Enabling Science to Improve the Quality of Life

2013 Annual Report

SIGMA-ALDRICH®

Company Results 2013

PRODUCTS

Leading the way in the life science and high technology materials markets.

- 230,000 Reagents and Chemicals
- 40,000 Laboratory Equipment Items

CUSTOMERS

More than1.4 million individual customers worldwide in more than 100,000 accounts.

(Percent of 2013 total sales)

- 52% Research
- 23% Applied
- 25% SAFC Commercial

GEOGRAPHIES

Enhancing our global reach through service excellence.

(Percent of 2013 total sales)

- 43% Americas
- 38% Europe / Middle East / Africa
- 19% Asia Pacific

2013 PERFORMANCE

In 2013, Sigma-Aldrich had another year of strong performance with record sales, profits and free cash flow. The transition into customer-facing business units strengthened alignment with customers and increased solution-based product offerings, which resulted in above industry-average organic sales growth. The company also received, as a result of our continued commitment to global citizenship, several global and local honors for efforts in sustainability and citizenship.

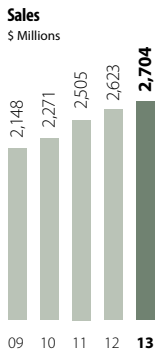
Research:
PAGE 4
Broad supplier of products, services and solutions to research laboratories

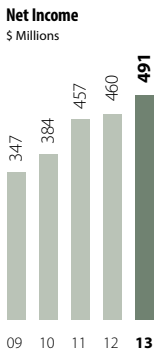
Applied:
PAGE 6
Supplier of raw materials and solutions for diagnostics and testing, and for industrial applications

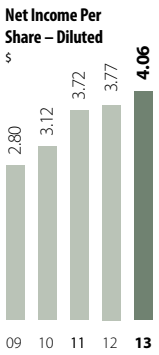
SAFC Commercial:
PAGE 8
Supplier of custom solutions to targeted commercial markets

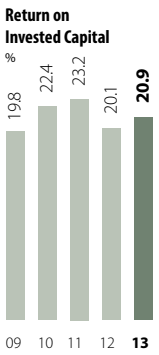
Emerging Markets:
PAGE 10
Important growth driver in 2013

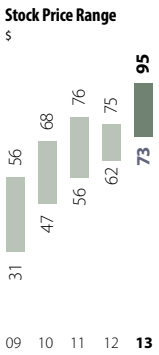
Global Citizenship:
PAGE 11
Commitment to social responsibility, environmental sustainability and fiscal accountability

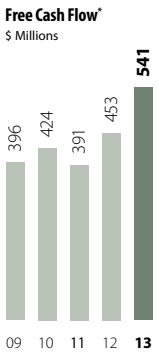












*Net cash provided by operating activities less capital expenditures

2013 Research Sales: $1,402 million

2013 Applied Sales: $629 million

2013 SAFC Commercial Sales: $673 million

Rakesh Sachdev
President & Chief Executive Officer

$2.7B in sales from over 230,000 biological and chemical products and service solutions

160+ countries served from over 50 offices in 37 countries around the world

1.4M individual customers in more than 100,000 accounts

To Our Shareholders,

It is my pleasure to report that Sigma-Aldrich delivered record sales, profits and cash flow in 2013 and its 39th consecutive year of adjusted earnings per share growth. Despite headwinds from a weaker U.S. academic funding environment and soft global industrial markets, our teams delivered above industry-average organic sales growth with contributions from all business units and geographies.

At the start of the year, we implemented a major realignment of our company into three market-facing business units focused on the unique needs of Research Laboratory customers (Research BU); Diagnostic and Industrial customers (Applied BU); and Pharma and Electronics manufacturers (SAFC Commercial BU). I am very pleased with the way our teams managed the transition into our new customer-facing business units without an interruption to the exceptional service, product selection and quality for which we are known.

Year in Review

RESEARCH BUSINESS UNIT

In 2013, we elevated our customer-focused sales and marketing efforts. For our large customers, we enhanced our account management activities. For our smaller customers, who represent the majority of our more than 100,000 accounts, we continued to build value through our industry-leading eCommerce platform with targeted support from our field and inside sales forces.

We increased the pace of collaborations with world-class research institutions to develop and bring to market new innovative research tools. From just one of these collaborations, we have already launched several dozen new and exciting product offerings and have plans to bring to market many more over the next few years as we roll-out this program to leading institutions around the world.

We continue to grow our unparalleled product portfolio of more than 230,000 biological and chemical reagents and consumables. We are focused on expanding our offering, adding more than 5,000 new products in 2013, across scientific workflows in the areas of drug discovery, translational research, clinical diagnostics R&D, and nutrition and food safety.

APPLIED BUSINESS UNIT

In 2013, we worked closely with existing and new diagnostics and testing customers to help them develop and conduct more innovative and repeatable tests for both clinical and environmental analyses. Our high quality offerings of chemicals, life-science products and analytical tools are allowing us to partner with customers to develop complete solutions in areas such as non-invasive diagnostics for cancer and other diseases.

For our industrial customers, we have brought new focus to their needs in diverse areas including consumer products, agricultural biology, chemical manufacturing and medical devices. These are high-growth markets that give us new opportunities to apply our deep scientific knowledge and extensive manufacturing capabilities to the challenges being faced across varied industries. The reception we have received so far from industrial customers has been very positive, and we are eager to engage them further in our new initiatives for 2014.

SAFC COMMERCIAL

In 2013, we had strong growth in Life Science Products - led by our industrial cell culture media, biological buffers and contract manufacturing of high-potent active pharmaceutical ingredients (APIs) and antibody-drug conjugates (ADCs).

We were pleased to see sequential growth each quarter in our Life Science Services business. Our biological testing, viral manufacturing and viral clearance businesses showed strong performance and are poised to deliver continued growth.

Within Hitech, we had strong growth of chemical precursors for advanced semiconductor chips that partially offset sales declines of precursors sold to the LED industry.

We are making further capital investments in a number of our SAFC Commercial areas including dry powder media, high-potent APIs and antibody-drug conjugates. We have also expanded capacity in several service areas such as viral clearance and high-complexity protein characterization in response to strong market demand.

GEOGRAPHIES

We experienced balanced growth last year across each of our major geographies. In Europe, the Middle East and Africa, we saw a stable academic environment and growth in Research Pharma driven in part by new service offerings. Through our "Dealers as Partners" program, we saw continued growth in several emerging countries in Asia. Japan and South Korea showed signs of improvement. China had strong growth in 2013 and helped offset softer markets in India and the Pacific Rim.

2013 Highlights

Research | Applied | SAFC Commercial

FINANCIAL PERFORMANCE

We achieved record sales and delivered our 39th consecutive year of adjusted earnings per share growth in 2013. We delivered a 7% increase in net income and a 19% increase in free cash flow with 4% organic sales growth. The 2013 return on invested capital of 21% reflects our long-term commitment to shareholder value. We finished the year with a strong net cash position of $357M after returning cash to shareholders through $146M of share repurchases and $103M of dividend payouts. In 2013, our stock gained 28%, closing the year at $94.01.

Looking Forward

Looking to 2014, we are confident in our ability to deliver solid earnings growth. We are cautiously optimistic about the end market trends, helped partly by a more stable funding environment for U.S. academic and government institutions as the year progresses. Our three business units are executing on their initiatives to deliver growth, and our newly-formed Global Supply Chain team has a number of programs in place designed to improve our operational efficiency.

+4%

SALES: Sales grew 4% organically and exceeded average peer performance

+7%

PROFITS: Net income grew 7%; 39th consecutive year of adjusted EPS growth

+19%

FREE CASH FLOW: Another year of record free cash flow; a strong balance sheet for investment in both organic and inorganic growth

"I am very pleased with the way our teams managed the transition into our new customer-facing business units without an interruption to the exceptional service, product selection and quality for which we are known."

– RAKESH SACHDEV

AMERICAS, EMEA AND APAC REGIONS
Had balanced growth across each of our major geographies, with strength in emerging markets

FINANCIAL PERFORMANCE
Delivered strong performance in sales, profits, and free cash flow

HONORED FOR GLOBAL CITIZENSHIP
Dow Jones Sustainability Index, Civic 50, CDL Global 500, Climate Disclosure Leadership Index (CDLI)

Our industry continues to consolidate and this trend is likely to continue for the foreseeable future. Strong companies in our space will benefit from this changing landscape, and we believe that we are well positioned to benefit from these opportunities. More and more, we are finding that our scientific breadth and depth, combined with our great products and longstanding relationships with more than a million customers, are producing opportunities to create and deliver new solutions to tomorrow's problems.

Finally, I am proud of the character and involvement of our global workforce of talented and dedicated employees. In early 2014, we were recognized by Corporate Knights at the World Economic Forum in Davos as one of the "Global 100 Most Sustainable Corporations in the World." To be ranked 20th in our debut year and to be the highest ranked life science tools company are testaments to our commitment to improve the quality of life.

On behalf of Sigma-Aldrich's 9,000 employees, I wish to thank our shareholders, customers and all other stakeholders for their continued support.

Rakesh Sachdev
President & Chief Executive Officer

PHARMA AND BIOTECH RESEARCH

Improving customer productivity through highly differentiated solutions

The Pharmaceutical industry today differs considerably from that of only 10 years ago. Rising R&D costs and generic competition have put increased pressure on companies to increase productivity and returns on investment. In addition to our industry-leading portfolio of chemicals, reagents and consumables, we offer Chemical-in-Stock programs and supply chain management solutions to address the challenges of our pharmaceutical customers in effectively managing compound inventories, supply chain, as well as compliance, regulatory and safety issues. Pharmaceutical customers rely on our scientific knowledge and are achieving gains in productivity through our broad product offerings and capabilities.

Research

2013 Sales

$1.4B

RESEARCH SALES BY SEGMENT

~50% Academic and Government Segment
~25% Pharma Segment
~25% Dealers Segment

Research Business Unit supports scientific research performed by customers in academic institutions, government and hospital laboratories, as well as the pharmaceutical and biotech industry. We provide a broad portfolio of products, services, and solutions that enable our customers to conduct their research in every phase of the scientific workflows they use. The Research Business Unit is composed of three market segments: Academic and Government, Pharma, and Dealers.

In 2013, we continued to expand our unparalleled product portfolio. Our new line of CRISPR products, along with a simple web-based design platform, provide researchers a fast gene-editing technology for various organisms. Our Redi-Dri™ product line, equipped with a proprietary packaging system, prevents solids from absorbing moisture regardless of the number of times you open the bottle or how humid the environment may be. This unique packaging solution provides many benefits including reduced costs and risks, longer shelf life, less waste and enhanced customer productivity.

The Academic and Government Segment enables scientists that are conducting R&D in basic discovery and drug development in university, government and hospital settings. In 2013, we expanded our collaboration with leading research institutions to accelerate the time to market of new research tools. We are also broadening our product offerings to address workflow needs of academic customers conducting research in drug discovery, clinical diagnostics, food and nutrition and materials science.

The Pharma Segment assists customers in accelerating drug development through an unparalleled range of unique products and customized solutions. A number of collaborations with large pharmaceutical companies are underway using our CompoZr™ ZFN engineered knockout transporter assay cells for preclinical testing in ADME/Tox assays. In 2013, we saw success in our strategic pharma accounts through the provision of service-based solutions such as Aldrich Market Select™, chemistry procurement and management, and supply chain management. As these initiatives gain traction with our customers it is helping to elevate our reputation of quality, scientific and regulatory knowledge, as well as expertise on compliance and safety.

Through our Dealers Segment, we work with dealer partners around the world to expand access to new customers and geographies. In 2013, we successfully rolled out our "Dealers as Partners" program across all of our geographies and saw excellent results in emerging markets such as Russia, Turkey, Africa and Eastern European countries.

RESEARCH SALES BY REGION

Americas
33%

EMEA
40%

APAC
27%

ACADEMIC AND GOVERNMENTAL RESEARCH

Accelerating the speed to market for innovative research tools

Academic researchers are at the forefront of discovering new chemical and biochemical processes. Sometimes, these discoveries can take a long time to become research tools that can be used by the entire scientific community. We have increased the pace of our collaborations with world-class research institutions like The Scripps Research Institute to speed up the translation of cutting-edge chemistry into widespread applications for drug discovery. The partnership funds basic research and infrastructure at world-renown academic institutions, accelerating the commercialization of new research tools that we are rolling out to the global scientific community – truly a 'win-win' scenario for science!

Applied

2013 Sales

$0.6B

APPLIED SALES BY SEGMENT

~50% Diagnostics and Testing Labs Segment

~50% Industrial Segment

DIAGNOSTICS AND TESTING

Helping customers develop next-generation diagnostics

With technological advances in diagnostic instruments increasing sensitivity and throughput, clinical diagnostic companies are developing next-generation proteomics (protein-based) tests. At Sigma-Aldrich, we developed Seppro® IgY14 and Human SuperMix protein depletion columns that are tailored for proteomics tests used in the diagnosis of cancer. These columns can remove high abundance proteins from blood to enable trace biomarker detection by mass spectrometry. A pioneering molecular diagnostics company uses our protein depletion columns in its proprietary lung test. Using this non-invasive procedure, medical professionals can rule out an individual patient's lung nodule as being cancerous thereby reducing potential complications and the healthcare costs that are associated with invasive procedures.

Applied Business Unit offers a broad and innovative portfolio of products and services, including customized solutions and critical components, to diagnostic companies, testing laboratories and industrial companies. The two segments in this unit, Diagnostics & Testing Labs and Industrial, together serve end markets that are large and growing.

By leveraging our scientific knowledge, broad portfolio of reagents and consumables and manufacturing capabilities for highly regulated products, we better enable our customers to develop new, innovative diagnostic tests. As an example, our Seppro® columns are being used by a cutting-edge diagnostic company to filter out high-abundance proteins from blood, thereby making it possible to trace a lung cancer biomarker using a simple blood test and eliminating the need for a biopsy, an expensive and time-consuming procedure. Our stable isotopes are being incorporated into established and new diagnostic applications ranging from a breath-test for stomach ulcers to a novel method for detection of prostate cancer. In order to meet the increasing requirements of our customers for more stringent quality systems with respect to critical raw materials and ingredients, we have expanded our high quality Elite™ product offerings for diagnostics kits. We are also expanding our ISO-certified manufacturing capacity to satisfy the growing demand for components in the highly regulated diagnostic markets.

Our Industrial Segment supplies critical components and solutions meeting the specific needs of a target group of customers in industrial markets. In 2013, we implemented a global account management structure for our top industrial customers, greatly improving key account relationships. In 2013, we better aligned our R&D resources, working with AgBio and medical materials customers to develop new products and workflow solutions.

Looking forward, we will continue to work with our customers to better understand their needs and align our resources in ways that best satisfy their requirements. We are building upon the strength of our portfolio of high-quality products by expanding our service offerings to include more complete solutions across the workflow, leveraging our existing channels, and entering into new adjacent markets.

APPLIED SALES BY REGION

Americas	EMEA	APAC
47%	42%	11%

INDUSTRIAL

Providing customers with safe high-quality flavoring ingredients

The growing consumer demand for natural products has placed a spotlight on the necessity of imposing consistent regulatory standards across-the-board, which itself is proving to be a growing challenge for the flavor and fragrance industry. With our deep understanding of the complex regulatory landscape around food and food additives, and our continuous efforts in upgrading more of our Flavor and Fragrance ingredient offerings to meet exacting European Regulations, we are developing a differentiated position in the flavors and fragrances business where our products have a strong reputation for quality and safety.

LIFE SCIENCE PRODUCTS

Supporting customers through all phases of ADC innovation

Antibody-Drug Conjugate technologies have shown exceptional promise in targeted therapies for diseases such as cancer. As a direct result of increasing customer demand, we are investing in commercial-scale manufacturing capacity for ADCs in our St. Louis, Missouri facilities. Through these new manufacturing lines we will provide the supply chain continuity our customers require when sourcing the high-quality manufacturing materials that drive the performance of their end products. Upon completion, the facilities will enable continuous scale-up of ADCs from preclinical to clinical phases and then into commercial-scale production.

SAFC Commercial

2013 Sales

$0.7B

SAFC COMMERCIAL SALES BY SEGMENT

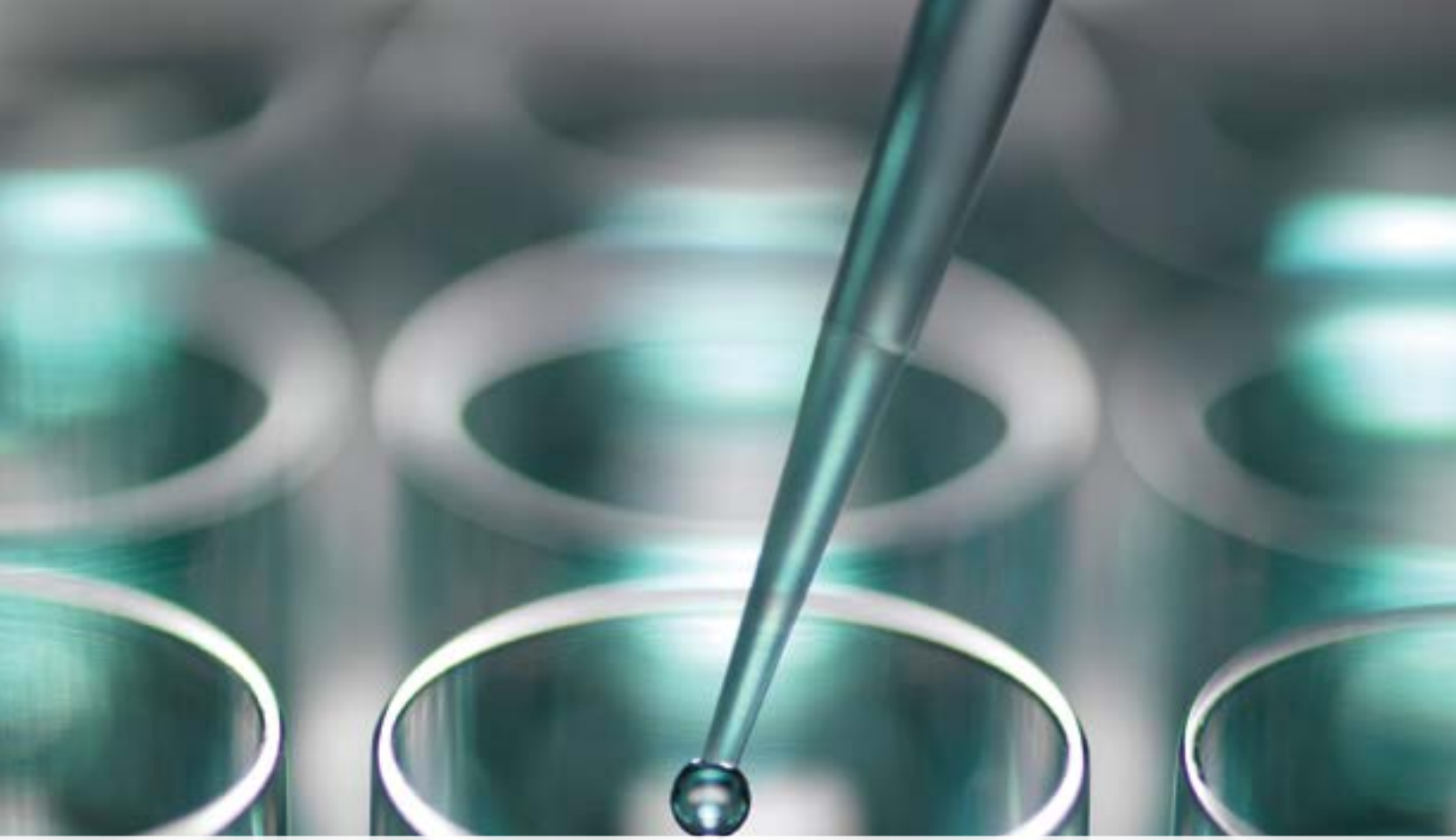
~65% Life Science Products Segment
~20% Life Science Services Segment
~15% Hitech Electronics Segment

SAFC Commercial Business Unit develops, manufactures and provides high quality products and service solutions that are difficult to replicate or substitute, critical to the performance of our customers' products and processes and typically represent a small portion of our customers' total manufacturing cost. There are three segments in the SAFC Commercial Business Unit - Life Science Products, Life Science Services and Hitech Electronics.

In 2013, our Life Science Products Segment experienced strong growth, led by biopharma materials such as cell culture media and biological buffers, as well as contract manufacturing of high-potent APIs and antibody-drug conjugates. To meet growing demand and customer expectations, we strategically added select capabilities and manufacturing capacity. We invested in additional capacity of high-potent API (HPAPI) manufacturing and storage to address our customer needs for supply chain continuity. We also invested in commercial-scale manufacturing capacities for ADCs to support our customers through all phases of ADC innovation. In 2013, through offerings such as our PharmaGrade™ line, we expanded our quality initiatives and enhanced product attributes better enabling our customers to mitigate risks associated with their manufacturing processes.

In 2013, our Life Sciences Services Segment experienced sequential quarterly sales growth with sales synergies from the BioReliance® integration. We received positive feedback from customers on the design and capabilities of our new viral clearance (downstream process validation) laboratories in the United States and saw increased customer demand for our viral testing services. We continue to develop close relationships with our top customers by involving our entire organization, including the sales force, R&D personnel, and project managers, in the account management process.

In the LED market, we have experienced continuing pricing pressure that has created challenging market conditions for the industry. Conversely, our Hitech Electronics Segment experienced strong growth in chemical precursors for advanced semiconductor chips. We have been working with our customers to develop the next generation of semiconductor chips, placing us well positioned to create and offer qualified precursors that will help our customers improve the performance of their products and ultimately drive the performance of consumer electronic devices.



SAFC COMMERCIAL SALES BY REGION

Americas
55%

EMEA
32%

APAC
13%

LIFE SCIENCE SERVICES

Offering customers proprietary Complete Clearance services

For the fast-growing biologic drug industry, one major concern is viral contamination. To assess viral safety, biopharmaceutical companies usually perform viral clearance studies. Our BioReliance affiliate commissioned a world-class Clearance Services Facility that allows customized laboratory setups better enabling us to conduct critical downstream bioprocessing studies for our customers. Customers can take advantage of a wide range of resources including state-of-the-art equipment and full technical, compliance and regulatory support from our personnel who are acknowledged to be the world's best experts to solve problems associated with high complexity proteins and challenging purification processes.

Emerging Markets

EMEA

The global rollout of our "Dealers as Partners" program has led to strong growth in Russia, the Middle East and Africa

APAC

We continue to grow in the emerging countries in the Asia Pacific region, particularly in China

MEXICO:
Working with CINVESTAV, one of the most important federal research centers in Mexico, we offered a symposium that brought together key opinion leaders and researchers to promote specific fields of science. We were the first company to organize such a forum in the country.

BRAZIL:
Our Radiello® products are used to monitor the level of air pollution in the Amazon rainforest as a part of the GOAMAZON field campaign funded by the U.S. Department of Energy.

RUSSIA:
We implemented technological improvements and applied our global import / compliance expertise to shorten the direct shipment process, which in turn increased customer productivity.

MIDDLE EAST AND AFRICA:
We worked with our local partners to improve supply chain efficiency and to enhance their knowledge of our broad portfolio offerings.

CHINA:
We provide quality control solutions for food & beverage testing. Our products are used to conduct safety and nutrition labeling analyses.

INDIA:
Our innovative chromatography columns and high quality solvents are used by pharma customers in analytical applications such as sample screening and pharmacology analysis. These products have created a differentiated position in the growing clinical & bioanalytical markets.

SOUTHEAST ASIA:
We provide custom cell culture media that is used in Thailand to produce millions of doses of an animal disease vaccine, which improves the health of livestock on farms throughout the country.

Global Citizenship at Sigma-Aldrich

The mission of Sigma-Aldrich is to enable science to improve the quality of life. One way we are living that mission is through Global Citizenship. As a longtime leader in life science and high technology, Sigma-Aldrich is quickly establishing itself as a leader in Corporate Social Responsibility. This success is the result of our more than 9,000 employees worldwide who are finding ways to minimize our carbon footprint, who are working to deliver new, environmentally friendly technologies for our customers and who are actively engaged in bettering the communities where we live and work.

COMMITMENT TO ENVIRONMENTAL SUSTAINABILITY

We continue to focus on operational eco-efficiency in our facilities and businesses. With a distinct focus on mitigating our impact on climate change and working to reduce the intensity of our natural resource use and carbon footprint, we actively initiated projects to decrease electricity usage. In 2013, we recorded our third straight year of absolute water-use reduction. We are also working with our supply chain partners to identify opportunities to make our business and our vendors more energy efficient. Our R&D programs have successfully developed and launched a number of green chemistry alternatives to respond to our customers' requests for environmentally friendly products.

COMMITMENT TO SOCIAL RESPONSIBILITY

A strong community is integral to creating a successful workplace. In 2013, we increased our charitable contributions to our communities by nearly 20%. Our giving strategy is focused on three core funding areas: STEM (Science, Technology, Engineering and Mathematics) Education, Scientific Research and Economic Development through Science. Our employees also contributed more than 8,000 hours of time valued at nearly $500,000 and reaching more than 8,300 students through STEM outreach programs.

RECOGNITION

Sigma-Aldrich was again recognized by several leading Corporate Social Responsibility indices and rankings, including the Dow Jones Sustainability Index; the Civic 50, where we were named number one in the Materials sector; and the CDP as a Carbon Disclosure Leadership Index member for the second year in a row. We are pleased with this recognition and committed to develop additional opportunities towards our goal of leadership in global citizenship.

Global Citizenship



Sigma-Aldrich Global Citizenship Initiative (GC1015)

Waste
- Implementation of increased recycling efforts at sites around the world

Emissions
- Increased reporting of SOx, NOx, PM, VOC and CO emission data
- Focused awareness of efficiency projects to drive energy reductions

Water
- Elimination of single pass water systems at our largest water using facilities

Energy
- Implementation of Top 10 Buildings Project
- Strategic planning for future reductions
- Data utilization to provide guidance on best opportunities

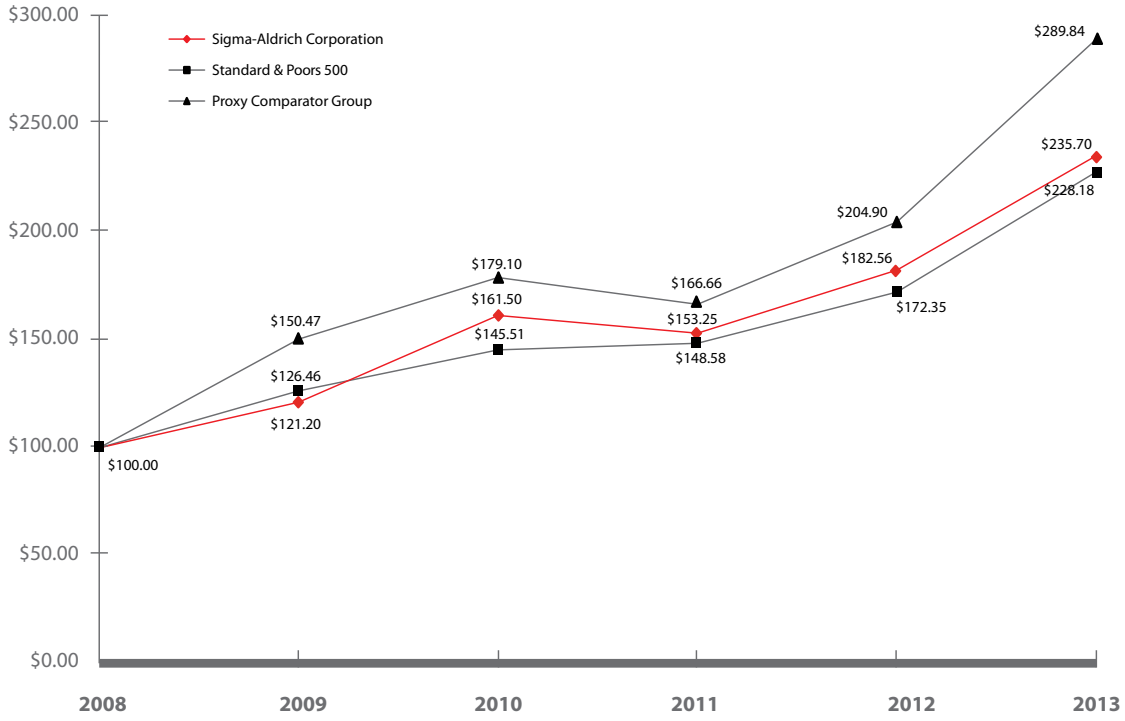
Supply Chain Transparency
- Prepared to engage Top 200 suppliers regarding environmental sustainability and social responsibility management
- Top 100 Surveyed

Greener Alternative Products
- Increased market demands for greener alternatives
- Successful reformulation projects and collaboration across the organization

Performance Graph

The following performance graph compares the Company's cumulative shareholder return (stock price appreciation plus reinvestment of dividends) for a five year period ended December 31, 2013, with that of two separate indices assuming that $100 was invested in each on December 31, 2008, and that all dividends were reinvested. The indices utilized are the Standard & Poor's 500 Composite Stock Price Index ("S&P 500") and an index consisting of our peers and a broader group of companies in the chemical, life science and high technology industries (the "Proxy Comparator Group"). These indices are only included for comparative purposes as required by Securities and Exchange Commission rules and do not necessarily reflect management's opinion that such indices are an appropriate measure of the relative performance of the Company's common stock, and are not intended to forecast or be indicative of possible future performance of the Company's common stock.

The Proxy Comparator group includes the following companies: Agilent Technologies, Inc., Air Products & Chemicals, Inc., Airgas, Inc., Albemarle Corporation, Ashland Inc., Bio Rad Laboratories, Inc., Charles River Laboratories Int'l, Inc., Covance Inc., Ecolab Inc., Int'l Flavors & Fragrances Inc., Life Technologies Corporation, Lonza, Mettler-Toledo International Inc., Pall Corporation, PerkinElmer, Inc., Qiagen, Techne Corporation, Thermo Fisher Scientific Inc. and Waters Corporation.



	2008	2009	2010	2011	2012	**2013**
SIGMA-ALDRICH CORPORATION	$100.00	121.20	161.50	153.25	182.56	**235.70**
STANDARD & POORS 500	100.00	126.46	145.51	148.58	172.35	**228.18**
PROXY COMPARATOR GROUP	100.00	150.47	179.10	166.66	204.90	**289.84**

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10–K

(Mark one)
☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2013

OR

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ **to** _____

Commission file number: 0-8135

SIGMA-ALDRICH CORPORATION

(Exact name of registrant as specified in its charter)

Delaware	**43-1050617**
State or other jurisdiction of incorporation or organization	**(I.R.S. Employer Identification No.)**
3050 Spruce Street, St. Louis, Missouri	**63103**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: 314-771-5765

Securities registered pursuant to Section 12(b) of the Act:

Common Stock, $1.00 par value	**NASDAQ**
Title of each class	**Name of exchange on which registered**

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Website, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☒	Accelerated filer ☐
Non-accelerated filer ☐	Smaller reporting company ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

Aggregate market value of the voting stock held by non-affiliates of the registrant:

$8,428,183,193	June 30, 2013
Value	Date of Valuation

Number of shares of the registrant's common stock, $1.00 par value, outstanding as of January 31, 2014 was 119,454,220. The following documents are incorporated by reference in the Parts of this Form 10-K indicated below:

Documents Incorporated by Reference	**Parts of Form 10-K into which Incorporated**
Portions of the Registrant's Definitive Proxy Statement on Schedule 14A for the 2014 Annual Meeting of Shareholders to be held on May 6, 2014	Part III

Table of Contents

Glossary

2003 LTIP	Sigma-Aldrich Corporation 2003 Long-Term Incentive Plan
2014 Proxy Statement	Sigma-Aldrich Corporation Definitive Proxy Statement on Schedule 14A for the Annual Meeting of Shareholders to be held on May 6, 2014
Aldrich	Aldrich Chemical Company, Inc.
AOCI	Accumulated Other Comprehensive Income
APAC	Asia Pacific Region
Applied	Applied Business Unit
ASC	Accounting Standards Codification
ASU	Accounting Standards Update
BioReliance	BioReliance Holdings, Inc.
Board	Sigma-Aldrich Corporation Board of Directors
CAA	Clean Air Act
CBP	U.S. Customs and Border Protection
CEO	Sigma-Aldrich Corporation Chief Executive Officer
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CFO	Sigma-Aldrich Corporation Chief Financial Officer
Company, we, us or our	Sigma-Aldrich Corporation
CWA	Clean Water Act
DEA	U.S. Drug Enforcement Administration
DHS	U.S. Department of Homeland Security
DOC	U.S. Department of Commerce
DOT	U.S. Department of Transportation
EDI	Electronic Data Interchange
Effective tax rate	Income tax expense expressed as a percentage of income before income taxes
EMEA	Europe, Middle East and Africa Region
EPS	Earnings Per Share
EU	European Union
Exchange Act	Securities Exchange Act of 1934
FASB	Financial Accounting Standards Board
FDA	U.S. Food and Drug Administration
FX	Foreign Currency Exchange Rate
GAAP	U.S. Generally Accepted Accounting Principles
Gross profit margin	Gross profit as a percentage of sales
LED	Light-Emitting Diode
NASDAQ	National Association of Securities Dealers Automated Quotation System
NRC	U.S. Nuclear Regulatory Commission
OCI	Other Comprehensive Income
Operating income margin	Operating income as a percentage of sales
PPA	Pollution Prevention Act of 1990
R&D	Research and Development
RCRA	Resource Conservation and Recovery Act of 1976
Report	Sigma-Aldrich Corporation Annual Report on Form 10-K for the year ended December 31, 2013
Research	Research Business Unit

Research Organics	Research Organics, Inc.
RSU	Restricted Stock Unit
SAFC Commercial	SAFC Commercial Business Unit
Sangamo	Sangamo BioSciences, Inc.
SARA	Superfund Amendments and Reauthorization Act of 1986
SEC	U.S. Securities and Exchange Commission
Securities Act	Securities Act of 1933
SFAS	Statement of Financial Accounting Standards
SG&A	Selling, General and Administrative Expense
Sigma Chemical	Sigma Chemical Company
Total Americas	Total Americas Region consisting of North and Latin America
UK	United Kingdom
USDA	U.S. Department of Agriculture
ZFP	Zinc Finger DNA Binding Protein

Forward-Looking Statements

This Report may include or incorporate forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act that involve risks and uncertainties, including financial, business environment and projections, as well as statements that are preceded by, followed by or that include the words "believes," "can," "expects," "plans," "anticipates," "should" or similar expressions, and other statements contained herein regarding matters that are not historical facts. Additionally, this Report contains forward-looking statements relating to future performance, goals, strategic actions and initiatives and similar intentions and beliefs, including, without limitation, statements with respect to the Company's expectations, goals, beliefs, intentions and the like regarding future sales, earnings, return on equity, cost savings, process improvements, free cash flow, share repurchases, capital expenditures, acquisitions and other matters, as well as the information included in Item 7 of Part II of this Report - Management's Discussion and Analysis of Financial Condition and Results of Operations - 2014 Outlook. These statements are based on assumptions regarding Company operations, investments and acquisitions and conditions in the markets the Company serves.

The Company believes these assumptions are reasonable and well founded. The statements in this Report are subject to risks and uncertainties, including, among others, certain economic, political and technological factors. Actual results could differ materially from those stated or implied in this Report, due to, but not limited to, such factors as:

(1) global economic conditions and other factors affecting the creditworthiness of our customers;

(2) changes in pricing and the competitive environment and the global demand for the Company's products;

(3) changes in foreign currency exchange rates;

(4) changes in research funding, including changes in funding of various government agencies including but not limited to the National Institute of Health, and the success of R&D activities;

(5) failure of planned sales initiatives in our Research, Applied and SAFC Commercial business units;

(6) dependence on uninterrupted manufacturing operations and a global supply chain;

(7) changes in the regulatory environment in which the Company operates;

(8) changes in worldwide tax rates or tax benefits from domestic and international operations, including the matters described in Note 12 – Income Taxes to the Company's consolidated financial statements in Item 8 - Financial Statements and Supplementary Data of Part II of this Report;

(9) exposure to litigation, including product liability claims;

(10) the ability to maintain adequate quality standards;

(11) reliance on third party package delivery services;

(12) an unanticipated increase in interest rates;

(13) other changes in the business environment in which the Company operates;

(14) acquisitions or divestitures of businesses; and

(15) the outcome of the outstanding matters described in Note 13 – Contingent Liabilities and Commitments to the Company's consolidated financial statements in Item 8 - Financial Statements and Supplementary Data of Part II of this Report.

A further discussion of the Company's risk factors can be found in Item 1A, Part I of this Report. Any forward-looking statement made by us in this Report is based only on information currently available to us and speaks only as of the date on which it is made. We undertake no obligation to publicly update any forward-looking statement, whether written or oral, that may be made from time to time, whether as a result of new information, future developments or otherwise.

PART I

Unless we have indicated otherwise, or the context otherwise requires, (i) references in this Report to "the Company," "we," "us" and "our" refer to Sigma-Aldrich Corporation and its subsidiaries, and (ii) all dollar amounts in this Report are in millions except for per share data.

Information in this Form 10-K is current as of February 6, 2014, unless otherwise specified.

Item 1. Business.

(a) General Development of Business

The Company was incorporated under the laws of the State of Delaware in May 1975. Effective July 31, 1975 (the "Reorganization"), the Company succeeded, as a reporting company, Sigma International, Ltd., the predecessor of Sigma Chemical, and Aldrich Chemical, both of which had operated continuously for more than 20 years prior to the Reorganization. The Company's principal executive offices are located at 3050 Spruce Street, St. Louis, Missouri, 63103.

During 2012, the Company acquired two businesses with aggregated sales of $151 and $127 in 2013 and 2012, respectively. One of these companies, BioReliance, a global provider of biopharmaceutical testing services, was acquired on January 31, 2012 for $353 (net of $11 of cash acquired). The other company was Research Organics, a supplier of high purity biochemicals, which the Company acquired on April 2, 2012.

(b) Financial Information About Segments

The Company operates in one segment. Information concerning sales for the Company's business units is provided in Note 15 – Company Operations by Business Unit to the Company's consolidated financial statements in Item 8 - Financial Statements and Supplementary Data of Part II of this Report.

(c) Narrative Description of Business

The Company, a leading life science and high technology company focused on enhancing human health and safety, manufactures and distributes 230,000 chemicals, biochemicals and other essential products and 40,000 equipment products to more than 1.4 million customers globally in research and applied labs as well as in industrial and commercial markets. With three distinct business units – Research, Applied and SAFC Commercial – the Company is committed to enabling science to improve the quality of life. The Company operates in 37 countries and sells into approximately 160 countries, serving roughly 100,000 accounts worldwide. The Company manufactures approximately 110,000 of its products.

Products and Services

Effective January 1, 2013, the Company's business unit structure was realigned into three market-focused business units that are defined by the customers and markets they serve: Research, Applied and SAFC Commercial.

- Research - Our products and services, which include chemicals, reagents and kits, enable scientists to discover and develop new drugs and materials;
- Applied - Our products and services, which primarily include high quality components and kits, chemical reagents, critical raw materials and certified reference standards, provide customized solutions to and constitute critical components and materials for diagnostic companies, testing laboratories and industrial companies;
- SAFC Commercial - Our products and services are used by our customers to develop and manufacture product and service solutions for the commercial production of pharma, biopharma and electronics products. Products and services include industrial cell culture media, active pharmaceutical ingredients, intermediates, raw materials, biological testing services and organometallic precursors for LED and semiconductor manufacturing.

Sales and Distribution

During 2013, the Company sold products and services to approximately 100,000 accounts representing over 1.4 million individual customers, including pharmaceutical companies, universities, commercial laboratories, industrial companies, biotechnology companies, non-profit organizations, governmental institutions, diagnostic, chemical and electronics companies and hospitals. Our Research and Applied business units, with an average order size of approximately $500

dollars, accounted for 75 percent, 76 percent and 80 percent of the Company's net sales in 2013, 2012 and 2011, respectively. Through its SAFC Commercial business unit, the Company also makes its chemical products available in larger-scale quantities for use in manufacturing. Sales of these products accounted for 25 percent, 24 percent and 20 percent of net sales in 2013, 2012 and 2011, respectively.

Customers and potential customers, wherever located, are encouraged to contact the Company by telephone or via its website (www.sigma-aldrich.com) to place orders or obtain technical staff consultation. Information on the website does not constitute a part of this Report. Shipments are made every scheduled work day from all locations conducting distribution activities. The Company strives to ship its products to customers on or near the same day an order is received and carries inventory levels which it believes appropriate to maintain this practice.

Production and Purchasing

The Company has manufacturing and distribution facilities in Madison, Milwaukee and Sheboygan, Wisconsin; St. Louis, Missouri; Lenexa, Kansas; Houston and Round Rock, Texas; Bellefonte, Pennsylvania; Haverhill and Natick, Massachusetts; Urbana, Illinois; Miamisburg and Cleveland, Ohio; Carlsbad, California; Laramie, Wyoming; Australia; Brazil; Canada; Germany; India; Ireland; Israel; Japan; Singapore; Switzerland; Taiwan; and the United Kingdom. Biochemicals are primarily produced by extraction and purification from yeast, bacteria and other naturally occurring animal and plant sources. Organic and inorganic chemicals are primarily produced by synthesis. Chromatography media and columns are produced using proprietary chemical synthesis and proprietary preparation processes. Similar processes are used to produce filtration and sample collection products.

There are approximately 230,000 chemical and biochemical products and 40,000 equipment products listed on our web site and in the Sigma, Aldrich, Fluka and Supelco catalogs. The Company manufactures approximately 110,000 of the chemical and biochemical products it sells, which represented approximately 60 percent of sales in 2013. Products not manufactured by the Company are purchased from many sources either under contract or in the open market.

None of the Company's 10,000 suppliers accounted for more than 5 percent of the Company's chemical, biologic or equipment purchases in 2013. The Company has generally been able to obtain adequate supplies of products and materials to meet its needs. No assurance can be given that shortages will not occur in the future.

Whether a product is produced by the Company or purchased from suppliers it is subjected to the same quality control procedures. Quality control is performed by a staff of chemists, biologists and lab technicians in our network of labs around the world.

Patents, Trademarks and Licenses

The Company holds approximately 470 issued or pending patents, over 680 licenses and has approximately 910 registered trademarks and trademark applications worldwide. The Company's significant trademarks are the brand names: "Sigma-Aldrich," "Sigma," "Aldrich," "Fluka," "Riedel-de Haën," "Supelco," "SAFC," "SAFC Biosciences," "SAFC Hitech," "Genosys," "Proligo," "Pharmorphix," "Cerilliant," "Vetec" and "BioReliance." Their related registered logos and trademarks are expected to be maintained indefinitely. Approximately 75 percent of the Company's issued patent portfolio has a remaining life of at least five years.

The Company is aware of the desirability for patent and trademark protection for its products. The Company believes that other than its brand names, no single patent, license or trademark (or related group of patents, licenses or trademarks) is material in relation to its business as a whole.

In addition to patents, the Company relies on trade secrets and proprietary know-how in the conduct of its business. The Company seeks protection of these trade secrets and proprietary know-how, in part, through confidentiality and proprietary information agreements. The Company makes efforts to require its employees, directors, consultants and advisors, outside scientific collaborators and sponsored researchers, other advisors and other individuals and entities to execute confidentiality agreements upon the start of employment, consulting or other contractual relationships with the Company. These agreements provide that all confidential information developed or made known to the individual or entity during the course of the relationship is to be kept confidential and not disclosed to third parties except in specific circumstances. In the case of employees and some other parties, the agreements provide that all inventions conceived by the individual will be the Company's exclusive property. These agreements may not provide meaningful protection for or adequate remedies to protect the Company's technology in the event of unauthorized use or disclosure of information. Furthermore, the Company's trade secrets may otherwise become known to, or be independently developed by, its competitors.

Dependence on a Single Customer or Product

During the year ended December 31, 2013, no single customer accounted for more than 2 percent, and no single product accounted for more than 1 percent, of the Company's net sales.

Backlog

The vast majority of customer orders are shipped from inventory on the day ordered, resulting in limited backlog. Individual items may occasionally be out-of-stock. These items are shipped as soon as they become available. Some orders for larger scale quantities specify a future delivery date, which we exclude from our backlog calculation. At December 31, 2013, the backlog of firm orders was not significant at about 4 percent of sales. The Company anticipates that substantially all of the backlog as of December 31, 2013 will be shipped during 2014.

Competition

The markets for the Company's products, services and technologies are both competitive and price sensitive. The Company believes it is a major supplier of biochemical and organic chemical products and kits used in scientific research and testing laboratories, including industrial applications, genomic and proteomic research, biotechnology, pharmaceutical development and as key components in pharmaceutical, diagnostic, environmental and other high technology manufacturing. The Company offers approximately 270,000 chemical, biologic and equipment items, some of which are unique with limited demand. There are many competitors that offer a narrower range of chemicals and many others offering a broader range of equipment products.

In all product areas, the Company competes primarily on the basis of customer service, product availability, quality and price. The Company's main marketing vehicles include its website, www.sigma-aldrich.com, as well as printed catalogs under the Sigma, Aldrich, Fluka and Supelco brands. These catalogs are supplemented with advertisements in life science, chemical and other scientific journals and trade publications, the mailing of special product brochures, the electronic distribution of various advertisements and product data, social media, news releases related to new product offerings and through personal visits with customers from management, sales and technical representatives.

Compliance with Regulations

The Company is subject to extensive regulation by federal, state and local governments and similar international agencies relating to the manufacture, sale and distribution of its products. These regulations govern the Company’s manufacture, use, labeling, packaging, storage and distribution of chemicals and hazardous substances. The Company is also subject to import, export and customs regulations, similar international laws and regulations, and statutes and regulations relating to government contracting. The Company has automated systems, processes and procedures in place to support compliance with these regulations, which are enforced by governmental agencies such as the CBP, DEA, DHS, DOC, DOT, FDA, NRC and USDA and similar international agencies.

The Company believes that it is in compliance in all material respects with federal, state and local regulations relating to the manufacture, sale and distribution of its products. The Company also believes that due to its automated systems, processes and procedures in place it conducts its global business in compliance in all material respects with applicable statutes and regulations as promulgated in the more than 160 countries into which we sell our products. While we believe we are in compliance in all material respects with such laws and regulations, any noncompliance could result in substantial fines or otherwise restrict our ability to conduct our business.

The Company is also subject to federal, state, local and international laws and regulations regulating the emission or discharge of materials into the environment, or otherwise relating to the protection of the environment, in those jurisdictions where the Company operates or maintains facilities. Examples of these laws and regulations include, but are not limited to, the CAA, CWA, CERCLA, SARA, PPA and RCRA. The Company does not believe that any liability arising under, or compliance with, these laws and regulations will have a material effect on our business, and no material capital expenditures are currently expected for environmental control.

R&D

R&D expenses were 2.4 percent, 2.6 percent and 3.0 percent of sales in 2013, 2012 and 2011, respectively. The R&D expenses relate primarily to efforts to add new manufactured products and enhance manufacturing processes. Self-manufactured products accounted for approximately 60 percent of net sales in 2013.

Number of Persons Employed

The Company had approximately 9,000 employees as of December 31, 2013. The total number employed in the United States was approximately 4,400 with the remaining 4,600 employed by the Company's international subsidiaries. The Company employs approximately 3,300 people who have degrees in chemistry, biochemistry, engineering or other scientific disciplines, including approximately 440 with Ph.D. degrees.

Approximately 232 of the 4,600 persons employed by the Company's international subsidiaries were members of unions. None of the Company's employees in the United States were members of unions. The Company believes its labor relations are good.

(d) Financial Information About Geographic Areas and Business Units

Information concerning sales by geographic area and business unit for the years ended December 31, 2013, 2012 and 2011, is located in Note 15 – Company Operations by Business Unit to the Company's consolidated financial statements in Item 8 - Financial Statements and Supplementary Data of Part II of this Report.

The Company's sales to customers located outside the United States were 64 percent, 65 percent and 66 percent in 2013, 2012 and 2011, respectively. These sales were made directly by the Company, by its subsidiaries located in 37 other countries and by a global network of independent distributors.

(e) Available Information

The Company's Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, Definitive Proxy Statements on Schedule 14A and amendments to reports filed pursuant to Sections 13(a) and 15(d) of the Exchange Act are available on the Company's web site at www.sigma-aldrich.com as soon as reasonably practicable after being filed electronically with or furnished to the SEC. The information on the website does not constitute part of this Report.

(f) Executive Officers of the Registrant

The executive officers of the Registrant are:

Name of Executive Officer	Age	Positions and Offices Held
Jan A. Bertsch	57	Executive Vice President and Chief Financial Officer
Gilles A. Cottier	55	Executive Vice President and President, SAFC Commercial
Eric M. Green	44	Executive Vice President and President, Research
Michael F. Kanan	50	Vice President and Corporate Controller
George L. Miller	59	Senior Vice President, General Counsel & Secretary
Karen J. Miller	56	Senior Vice President, Corporate Development and Corporate Communications
Douglas W. Rau	57	Vice President, Human Resources
Rakesh Sachdev	57	President and Chief Executive Officer
Franklin D. Wicks	60	Executive Vice President and President, Applied

There is no family relationship between any of the officers or directors. These officers serve at the pleasure of the Board subject to the terms of any employment or similar agreements.

Ms. Bertsch has been Executive Vice President and Chief Financial Officer of the Company since March 2012. She also served as Treasurer from September 2012 until September 2013. She was previously Vice President, Controller and Principal Accounting Officer of Borg Warner Inc. from August 2011 to February 2012 and Vice President and Treasurer of Borg Warner Inc. from December 2009 to July 2011. From July 2008 to November 2009, Ms. Bertsch was Senior Vice President, Treasurer and Chief Information Officer for Chrysler Group, LLC and Chrysler LLC, and from May 2006 to June 2008, she was Chief Information Officer of Daimler Chrysler's Chrysler Group and Mercedes Benz NAFTA organizations and Chrysler LLC.

Mr. Cottier was named Executive Vice President and President, SAFC Commercial of the Company in January 2013. Prior to that, he was President of SAFC since January 2009 and was made an Executive Vice President of the Company in 2011. He served as President of the Research Essentials business unit of the Company from July 2005 until January 2009.

Mr. Green was named Executive Vice President and President, Research of the Company in January 2013. Prior to that, he was Vice President and Managing Director, International (or APAC) of the Company since October 2009. Previously, he served as Vice President, International Sales and Operations of the Company from August 2005 to September 2009.

Mr. Kanan has been Vice President and Corporate Controller of the Company since April 2009. Prior to that, he served as Vice President Finance-Light Vehicle Systems of ArvinMeritor from October 2006 to April 2009.

Mr. Miller has been Senior Vice President, General Counsel and Secretary of the Company since October 2009. Prior to that, he served as General Counsel of Novartis Services, Inc. from September 2008 to September 2009, and as General Counsel of Novartis Corporation from December 2005 to August 2008.

Ms. Miller was named Senior Vice President, Corporate Development and Corporate Communications of the Company in January 2013. Prior to that, she was Senior Vice President, Strategy & Corporate Development of the Company since May 2009 and was previously Vice President, Strategy & Corporate Development of the Company from January 2009 through May 2009. Prior to that, she served as Controller of the Company for more than five years.

Mr. Rau has been Vice President, Human Resources of the Company since October 2005.

Mr. Sachdev has been President and Chief Executive Officer of the Company since November 2010. He previously served as Senior Vice President, Chief Financial Officer and Chief Administrative Officer of the Company from May 2009 to November 2010. Previously, he served as Vice President and Chief Financial Officer of the Company from November 2008 to May 2009. Prior to that, he served as Senior Vice President and President, Asia Pacific of ArvinMeritor from March 2007 to July 2008.

Dr. Wicks was named Executive Vice President and President, Applied of the Company in January 2013. Prior to that, he was President of Research and has been an Executive Vice President of the Company since February 2011. He previously served as President of the Research Essentials and Specialties business units of the Company from January 2009 to February 2011 and Managing Director-U.S & Canada from January 2010 to February 2011. Prior to that, he served as President of SAFC for more than five years.

Item 1A. Risk Factors.

Our business is subject to certain risks and uncertainties, including, among others, certain economic, political and technological factors. You should carefully consider the risk factors below, together with other matters described in this Report or incorporated herein by reference, in evaluating our business and prospects. If any one or more of the following risks occurs, our business, results of operations, financial condition, cash flows and liquidity could be adversely impacted and the trading price of our common stock could decline. Additional risks not presently known to us or that we currently deem immaterial may also adversely impact our business, results of operations, financial condition, cash flows and liquidity.

Our performance may be affected by the economic conditions in the United States and in other nations where we do business.

Declining economic conditions as a result of inflation, rising interest rates, limitations on access to and the functioning of capital markets, changes in spending patterns at pharmaceutical, biotechnology and diagnostic companies and the effects of governmental initiatives to manage economic conditions may have a negative impact on our consolidated results of operations, financial condition and cash flows. Overall demand for our products could be reduced as a result of a global economic recession, especially in such customer segments as the pharmaceutical, biotechnology, diagnostic, chemical, industrial and electronics industries and academia.

We face significant competition, including changes in pricing.

The markets for our products and services are both competitive and price sensitive. Many of our competitors have significant financial operations, sales and marketing resources and experience in research and development. Existing or new competitors could develop new technologies that compete with our products and services or even render our products obsolete. If a competitor develops superior technology or cost-effective alternatives to our products and services, our business could be harmed.

The markets for some of our products are also subject to specific competitive risks because these markets are highly price competitive. Our competitors have competed in the past by lowering prices on certain products. If they do so again, we may be forced to respond by lowering our prices. This may reduce profits and possibly sales. Failure to anticipate and respond to price competition may also impact sales and profits.

Consolidation trends in both our industry and that of our customers have changed industry dynamics.

The industries in which we compete have been subject to increasing consolidation for the past several years. Consolidation in our industries could result in existing competitors increasing their market share through business combinations and result in stronger competitors, which could have a material adverse effect on our business, results of operations, financial condition and cash flows. We cannot predict with certainty how industry consolidation would affect our competitive position.

Additionally, there has been a trend toward consolidation among our customers, notably in the pharmaceutical industry. Consolidation in our customer markets results in increased competition for important market segments and fewer available accounts. Larger consolidated customers may be able to exert increased pricing pressure on industry participants.

We must continually offer new products and technologies.

Our success depends in large part on continuous and timely development and introduction of new products that address evolving customer needs and changes in the market. We believe customers in our markets display a significant amount of loyalty to their supplier of a particular product. We also believe that because of the initial time investment required by many of our customers to reach a purchasing decision for a new product, it may be difficult to regain that customer once the customer purchases a product from a competitor. To the extent we are not the first to develop, offer and/or supply new products, customers may buy from our competitors or make products themselves, causing our competitive position to suffer.

These facts have led us to focus significant efforts and resources on the development and identification of new technologies, products and services. As a result, we have a very broad product line and are continually seeking to develop, license or acquire new technologies, products and services to further broaden our offerings. If we fail in these efforts, our customers likely will purchase products from our competitors, significantly harming our business. Once we develop or obtain a technology, to the extent that we fail to timely introduce new and innovative products that are accepted by our markets, we could fail to obtain an adequate return on our R&D, licensing and acquisition investments and could lose market share to our competitors, which may be difficult or impossible to regain and could damage our business.

In addition, technology innovations, which our current and potential customers might have access to, could create alternatives to our products and reduce or eliminate the need for our products. Our failure to develop, introduce or enhance products able to compete with new technologies in a cost-effective and timely manner could have an adverse effect on our business, results of operations and financial condition.

Our sales and results of operations depend on our customers' research and development efforts and their ability to obtain funding for these efforts.

Our customers include researchers at companies in the pharmaceutical, biotechnology, diagnostic, chemical, electronics and related industries, academic institutions, government laboratories and private foundations. Fluctuations in the R&D budgets of these researchers and their organizations could have a significant effect on the demand for our products. Our customers determine their R&D budgets based on several factors, including the need to develop new products, the availability of governmental and other funding, competition and the general availability of resources. As we continue to expand our international operations, we expect R&D spending levels in markets outside of the United States will become increasingly important to us.

R&D budgets fluctuate due to changes in available resources, spending priorities, general economic conditions, institutional and governmental budgetary limitations and mergers of companies in the key industry sectors we serve. Our business could be seriously harmed by any significant decrease in life science and high technology R&D expenditures by our customers. In addition, credit availability may impact the ability of small, emerging pharmaceutical, biotechnology and diagnostic companies to access funding.

A portion of our sales have been to researchers whose funding is dependent on grants from government agencies across the globe. In the United States, these agencies include the U.S. National Institute of Health, the National Science Foundation, the National Cancer Institute and similar agencies or organizations. Government funding of research and development is subject to the political process and budget process, which are often unpredictable. Any shift away from funding of life science and high technology R&D, delays surrounding the approval of governmental budget proposals or further United States federal government shutdowns may cause our customers to delay or forgo purchases of our products and services, which could damage our business.

Some of our customers receive funds from approved grants at a particular time of year, many times set by government budget cycles. In the past, such grants have been frozen for extended periods or have otherwise become unavailable to various institutions without advance notice. The timing of the receipt of grant funds may affect the timing of purchase decisions by our customers and, as a result, cause fluctuations in our sales and operating results.

Likewise, public support of R&D in key markets in Europe and elsewhere has come under pressure, which may lead to decreased sales of our products in those jurisdictions.

Due to heavy reliance on manufacturing and related operations to produce, package and distribute the products we sell, our business could be adversely affected by disruptions of these operations.

We rely upon our manufacturing operations to produce products accounting for approximately 60 percent of our sales and several products are produced solely at one facility. Our quality control, packaging and distribution operations support all of our sales. Any significant disruption of those operations for any reason, such as labor unrest, power interruptions, fire, natural disasters or other events beyond our control, could adversely affect our sales, product distribution and customer relationships and therefore adversely affect our business. While insurance coverage may reimburse us, in whole or in part, for profits lost from such disruptions, our ability to provide these products in the longer term may affect our sales growth expectations and results.

If we experience a significant disruption in our information technology systems or if we fail to implement new systems and software successfully, our business could be adversely affected.

We depend on information systems throughout the Company to control our manufacturing processes, process orders, manage inventory, process and bill shipments to and collect cash from our customers, respond to customer inquiries, contribute to our overall internal control processes, maintain records of our property, plant and equipment and record and pay amounts due vendors and other creditors. Additionally, in 2013, approximately 48 percent of the Company's Research and Applied sales originated through e-commerce. As a part of our ongoing effort to upgrade our current information systems, we are implementing new enterprise resource planning software and other software applications to manage certain of our business operations. As we upgrade or change systems, we may suffer interruptions in service, loss of data or reduced functionality, and other problems could arise that we have not foreseen. Such problems could adversely impact our ability to provide quotes, take

customer orders and otherwise run our business in a timely manner. In addition, if our new systems fail to provide accurate and increased visibility into pricing and cost structures, it may be difficult to improve or maximize our profit margins. As a result, our results of operations and cash flows could be adversely affected.

Our information technology systems may be susceptible to damage, disruptions or shutdowns due to natural disasters, power outages, hardware failures, viruses, break-ins, sabotage, acts of terrorism, acts of vandalism, hacking, cyber-terrorism and similar misconduct. Although we strive to have appropriate security controls in place, prevention of security breaches cannot be assured, particularly as cyber threats continue to evolve. We may be required to expend additional resources to continue to enhance our security measures or to investigate and remediate any security vulnerabilities. If we were to experience a prolonged disruption in our information systems that involve interactions with customers and suppliers, it could result in the loss of sales and customers and/or increased costs, which could adversely affect our business.

We are subject to regulation by various federal, state, local and international agencies that require us to comply with a wide variety of regulations, including those regarding the manufacture and distribution of products and environmental matters.

Some of our operations are subject to regulation by various United States federal agencies and similar state and international agencies, including the DOC, FDA, DOT, USDA and other comparable United States, state, local and international governmental agencies. These regulations govern a wide variety of product activities, from design and development to labeling, manufacturing, handling, sales, distribution, importing and exporting of products. If we fail to comply with any or all of these regulations, we may be subject to fines or penalties, have to recall products and/or cease their manufacture and distribution, which would increase our costs and reduce our sales.

In addition to the foregoing, we have agreements in place for the sale of our products to government entities; consequently, we are subject to various statutes and regulations that apply to companies doing business with the government. A failure to comply with these statutes and regulations could result in suspension of these contracts, criminal, civil and administrative penalties or debarment.

We may be exposed to certain regulatory and financial risks related to climate change.

Our manufacturing processes for certain products involve the use of chemical and other substances that are regulated under various international, federal, state and local laws governing the environment. In the event that any future climate change legislation would require that stricter standards be imposed by domestic or international environmental regulatory authorities with respect to the use and/or levels of possible emissions from such chemicals and/or other substances, we may be required to make certain changes and adaptations to our manufacturing processes. There can be no assurance that any such changes would not have a material effect on our financial condition, results of operations and cash flows.

We are subject to regulations that govern the handling of hazardous substances.

We are subject to various international, federal, state and local laws and regulations that govern the handling, transportation, manufacture, use, storage, disposal and sale of substances that are or could be classified as toxic or hazardous substances. Some risk of environmental and property damage and environmental liabilities, including potential cleanup liability relating to currently or formerly owned or operated sites or third party disposal sites and liabilities relating to the exposure to hazardous substances, is inherent in our operations and the products we manufacture, sell or distribute. Any failure by us to comply with the applicable government regulations could also result in product recalls or impositions of significant fines and restrictions on our ability to carry on with or expand a portion or possibly all of our operations. If we fail to comply with any or all of these regulations, we may be subject to fines or penalties, have to recall products and/or cease their manufacture and distribution, which would increase our costs and reduce our sales.

Changes in worldwide tax rates or tax benefits will impact our tax expense and profits.

We are subject to a variety of taxes in numerous local, regional, national and international jurisdictions. The laws regulating the taxes to which we are subject may change. We have no control over these changes and their impact, if any, on our results. Additionally, results of tax audit activity may also impact our tax provision and our profits. We reflect changes in our actual or forecast income tax rates as relevant facts and circumstances are known to us. Variations to our forecast tax rates and forecast diluted EPS in the future are possible due in part to tax rate changes and changes in the status of tax uncertainties pursuant to ASC Subtopic 740-10.

Litigation may harm our business.

Substantial, complex or extended litigation could cause us to incur significant costs and distract our management. For example, lawsuits by governmental authorities, employees, shareholders, suppliers, collaborators, distributors, customers, competitors or others with protected intellectual property could be very costly and substantially disrupt our business. Disputes from time to time with such companies, organizations or individuals are not uncommon, and we cannot provide assurance that we will always be able to resolve such disputes or do so on terms favorable to us. Unexpected results could cause us to have financial exposure in these matters in excess of recorded reserves and insurance coverage, requiring us to provide additional reserves to address these liabilities, therefore impacting profits.

Potential product liability claims could affect our earnings and financial condition and harm our reputation.

We face potential liability claims arising out of the use of or exposure to our products and/or services. We carry product liability insurance coverage, generally available in the market, but which is limited in scope and amount. While our products are generally used by trained scientists and operators, there is no assurance that they will be used in accordance with our terms and conditions of sale. As a result, we could be forced to defend ourselves in connection with the use of these products or services.

Although we seek to reduce our potential liability through measures such as contractual indemnification provisions with customers and/or suppliers, we cannot assure you that such measures will be enforced or effective. Our results of operations, financial position and cash flows could be materially and adversely affected if we were required to pay damages or incur defense costs in connection with a claim that is outside the scope of the indemnification agreements, if the indemnity, although applicable, is not executed in accordance with its terms or if our liability exceeds the amount of applicable insurance or indemnification. There can be no assurance that our insurance coverage will be adequate or that insurance coverage will continue to be available on terms acceptable to us. Unexpected results could cause us to have financial exposure in these matters in excess of recorded reserves and insurance coverage, requiring us to provide additional reserves to address these liabilities, therefore impacting profits.

If we fail to maintain adequate quality standards for our products and services, our business may be adversely affected and our reputation harmed.

Our life science and high technology customers are often subject to rigorous quality standards to obtain and maintain regulatory approval of their products and the manufacturing processes that generate them. A failure to maintain, or in some instances upgrade, our quality standards to meet our customers' needs could result in a breach of our contractual obligations or the loss of a customer's regulatory license, which may cause us to incur significant liabilities to such customers or result in substantial sales losses and reputational harm.

Demand for our products and services is subject to the commercial success of our customers' products, which may vary for reasons outside our control.

Even if we are successful in securing utilization of our products in a customer's manufacturing process, sales of many of our products and services remain dependent on the timing and volume of the customer's production, over which we have no control. The demand for our products depends on regulatory approvals and frequently depends on the commercial success of the customer's supported product. Regulatory processes are complex, lengthy and expensive and can often take years to complete. Commercial success of a customer's product, which would drive demand in their production and commensurate demand for our products and services, is dependent on many factors, some of which can change rapidly, despite early positive indications.

We rely heavily on third party transportation providers and other package delivery services, and a significant disruption in these services or significant increases in prices may disrupt our ability to ship products or import materials, increase our costs, lower our profitability and harm our reputation.

We emphasize our prompt service and shipment of products as a key element of our sales and marketing strategy. We ship a significant number of products to our customers through independent package delivery companies. In addition, we transport materials between our worldwide facilities and import raw materials from worldwide sources. Consequently, we rely heavily on both sea and air cargo carriers and other third party package delivery providers. If any of our key third party providers were to experience a significant disruption in services such that any of our products, components or raw materials could not be delivered in a timely fashion, our costs may increase and our relationships with certain customers may be adversely affected. In addition, if these third party providers increase prices and we are not able to find comparable alternatives or make adjustments to our selling prices, our profitability could be adversely affected.

Fluctuations in the availability, quality and prices of raw materials could negatively impact our financial results.

Our operations depend upon our ability to obtain high quality raw materials at reasonable prices. Although most of our raw materials are available from a number of potential suppliers, the availability and costs of these raw materials may fluctuate significantly from time to time. If we are unable to obtain the materials we need at a reasonable price, we may not be able to produce certain of our products or we may not be able to produce certain of these products at a marketable price, which could have an adverse effect on our results of operations.

If we fail to attract and retain key personnel, our business could be adversely affected.

Most of our products and services are highly technical in nature. In general, only highly qualified and trained scientists have the necessary skills to develop, manufacture and market our products and provide our services. In addition, some of our manufacturing, quality control, safety and compliance, information technology, sales and e-commerce related positions require persons possessing highly technical skills. Our success depends in large part upon our ability to identify, hire, retain and motivate highly skilled professionals. We face intense competition for these professionals from our competitors, customers, marketing partners and other companies throughout the industries in which we compete. Any failure on our part to hire, train and retain a sufficient number of qualified professionals would seriously damage our business.

We depend heavily on the services of our senior management. We believe that our future success depends on the continued services of our management team. Our business may be harmed by the loss of a significant number of our senior management members in a short period of time.

Rapid changes in the healthcare industry could directly or indirectly adversely affect our business.

A significant portion of our sales is derived from companies in the healthcare industry. This industry has undergone significant changes in an effort to control costs. These changes include:

- development of large and sophisticated group purchasing organizations;
- healthcare reform legislation;
- consolidation of pharmaceutical companies;
- increased outsourcing of certain activities, including biotechnology and pharmaceutical, to low-cost offshore locations;
- lower reimbursements for R&D; and
- legislative limitations on healthcare research.

We expect the healthcare industry to continue to change in the future. Some of these potential changes, such as a reduction in governmental support of healthcare services or adverse changes in legislation or regulations governing the ability to perform healthcare related research and the delivery or pricing of healthcare services or mandated benefits, may cause healthcare industry customers to purchase fewer of our products and services or to reduce the prices they are willing to pay for our products or services.

We may be unable to establish and maintain collaborative development and marketing relationships with business partners, which could result in a decline in sales or slower than anticipated growth rates.

As a part of our business strategy, we have formed, and intend to continue to form, strategic alliances and distribution arrangements with partners relating to the development and commercialization of certain of our existing and potential products to increase our sales and to leverage our product and service offerings. Our success will depend, in part, on our ability to maintain these relationships and to cultivate additional, acceptable strategic alliances with such companies.

In addition, we cannot ensure that parties with which we have established, or will establish, collaborative relationships will not, either directly or in collaboration with others, pursue alternative technologies or develop alternative products in addition to, or instead of, products offered as a result of these collaborations. Our business partners may also experience financial or other difficulties that lessen their value to us and to our customers. Our results of operations and opportunities for growth may be adversely affected by our failure to establish and maintain successful collaborative relationships.

Lack of early success with our pharmaceutical and biotechnology customers could exclude us from future business with those customers.

A number of the products we sell to pharmaceutical and biotechnology customers are incorporated into the customers' drug manufacturing processes. In some cases, once a customer chooses a particular product for use in a drug manufacturing process, it is unlikely that the customer will later switch to a competing alternative. In many cases, the regulatory license for the

product will specify the products qualified for use in the process. Obtaining the regulatory approvals needed for a change in the manufacturing process is time consuming, expensive and uncertain. Accordingly, if a pharmaceutical or biotechnology customer does not select our products early in its manufacturing design phase for any number of reasons, including, but not limited to, cost, ease of use, ability to supply large quantities or similar reasons, we may lose the opportunity to participate in the customer's manufacturing of such product. Because we face competition in this market from other companies, we run the risk that our competitors could win significant early business with a customer making it difficult for us to recover the late stage commercialization opportunity.

Our failure to protect our intellectual property may significantly harm our results of operations.

Our success and ability to compete is dependent in part on our ability to protect and maintain proprietary rights to our intellectual property, particularly trade secrets and proprietary know-how. We generally enter into confidentiality and proprietary information agreements with our employees, consultants and advisors. These agreements may not provide meaningful protection for or adequate remedies to protect the Company's technology in the event of unauthorized use or disclosure of information. Efforts to address any infringement of our proprietary rights could result in diversion of management's time and significant costs through litigation or otherwise. In addition, the laws of other countries may not protect our intellectual property rights to the same extent as the laws of the United States. Any failure to adequately protect our proprietary rights could result in our competitors offering similar services, potentially resulting in the loss of one or more competitive advantages and decreased sales.

Despite efforts to protect our proprietary rights, existing trade secret, copyright, patent and trademark laws afford us only limited protection. Others may attempt to copy or re-engineer aspects of our products or obtain and use information that we regard as proprietary. Accordingly, we may not be able to prevent misappropriation of our products or trade secrets, or deter others from developing similar products. Further, monitoring the unauthorized use of our products and other proprietary rights is difficult. Litigation may be necessary to enforce our intellectual property rights or to determine the validity and scope of the proprietary rights of others. Litigation of this type could result in substantial costs and diversion of resources and could significantly harm our results of operations and reputation.

We may become involved in disputes regarding our intellectual property rights, which could result in prohibition of the use of certain technology in current or planned products, exposure of the business to significant liability and diversion of management's focus.

We and our major competitors spend substantial time and resources developing and patenting new and improved products and technologies. Many of our products are based on complex, rapidly developing technologies. Further, while we strive to respect others' intellectual property, we may not have identified each and every instance where our products may infringe or utilize intellectual property rights held by others. Thus, we cannot provide assurance that others will not claim that we are infringing their intellectual property rights or that we do not in fact infringe those rights.

We have been and may in the future be sued by third parties alleging that we are infringing upon their intellectual property rights. Any claims, with or without merit, could:

- be expensive;
- take significant time and divert management's focus from other business concerns;
- if successful, require us to stop the infringing activity, redesign our product or process or license the intellectual property in question, thereby resulting in delays and loss or deferral of sales;
- require us to pay substantial damage awards; and/or
- require us to enter into royalty or licensing agreements which may not be available on acceptable terms, if at all.

If we are unable to obtain a royalty agreement or license on acceptable terms, or are unable to redesign our products or processes to avoid conflicts with any third party patent, we may be unable to offer some of our products, which could result in reduced sales.

Foreign currency exchange rate fluctuations may adversely affect our business.

Since we are a multinational corporation that sells and sources products in many different countries, changes in exchange rates have in the past, and could in the future, adversely affect our cash flows and results of operations. Reported sales and purchases made and expenses incurred in non-U.S. currencies by our international businesses, when translated into U.S. Dollars for financial reporting purposes, fluctuate due to exchange rate movement. For example, the effect of translating foreign currency sales into U.S. Dollars decreased 2013 and 2012 sales by 1 percent and 3 percent, respectively, and increased 2011 sales by 4 percent. The effect of translating foreign currency sales into U.S. Dollars decreased 2013 and 2012 EPS by $0.05

and $0.22, respectively, and increased 2011 EPS by $0.16. Due to the number of currencies involved, the variability of currency exposures and the potential volatility of currency exchange rates, we cannot predict the effect of exchange rate fluctuations on future sales and operating results.

We are subject to economic, political and other risks associated with our significant international business, which could adversely affect our financial results.

We operate internationally through wholly-owned subsidiaries located in North and South America, Europe, Asia, the Middle East, Australia and Africa. Sales outside the United States were in excess of 64 percent of total sales in 2013. We expect that sales from international operations will continue to represent a growing portion of our sales. During 2013, approximately 20 percent of the Company's United States operations' chemical and equipment purchases were from international suppliers. In addition, many of our manufacturing facilities, employees and suppliers of our international operations are located outside the United States. Our sales and earnings could be adversely affected by a variety of factors resulting from our international operations, including, without limitation:

- future fluctuations in foreign currency exchange rates;
- complex regulatory requirements and changes in those requirements;
- trade protection measures, tariffs, royalties or taxes, and import or export licensing requirements or restrictions;
- multiple jurisdictions and differing tax laws, as well as changes in those laws;
- restrictions on our ability to repatriate investments and earnings from international operations;
- changes in the political or economic conditions in a country or region, particularly in developing or emerging markets;
- difficulty in staffing and managing worldwide operations;
- changes in shipping costs;
- difficulties in collecting on accounts receivable; and
- difficulties enforcing intellectual property rights.

If any of these risks materialize, we could face a loss of sales and/or substantial increases in costs, which could adversely affect our operating results.

Acquisitions are an important part of our growth strategy.

We have acquired or invested in several businesses and technologies and routinely review additional opportunities. Certain risks exist including, without limitation, the potential for:

- increasing debt levels to fund sizable acquisitions;
- the acquisition or investment failing to provide, or delays in realizing, the benefits originally anticipated by management;
- difficulties in integrating the operations and systems of the acquired businesses and in realizing operating synergies;
- difficulties in assimilating and retaining employees and customers of the acquired companies;
- management's attention being diverted to the integration of the acquired businesses or acceptance of the acquired technology;
- rising interest rates on debt needed to provide cash to fund the purchase price of acquisitions; and
- unanticipated contract or regulatory issues.

None of these difficulties have been historically significant, but if they were to be in the future, we may be unable to achieve expectations from our acquisition strategy. In addition, we compete with other companies for suitable acquisition targets and may not be able to acquire certain targets that we seek. Also, certain businesses we have acquired or invested in may not generate the cash flow and/or earnings or other benefits we anticipated at the time of their acquisition. If we are unable to successfully complete and integrate acquisitions in a timely manner, such acquisitions may adversely affect our profitability.

The realignment of our business into three business units may not result in an improvement in our operating results.

Effective January 1, 2013, the Company's business unit structure was realigned into three market-focused business units that are defined by the customers and markets they serve: Research, Applied and SAFC Commercial. If we do not manage this reorganization and the consequent realignment of responsibilities effectively, or if this new organization does not provide better service and products to our customers, then our overall business could suffer resulting in consolidated sales and/or margin declines that could be material.

We expect to continue to implement various process improvement initiatives that may not achieve the desired results, thereby potentially reducing our profitability.

We have implemented a number of changes designed to improve operating efficiencies and reduce costs. We expect to continue to identify opportunities for operational efficiencies and cost reduction and implement changes to achieve these efficiencies, which could result in significant charges. Such actions may lead to, among other things, the consolidation and integration of products, brands, facilities, functions, systems and processes and/or a reduction of our talent pool and available resources, any or all of which might present significant management challenges. There can be no assurance that such actions will be accomplished as rapidly as anticipated or that the full extent of expected cost reductions will be achieved.

Our business may be adversely affected by a decrease in the availability of commercial paper or other forms of credit or an increase in our cost of capital.

We had $65 of commercial paper outstanding at December 31, 2013. If the market for commercial paper or other forms of credit becomes restricted or unavailable, or our cost of capital significantly increases due to a credit rating downgrade, an economic downturn or uncertainty or other factors, our business could be adversely affected, including our consolidated results of operations, financial condition and cash flows.

Our sales and operating results may vary from the guidance we publish and from period to period.

Our sales and operating results may vary significantly from the guidance we publish, from quarter to quarter and from year to year, depending on a variety of factors including, without limitation, those previously identified within other risk factors and the following:

- the timing of our cost of products and services sold, R&D, sales and marketing expenses and other charges;
- the timing of significant custom sales orders, typically associated with our SAFC Commercial business;
- the expected higher level of sales growth in our SAFC Commercial business creating downward pressure on overall gross profit margins;
- an increase in the sale of commoditized Research products creating downward pressure on overall gross profit margins;
- changes in GAAP; and
- unanticipated loss of market value of the securities we hold.

Our expense levels are based in part on our future sales expectations. Consequently, sales or profits may vary significantly from quarter to quarter or from year to year, and sales and profits in any interim period may not be indicative of results in subsequent periods.

We have significant inventories on hand.

We maintain significant inventories and have an allowance for slow-moving and obsolete inventory. Any significant unanticipated changes in future product demand or market conditions, including the current uncertainty in the global market, could also have an impact on the value of inventory and adversely impact our results of operations. Additionally, if it would become necessary to rework product to make it saleable, this additional effort would impact our costs and operating results.

We may incur impairment charges on our goodwill and other intangible assets with indefinite lives that would reduce our earnings.

We are subject to ASC Topic 350 which requires that goodwill and other intangible assets that have an indefinite life be tested at least annually for impairment. Goodwill and other intangible assets with indefinite lives must also be tested for impairment between the annual tests if a triggering event occurs that would likely reduce the fair value of the asset below its carrying amount. As of December 31, 2013, goodwill and other intangible assets with indefinite lives represented approximately 19 percent of our total assets. If we determine that there has been an impairment, our financial results for the relevant period would be reduced by the amount of the impairment, net of tax effects, if any. There were no indicators of impairment as of December 31, 2013.

Our share price will fluctuate.

Both the market price and the daily trading volume of our common stock will continue to be subject to fluctuations due not only to general stock market conditions but also to a change in sentiment in the market regarding our operations and business prospects. In addition to the risk factors discussed above, the price and volume volatility of our common stock may be affected by:

- operating results that vary from the expectations of securities analysts and investors;
- the financial performance of the major end markets that we target;
- the operating and securities price performance of companies that investors consider to be comparable to us;
- announcements of strategic developments, acquisitions and other material events by us or our competitors; and
- changes in global financial markets and global economies and general market conditions, such as interest or foreign exchange rates, commodity and equity prices and the value of financial assets.

Dividends on our common stock and share repurchases could change in the future.

In 2013, we paid annual dividends of $0.86 per share and had repurchased a total of 101 million shares of common stock, and in 2012, we paid annual dividends of $0.80 per share and had repurchased a total of 99 million shares of common stock. In the future, the Board may continue to authorize changes in our common stock dividend and share repurchase programs. The failure to maintain or pay dividends or repurchase shares may adversely affect the market price of our common stock.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

The following table shows the location, land area, building area and function of the properties the Company owned or leased at December 31, 2013.

Country	Land Area (Acres)	Building Area (Sq. Ft) (in thousands)	Function
United States	931	4,635	admin., production, warehousing, distrib.
Germany	46	647	admin., production, warehousing, distrib.
United Kingdom	85	490	admin., production, warehousing, distrib.
Switzerland	13	436	admin., production, warehousing, distrib.
Brazil	10	324	admin., production, warehousing, distrib.
India	10	222	admin., production, warehousing, distrib.
Israel	6	131	admin., production, warehousing, distrib.
All Other	63	772	admin., production, warehousing, distrib.
Total	1,164	7,657	
Percent Owned Property		85%	
Percent Leased Property		15%	

The Company considers the properties to be well maintained, in sound condition and repair and adequate for its present needs. These properties generally have sufficient capacity for the Company's existing needs and near-term growth. The Company expects to continue to make capital investments in plants to support specific business opportunities.

Item 3. Legal Proceedings.

See Note 13 – Contingent Liabilities and Commitments in Item 8 - Financial Statements and Supplementary Data of Part II of this Report, which is incorporated herein by reference.

Item 4. Mine Safety Disclosures.

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Common Stock Data (per share) (Unaudited):

	2013 Price Range		2012 Price Range		Dividends	
	High	Low	High	Low	2013	2012
First Quarter	**$ 79.32**	**$ 74.28**	$ 74.31	$ 61.68	**$ 0.22**	$ 0.20
Second Quarter	**85.91**	**73.24**	74.59	66.77	**0.21**	0.20
Third Quarter	**88.55**	**80.25**	74.94	66.52	**0.22**	0.20
Fourth Quarter	**94.78**	**82.90**	74.50	68.22	**0.21**	0.20

The Company's common stock is traded in the NASDAQ Global Select Market. The trading symbol is SIAL. On January 31, 2014, there were 513 shareholders of record of the Company's common stock.

The Company expects to continue its policy of paying regular quarterly cash dividends. Future dividends are dependent on future earnings, capital requirements and the Company's financial condition and are declared in the sole discretion of the Board.

See Item 12 – Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters of Part III of this Report for information concerning securities authorized for issuance under the Company's equity compensation plans.

The following table presents share repurchases by the Company and any affiliated purchasers for the year ended December 31, 2013 (in millions except per share amounts):

Issuer Purchases of Equity Securities

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Cumulative Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Number of Shares that May Yet Be Purchased Under the Plans or Programs
Total at Dec. 31, 2012			99.4	10.6
Jan. 1, 2013 – Jan. 31, 2013	—	—	99.4	10.6
Feb. 1, 2013 – Feb. 28, 2013	0.2	$ 76.06	99.6	10.4
Mar. 1, 2013 – Mar. 31, 2013	0.1	78.01	99.7	10.3
Apr. 1, 2013 – Apr. 30, 2013	—	—	99.7	10.3
May 1, 2013 – May 31, 2013	0.1	83.95	99.8	10.2
Jun. 1, 2013 – Jun. 30, 2013	0.3	83.63	100.1	9.9
Jul. 1, 2013 – Jul. 31, 2013	—	—	100.1	9.9
Aug. 1, 2013 – Aug. 31, 2013	0.5	84.44	100.6	9.4
Sep. 1, 2013 – Sep. 30, 2013	0.2	83.24	100.8	9.2
Oct. 1, 2013 – Oct. 31, 2013	—	—	100.8	9.2
Nov. 1, 2013 – Nov. 30, 2013	0.3	87.05	101.1	8.9
Dec. 1, 2013 – Dec. 31, 2013	—	—	101.1	8.9
Total at Dec. 31, 2013	1.7	$ 83.19	101.1	8.9

The timing and number of shares purchased, if any, will depend on market conditions and other factors. The Board's authorization of management to purchase the remaining 8.9 million shares is effective until November 2014.

For additional information on the Company's share repurchase program, see Note 19 – Share Repurchases in Item 8 – Financial Statements and Supplementary Data of Part II of this Report.

Item 6. Selected Financial Data.

Annual Financial Data:

The following selected financial data should be read in conjunction with our consolidated financial statements and related notes and Item 7—Management's Discussion and Analysis of Financial Condition and Results of Operations in Part II of this Report.

	2013	2012	2011	2010	2009
Net sales	**$ 2,704**	$ 2,623	$ 2,505	$ 2,271	$ 2,148
Net income	**491**	460	457	384	347
Per share:					
Net income — Basic	**4.09**	3.80	3.78	3.17	2.84
Net income — Diluted	**4.06**	3.77	3.72	3.12	2.80
Dividends	**0.86**	0.80	0.72	0.64	0.58
Cash balance	**722**	724	665	569	373
Cash dividends	**103**	97	86	78	71
Total assets	**3,805**	3,820	3,281	3,027	2,714
Short-term debt	**65**	383	221	239	477
Long-term debt	**300**	300	300	300	100
Pension obligations — Long term	**36**	91	93	64	51
Post-retirement medical benefit plans	**37**	44	50	46	43

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

Management's Discussion And Analysis
($ In Millions, Except Per Share Data)
The following should be read in conjunction with the consolidated financial statements and related notes.

Overview

The Company is a leading life science and high technology company whose biochemical and organic chemical products, kits and services are used in scientific research, including genomic and proteomic research, biotechnology, pharmaceutical development, the diagnosis of disease and as key components in pharmaceutical, diagnostics and high technology manufacturing. Our customers include pharmaceutical and life science companies, university and government institutions, hospitals and a wide range of industrial companies. We believe over 1.4 million scientists and technologists use our products. We operate in 37 countries and have approximately 9,000 employees worldwide.

Effective January 1, 2013, the Company's business unit structure was realigned into three market-focused business units that are defined by the customers and markets they serve: Research, Applied and SAFC Commercial. The units are closely interrelated in their activities, share services such as order entry, billing, technical support, e-commerce infrastructure, purchasing and inventory control. The business units also share production and distribution facilities. Additionally, these business units are supported by centralized functional areas such as finance, human resources, quality, safety, compliance and information technology. A summary of our business units is as follows:

- **Research** - Our products and services, which include chemicals, reagents and kits, enable scientists to discover and develop new drugs and materials. This business unit generated 52 percent of sales in 2013.
- **Applied** - Our products and services, which primarily include high quality components and kits, chemical reagents, critical raw materials and certified reference standards, provide customized solutions to and constitute critical components and materials for diagnostic companies, testing laboratories and industrial companies. This business unit generated 23 percent of sales in 2013.
- **SAFC Commercial** - Our products and services are used by our customers to develop and manufacture product and service solutions for the commercial production of pharma, biopharma and electronics products. Products and services include industrial cell culture media, active pharmaceutical ingredients, intermediates, raw materials, biological testing services and organometallic precursors for LED and semiconductor manufacturing. This business unit generated 25 percent of sales in 2013.

The Company has a broad customer base of commercial laboratories, pharmaceutical companies, industrial companies, universities, diagnostics companies, biotechnology companies, electronics companies, hospitals, governmental institutions and non-profit organizations located in the United States and internationally. The Company would not be significantly impacted by the loss of any one customer. However, global macro economic conditions and government research funding in the United States, the European Union and elsewhere do impact demand from certain of our customers.

Strategy

The Company's business strategy is designed to drive overall sales and earnings growth while maintaining a return on invested capital at an appropriate premium above the Company's cost of capital. Our key areas of focus address the most significant opportunities and challenges facing the Company, including:

- **Improving Customer Intimacy:** To exceed our customers' expectations, we strive to offer the right selection of high quality products and services, to provide superior customer service and support as well as to consistently deliver products that meet published or agreed specifications when and where our customers need them. The continued enhancement of a leading e-commerce platform is a significant part of this approach.
- **Expanding Products and Services:** Increasing our geographic coverage, particularly in the APAC region and Brazil, pursuing new and innovative technologies and expanding our product and service offerings organically and through strategic acquisitions should help us drive continued sales and earnings growth.
- **Accelerating Operational Excellence:** Through the optimization of our worldwide footprint, strategic sourcing of our products and materials and driving efficiencies in our distribution networks and operating expenses, we strive to continually enhance our operating margins.

Key Business Trends and Highlights

In operating our business and monitoring its performance, the Company considers a number of performance measures, as well as trends affecting our industry as a whole, which include the following:

- **Macroeconomic Concerns Impacting Funding:** Uncertainties in the United States and Europe around the macroeconomic environment and the recent United States federal government shutdown have impacted overall research funding.
- **Industry Consolidation:** Competition in the markets we serve remains fragmented with few companies possessing a significant share in any particular market, which allows some participants to continue consolidating specialty, regional and niche players in the industry. The Company plans to continue to explore opportunities to enhance sales growth and increase its market presence through strategic acquisitions.
- **Foreign Currency Exchange Rate Fluctuations:** Since we are a multinational corporation that sells and sources products in many different currencies, changes in exchange rates have in the past, and could in the future, adversely affect our cash flows and results of operations. Due to the number of currencies involved, the variability of currency exposures and the potential volatility of currency exchange rates, we cannot predict the effect of exchange rate fluctuations on future sales and operating results.
- **Emerging Market Growth:** We continue to focus our sales efforts on emerging markets given the faster growth rates in these areas. In 2012, the Company further expanded its footprint in this area with the opening of a manufacturing facility in Kaohsiung, Taiwan that serves the electronic markets in Asia, an expanded distribution center and new packaging facility in Bangalore, India and a new packaging and quality control facility in Wuxi, China.
- **Increasing E-Commerce Channel Adoption:** The internet continues to change the markets we serve in terms of access and exposure to existing and potential customers. Ensuring a strong presence in this channel is critical to our long term success as it enables us to find innovative ways to meet our customers' information and product selection needs. Worldwide sales of Research and Applied products through the Company's e-commerce channels, including both web-based and EDI platforms, have grown to 48 percent of the Company's total sales of Research and Applied products during 2013 as compared to 45 percent during 2012.
- **Pharmaceutical Partnerships and Outsourcing:** We continue to take advantage of the expanded market opportunities brought about by several trends in the Pharmaceutical industry. These include the use of outsourcing partners, a shift towards biological drug development and an increase in industry-academia research partnerships.

Highlights of our consolidated results for the year ended December 31, 2013 are as follows:

- Sales were $2,704, an increase of 3 percent compared to the same period last year. Excluding the changes in foreign currency exchange rates, which lowered sales by 1 percent, sales increased organically by 4 percent year over year.
- Gross profit margin was 50.3 percent, down from 51.4 percent in 2012. Operating income margin was 24.4 percent, compared to 25.1 percent in 2012. This decline was largely attributable to $22 of restructuring and other charges incurred during 2013.
- Net income was $491 compared to $460 in 2012. Changes in foreign currency exchange rates as compared to the prior year, reduced otherwise reportable net income by $7. Net income was reduced in 2013 due to $7 of after tax restructuring costs, $5 of after tax costs related to a licensing dispute settlement and $4 of after tax costs related to merger and acquisition activity. Net income was reduced in 2012 due to $6 of after tax restructuring costs and $4 of after tax costs related to merger and acquisition activity. Management believes these items affect comparability of results year over year. Excluding these items and the impact of changes in foreign currency exchange rates, adjusted net income would have increased 9 percent in 2013 when compared to 2012.
- Diluted net income per share was $4.06, compared to $3.77 in 2012. Income taxes were 25.3 percent and 29.8 percent of pretax income for 2013 and 2012, respectively.
- Net cash provided by operating activities for the year ended December 31, 2013 was $641, an increase of $74 from last year.
- Total debt was $365 at December 31, 2013, a decrease of $318 since December 31, 2012. The decrease was due to the use of cash to repay a portion of notes payable in 2013.

Non-GAAP Financial Measures

The Company supplements its disclosures made in accordance with U.S. GAAP with certain non-GAAP financial measures. The Company does not, and does not suggest investors should, consider such non-GAAP financial measures in isolation from, or as a substitute for, U.S. GAAP financial information. These non-GAAP measures may not be consistent with the presentation by similar companies in the Company's industry. Whenever the Company uses such non-GAAP measures, it provides a reconciliation of such measures to the most closely applicable U.S. GAAP measure.

With approximately 60 percent of sales denominated in currencies other than the U.S. Dollar, management uses currency adjusted growth, and believes it is useful to investors, to judge the Company's local currency performance. Organic sales growth data presented herein excludes currency impacts, and where indicated, changes due to acquisitions and divestitures. The Company calculates the impact of changes in foreign currency exchange rates by multiplying current period activity in local currency by the difference between current period exchange rates and prior period exchange rates; the result is the defined impact of "changes in foreign currency exchange rates" or "changes in FX." While we are able to report currency impacts after the fact, we are unable to estimate changes that may occur to applicable exchange rates in 2014 or any future period. Any significant changes in currency exchange rates would likely have a significant impact on our reported growth rates due to the large volume of our sales denominated in foreign currencies.

Management also uses free cash flow, a non-GAAP measure, to judge its performance and ability to pursue opportunities that enhance shareholder value. Free cash flow is defined as net cash provided by operating activities less capital expenditures. Management believes this non-GAAP information is useful to investors as a supplemental measure of our ability to generate cash.

Critical Accounting Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires management to use judgment in making estimates and assumptions that affect the reported amounts of assets and liabilities, disclosures of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of sales and expenses during the periods presented. Actual results could differ from those estimates under different assumptions or conditions.

The following accounting policies are based on, among other things, judgments and assumptions made by management that include inherent risks and uncertainties. Management's estimates are based on the relevant information available at the end of each period.

Inventories. Inventories are valued at the lower of cost or market. The Company regularly reviews inventories on hand and records a provision for slow-moving and obsolete inventory, inventory not meeting quality standards and inventory subject to expiration. The provision for slow-moving and obsolete inventory is based on current estimates of future product demand, market conditions and related management judgment. Any significant unanticipated changes in future product demand or market conditions that vary from current expectations could have an impact on the value of inventories.

Long-Lived Assets. Long-lived assets, including intangibles with definite lives, are amortized over their expected useful lives. Goodwill and other intangibles with indefinite lives are not amortized against earnings. Goodwill is assessed annually for impairment. All long-lived assets are assessed whenever events and changes in business conditions indicate that the carrying amount of an asset may not be fully recoverable. If impairment is indicated, the asset value is written down to its fair market value. Any significant unanticipated changes in business or market conditions that vary from current expectations could have an impact on the fair market value of these assets and a potential associated impairment. There were no indications of impairment as of December 31, 2013.

Pension and Other Post-Retirement Benefits. The determination of the obligation and expense for pension and other post-retirement benefits is dependent on the Company's selection of certain assumptions used by actuaries to calculate such amounts. Those assumptions are described in Note 16 – Pension and Post-retirement Benefit Plans to the Company's consolidated financial statements in Item 8 – Financial Statements and Supplementary Data of Part II in this Report and include, among others, the discount rate, expected return on plan assets and rates of increase in compensation and health care costs.

In accordance with U.S. GAAP, actual results that differ from the assumptions are accumulated and amortized over future periods and therefore, generally affect the recognized expense in such future periods. While the Company believes that the assumptions are appropriate, significant differences in actual experience or significant changes in the assumptions may materially affect the Company's pension and other post-retirement benefit obligations and the Company's future expense. A one percent increase or decrease in the discount rate assumption or the expected return on plan assets would not have a material impact on the Company's consolidated financial statements.

Taxes. The Company operates within multiple taxing jurisdictions and is subject to audit in these jurisdictions. These audits can involve complex issues, which may require an extended period of time to resolve. The Company regularly reviews its potential tax liabilities for tax years subject to audit. In management's opinion, adequate provisions for income taxes have been made for all years presented.

The provision for income taxes is based on pretax income reported in the consolidated statements of earnings and currently enacted tax rates for each jurisdiction. No provision has been made for U.S. income taxes on the undistributed earnings of the Company's international subsidiaries where the earnings are considered permanently reinvested. Recognition of U.S. taxes on undistributed earnings of the international subsidiaries would be triggered by a management decision to repatriate those earnings, although there is no current intention to do so.

Deferred tax assets and liabilities are recognized for the future tax benefits or liabilities attributable to differences between the consolidated financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates would be recognized in income in the period that includes the enactment date. The Company regularly reviews its deferred tax assets for recoverability and establishes a valuation allowance when it believes that such assets may not be recovered, taking into consideration historical operating results, expectations of future earnings, changes in its operations and the expected timing of the reversals of existing temporary differences.

Results of Operations

The following is a summary of our financial results (in millions, except per share amounts):

	2013	2012	2011
Sales	**$ 2,704**	$ 2,623	$ 2,505
Cost of products and services sold	**1,343**	1,276	1,181
Gross profit	**1,361**	1,347	1,324
Selling, general and administrative expenses	**612**	605	597
Research and development expenses	**66**	69	72
Restructuring and other charges	**22**	14	8
Operating income	**661**	659	647
Interest, net	**4**	4	7
Income before income taxes	**657**	655	640
Provision for income taxes	**166**	195	183
Net income	**$ 491**	$ 460	$ 457
Net income per share - Diluted	**$ 4.06**	$ 3.77	$ 3.72

Net Sales

Sales were $2,704 in the year ended December 31, 2013, up 3 percent from 2012. The effect of changes in foreign currency exchange rates decreased sales by $22 or 1 percent. Excluding the effects of changes in foreign currency exchange rates, sales increased organically by $92 or 4 percent. Pricing and volume contributed 1 percent and 3 percent, respectively, to the organic growth.

Sales were $2,623 in the year ended December 31, 2012, up 5 percent from 2011. Acquisitions completed in 2012 contributed $136 or 5 percent to this sales growth. The effect of changes in foreign currency exchange rates decreased sales by $83 or 3 percent. Excluding the effects of acquisitions and changes in foreign currency exchange rates, sales increased organically by $65 or 3 percent. Pricing and volume contributed 2 percent and 1 percent, respectively, to the organic growth.

The change in sales for each of the Company's business units is as follows:

	Year Ended December 31,						
	2013	2012	Change	Impact of Changes in FX	Change due to Acquisitions & Divestitures	Organic Growth	Organic Growth %
Research	**$ 1,402**	$ 1,398	$ 4	$ (19)	$ (4)	$ 27	2%
Applied	**629**	598	31	—	3	28	5%
SAFC Commercial	**673**	627	46	(3)	12	37	6%
Total	**$ 2,704**	$ 2,623	$ 81	$ (22)	$ 11	$ 92	4%

	Year Ended December 31,						
	2012	2011	Change	Impact of Changes in FX	Change due to Acquisitions & Divestitures	Organic Growth	Organic Growth %
Research	**$ 1,398**	$ 1,427	$ (29)	$ (52)	$ 5	$ 18	1%
Applied	**598**	581	17	(19)	11	25	4%
SAFC Commercial	**627**	497	130	(12)	120	22	5%
Total	**$ 2,623**	$ 2,505	$ 118	$ (83)	$ 136	$ 65	3%

2013 Compared to 2012

Research total sales were $1,402 for the year ended December 31, 2013, compared to $1,398 for the prior year. Sales increased organically by $27 or 2 percent from the prior year. The increase in organic sales was primarily driven by growth in sales through our dealer networks from our "dealers as partners" programs and an increase in sales to our Pharmaceutical customers. The overall increase was partially offset by a decline in sales to the Academic, Government and Hospital markets due largely to lower government grants and other funding to academic institutions resulting primarily from sequestration in the United States. Geographically, the increase in Research's organic sales for the year ended December 31, 2013 compared to the prior year was largely led by the EMEA and APAC regions.

Applied total sales were $629 for the year ended December 31, 2013, compared to $598 for the prior year. Sales increased organically by $28 or 5 percent from the prior year. The increase in organic sales was primarily driven by growth in sales to customers in the Diagnostic and Testing markets, where our products are used as critical components for diagnostic kits and sales of standards and certified reference materials to clinical testing laboratories. All geographic regions contributed to Applied's overall growth.

SAFC Commercial total sales were $673 for the year ended December 31, 2013, compared to $627 for the prior year. Sales increased organically by $37 or 6 percent from the prior year. The organic growth was led by strong sales within our Life Science Products and Services business, most notably our custom pharmaceutical manufacturing and industrial cell culture media products. This growth was partially offset by lower sales in our Hitech electronics business, primarily from year-over-year pricing declines for certain metal organic precursors used by the LED industry. Geographically, the increase in SAFC Commercial's organic sales for the year ended December 31, 2013 compared to the prior year was largely led by the Total Americas and EMEA regions.

2012 Compared to 2011

Research total sales were $1,398 for the year ended December 31, 2012, compared to $1,427 for the prior year. Sales increased organically by $18 or 1 percent from the prior year. The increase in organic sales was driven by growth in sales through our dealer networks as a result of the launch of our "dealers as partners" program. The overall increase was partially offset by a decline in sales to Pharmaceutical customers driven by major downsizing, consolidation and outsourcing of R&D to contract research organizations in both the United States and Europe. Geographically, the increase in organic sales for the year ended December 31, 2012 compared to the prior year was led by the APAC and EMEA regions.

Applied total sales were $598 for the year ended December 31, 2012, compared to $581 for the prior year. Sales increased organically by $25 or 4 percent from the prior year. The increase in organic sales was primarily driven by growth in sales to customers in the Diagnostic and Testing markets, where our products are used as critical components for diagnostic kits and sales of standards and certified reference materials to clinical testing laboratories. All geographic regions contributed to Applied's overall growth.

SAFC Commercial total sales were $627 for the year ended December 31, 2012, compared to $497 for the prior year. Sales increased organically by $22 or 5 percent from the prior year. The organic growth was led by strong sales within our Life Science Products business and our custom pharmaceutical manufacturing and industrial cell culture media products. All geographic regions contributed to SAFC Commercial's overall growth.

2014 Outlook

We expect to drive improved sales growth in 2014 through our enhanced focus on our customers, an improved government funding environment and continued higher growth in emerging markets. Considering the current macro-economic environment, we expect to grow 2014 sales organically in the low-to-mid single digit range with a slight improvement over 2013 growth.

Gross Profit and Expenses

Key items from the consolidated statements of income expressed as a percentage of sales and the effective tax rate for the three years ended December 31, 2013, 2012 and 2011 were as follows:

	2013	2012	2011
Gross profit margin	**50.3%**	51.4%	52.9%
Selling, general & administrative expenses	**22.6%**	23.1%	23.8%
Research and development expenses	**2.4%**	2.6%	3.0%
Restructuring and other charges	**0.9%**	0.6%	0.3%
Operating income	**24.4%**	25.1%	25.8%
Effective tax rate	**25.3%**	29.8%	28.6%

Gross Margin

Gross margin is calculated as sales less cost of products and services sold. Cost of products and services sold includes direct materials, labor, distribution and overhead costs associated with the Company's products and services. The company's gross margin was 50.3% in 2013 compared to 51.4% in 2012.

The following table reflects the significant contributing factors to the net change in gross profit margin for the years ended December 31, 2013 and 2012, respectively:

Contributing Factors	2013	2012
Gross profit margin — previous year end	**51.4 %**	52.9 %
Decreases to gross profit margin:		
Changes in foreign currency exchange rates	**— %**	(0.5)%
Sales volume/Product mix/Pricing/Other	**(1.0)%**	— %
Acquisitions	**(0.1)%**	(1.0)%
Gross profit margin — current year end	**50.3 %**	51.4 %

The largest contributor to the decline in gross margin in 2013 as compared to 2012 was a shift in product mix among our business units. Products in our SAFC Commercial business unit in general have lower margins than products in our Research and Applied business units. This is primarily due to SAFC Commercial products that require more intensive manufacturing and quality control processes, and are generally sold in bulk rather than in smaller quantities as in our Research and parts of our Applied business units, as well as other market dynamics. Because the SAFC Commercial business is the fastest growing unit of our total business, approximately 50 basis points of the total gross margin decline in 2013 was due to a greater share of SAFC Commercial sales in the total product mix.

The largest contributor to the decline in gross margin in 2012 as compared to 2011 was the effect of acquisitions, principally BioReliance, which carries lower gross margins than the rest of our businesses.

SG&A

	2013	2012	2011
SG&A	**$ 612**	$ 605	$ 597
Percentage of Sales	**22.6%**	23.1%	23.8%

SG&A increased $7 during the year ended December 31, 2013 as compared to the same period in 2012. Gains on asset sales, net of certain impairments, of $10 were offset by higher compensation and other costs. Excluding these asset gains, SG&A as a percentage of sales was about the same as 2012.

SG&A increased $8 during the year ended December 31, 2012 as compared to the same period in 2011, but as a percentage of sales declined to 23.1% from 23.8%. Higher expenses attributable to acquisitions completed in 2012 of $41 were partially offset by lower costs resulting from the Company's cost reduction initiatives of $17 and changes in foreign currency exchange rates, which lowered SG&A by $16.

R&D Expenses

	2013	2012	2011
R&D	**$ 66**	$ 69	$ 72
Percentage of Sales	**2.4%**	2.6%	3.0%

R&D expenses relate primarily to efforts to add new manufactured products, create and develop new technologies and enhance manufacturing processes. Self-manufactured products currently account for approximately 60 percent of total sales. R&D expenses as a percentage of sales have trended down slightly since 2011 as a result of management's efforts to carefully prioritize R&D spending to the most appropriate projects.

Restructuring and Other Charges

	2013	2012	2011
Restructuring costs	**$ 10**	$ 9	$ 8
Licensing dispute settlement	**7**	—	—
Costs related to mergers and acquisitions	**5**	5	—
Total restructuring and other charges	**$ 22**	$ 14	$ 8
Percentage of sales	**0.9%**	0.6%	0.3%

Restructuring Costs

Programs Implemented During 2013

In the third quarter of 2013, the Company committed to a restructuring plan to exit a manufacturing site in Europe. This exit activity impacts approximately 90 employees and is intended to further reduce the Company's fixed cost structure. Total restructuring costs are expected to be $12, comprised of $9 to reduce the value of the assets impacted by these restructuring activities and $3 of employee termination costs. Once fully implemented, the Company expects annual pre-tax savings associated with these activities in a range from $3 to $4. During the year ended December 31, 2013, $10 of these restructuring costs were recognized.

Programs Implemented During 2012

In the second quarter of 2012, the Company committed to a restructuring plan to exit various sales office locations in Europe. These exit activities impacted approximately 30 employees and were intended to further reduce the Company's fixed cost structure by streamlining the sales force in Europe. Total restructuring costs associated with this plan were $4 and were incurred during 2012. As of December 31, 2012, all exit activities were complete.

In the third quarter of 2012, the Company committed to a restructuring plan to reduce global headcount by approximately 130 employees to further reduce the Company's fixed cost structure. Total restructuring costs associated with this plan were $5 and were incurred during 2012. As of December 31, 2012, all exit activities were complete.

Programs Implemented Prior to 2012

In the fourth quarter of 2009, the Company committed to a restructuring plan that included exit activities at five manufacturing sites in the U.S. and Europe. These exit activities impacted approximately 240 employees and were intended to reduce the Company's fixed cost structure and better align its global manufacturing and distribution footprint. Total restructuring costs associated with this plan were $41 and were incurred as follows: $8 in 2011, $24 in 2010 and $9 in 2009. As of December 31, 2011, all exit activities were complete.

Licensing Dispute Settlement

Costs of $7 were incurred during the second quarter of 2013 for the settlement of a licensing dispute associated with certain products.

Costs Related to Mergers and Acquisitions

Third party costs of $5 associated with merger and acquisition activity were incurred during the second quarter of 2013. Third party costs of $5 were incurred during the first quarter of 2012 related to the January 2012 acquisition of BioReliance and the March 2012 acquisition of Research Organics.

Interest, net

Net interest expense was $4 in 2013 and 2012 and $7 in 2011. Higher average borrowing levels were more than offset by lower weighted average interest rates for the year ended December 31, 2012, compared to 2011.

Income Taxes

Income taxes, which include federal, state and international taxes, were 25.3%, 29.8% and 28.6% of pretax income in 2013, 2012 and 2011, respectively. The lower effective tax rate for 2013 compared to 2012 is primarily due to a shift in the mix of earnings towards jurisdictions where the tax rate is lower than the U.S. statutory tax rate, as well as tax benefits from law changes in several jurisdictions. The higher effective tax rate for 2012 compared to 2011 is primarily due to higher state and local taxes, lower tax benefits from the manufacturer's deduction and the absence of an R&D tax credit in 2012.

Our effective tax rate for 2014 is expected to be approximately 27%.

Liquidity and Capital Resources

The Company's cash flows from operating, investing and financing activities, as reflected in the Consolidated Statements of Cash Flows, are summarized in the following table:

	Year Ended December 31,		
	2013	**2012**	**2011**
Net cash provided by (used in):			
Operating activities	**$ 641**	$ 567	$ 495
Investing activities	**(108)**	(511)	(191)
Financing activities	**(533)**	(6)	(200)

Operating Activities

Net cash provided by operating activities of $641 increased $74 or 13 percent in 2013 compared to 2012. The increase was largely driven by lower uses of cash for working capital. Specifically, cash used for accounts receivable, inventory and accounts payable was $28 compared to $49 in 2012. In 2013, the reduction of inventory generated $12 in operating cash flow compared to a use of cash for inventory in 2012 of $44. Initiatives to lower inventory without sacrificing customer service levels drove the reduction in inventory in 2013 as compared to 2012. Also contributing to the increase in operating cash flow was $33 of higher net income after adjusting for depreciation and amortization.

Net cash provided by operating activities of $567 increased $72 or 15 percent in 2012 compared to 2011. The increase was primarily driven by higher net income of $33 after adjusting for depreciation and amortization and lower uses of cash for working capital. Specifically, cash used for accounts receivable, inventory and accounts payable was $49 in 2012 compared to $75 in 2011.

Investing Activities

Cash used in investing activities for the year ended December 31, 2013 decreased $403 compared to 2012. This decrease was primarily due to cash used for acquisitions during 2012 of $391 that did not repeat in 2013. Capital spending was $100 in 2013 compared to $114 in 2012.

Cash used for investing activities of $511 in 2012 increased $320 from 2011. This increase was primarily due to cash used for acquisitions of $391 during 2012 compared to $75 in 2011. Capital spending was $114 in 2012 compared to $104 in 2011.

Financing Activities

Cash used in financing activities of $533 in 2013 increased $527 from 2012. This increase is due to the net repayment of $318 of short-term debt during 2013, as compared to a net issuance of short-term debt of $161 during 2012. During 2012, additional debt was issued to fund acquisition activity. Cash used for share repurchases increased to $146 in 2013, up from $124 in 2012.

Cash used in financing activities of $6 in 2012 decreased from $200 in 2011. This decrease was due primarily to a $100 repayment of long-term debt in 2011 which did not recur in 2012. The Company also issued $161 net of short-term debt primarily to fund acquisition activity during 2012 as compared to a net issuance of short-term debt of $81 in 2011.

The Company paid dividends of $103, $97 and $86 during the years ended December 31, 2013, 2012 and 2011, respectively.

Share Repurchases

At December 31, 2013 and December 31, 2012, the Company had repurchased a cumulative total of 101 million and 99 million shares, respectively, of an authorized repurchase of 110 million shares. There were 119 million shares outstanding as of December 31, 2013. The Company expects to continue to offset, in whole or in part, the dilutive impact of issuing share-based incentive compensation with future share repurchases. The Company may repurchase additional shares, but the timing and amount, if any, will depend on market conditions and other factors.

Liquidity and Risk Management

Liquidity risk refers to the risk that the Company might be unable to meet its financial obligations in a timely manner or fund its business on an ongoing basis. Factors that could cause such risk to arise include a disruption to the securities markets, downgrades in the Company's credit rating or the unavailability of funds. In addition to the Company's cash flows from operations, the Company utilizes commercial paper, short-term multi-currency debt, cash on hand and long-term debt programs as funding sources. The Company also maintains committed bank lines of credit to support its commercial paper borrowings. Downgrades in the Company's credit rating or other limitations on the ability to access short-term financing, including the ability to refinance short-term debt as it becomes due, would increase interest costs and adversely affect profitability.

The Company has considered the potential impact of recent trends in the global economic environment on its liquidity and overall financial condition, particularly with respect to availability of and the Company's access to short-term credit, including the market for commercial paper. Supported by discussions held with the Company's lenders, management does not believe that a significant risk exists of commercial paper or other credit becoming unavailable within the next twelve months. Management believes that the Company's financial condition is such that internal and external resources are sufficient and available to satisfy the Company's requirements for debt service, capital expenditures, selective acquisitions, dividends, share repurchases, funding of pension and other post-retirement benefit plan obligations and working capital presently and for the next twelve months.

The Company has a $600 five-year revolving credit facility with a syndicate of banks in the United States that supports the Company's commercial paper program. On December 2, 2013, the Company entered into an amendment to extend the termination date of the facility to May 10, 2018 from May 10, 2017. There were no changes to the terms and conditions of the facility as a result of the amendment. At December 31, 2013 and December 31, 2012, the Company did not have any borrowings outstanding under the facility. However, the amount available under the facility is reduced by the amount of commercial paper outstanding. At December 31, 2013 and December 31, 2012, the Company had $65 and $381, respectively, outstanding under its commercial paper program.

The Company also has a $200 seven-year multi-currency European revolving credit facility with a syndicate of banks maturing March 13, 2014. At December 31, 2013 and December 31, 2012, the Company did not have any borrowings outstanding under this facility.

Sigma-Aldrich Korea Limited has a short-term credit facility denominated in Korean Won with a total commitment of 20 billion Korean Won ($19 U.S. Dollars) expiring June 30, 2014. No borrowings were outstanding at December 31, 2013 and December 31, 2012.

Sigma-Aldrich Japan has two credit facilities denominated in Japanese Yen having a total commitment of 2 billion Japanese Yen ($19 U.S. Dollars) with one facility due April, 30, 2014 and the other representing a line of credit with no expiration. No borrowings were outstanding at December 31, 2013 and December 31, 2012.

In addition to those mentioned above, the Company has other short-term credit facilities denominated in foreign currencies having a total commitment of $3. At December 31, 2013 and December 31, 2012, the Company had $0 and $2 in borrowings outstanding under these facilities, respectively.

Long-term debt was $300 at both December 31, 2013 and 2012. This liability consists of 3.375% fixed rate Senior Notes due November 1, 2020.

Total debt at December 31, 2013 was $365 compared to $683 at December 31, 2012. Total debt as a percentage of total capitalization was 11.2 percent and 21.1 percent at December 31, 2013 and 2012, respectively.

As of December 31, 2013, the Company had sufficient net worth to allow for borrowing the full capacity under each credit facility without any restriction related to compliance with the respective debt covenants. For a description of the Company's material financial debt covenants, see Note 7 – Notes Payable and Note 8 – Long-Term Debt to the Company's consolidated financial statements in Item 8 – Financial Statements and Supplementary Data of Part II in this Report.

At December 31, 2013, a majority of the Company's cash and cash equivalents were held by its subsidiaries outside of the U.S. The Company expects that existing U.S. liquidity or access to capital to be sufficient to fund its U.S. operating activities and cash commitments for investing and financing activities. In addition, the Company expects that existing international liquidity or access to capital to be sufficient to fund its international operating activities and cash commitments for investing and financing activities.

The Company earns income globally. The undistributed earnings of our international subsidiaries are considered to be permanently reinvested in international jurisdictions. The Company has no immediate need or intentions to distribute any of the funds held outside of the U.S. If the Company were to remit undistributed earnings in the form of dividends or otherwise, the Company would be subject to both U.S. income taxes (subject to an adjustment for international tax credits) and withholding taxes payable to various international jurisdictions.

On October 5, 2009, the Company announced a major expansion of its existing license agreement with Sangamo to include the exclusive rights to develop and distribute ZFP-modified cell lines for commercial production of protein pharmaceuticals and ZFP-engineered transgenic animals for livestock, companion animals and therapeutic protein production. Under this agreement, the Company made initial payments of $20 to Sangamo, consisting of an upfront license payment of $15 and $5 for the purchase of shares of Sangamo common stock. The Company has since sold all of its shares in Sangamo common stock. Sangamo is eligible to earn additional contingent commercial license fees of up to $5 based on certain conditions and additional contingent milestone payments of up to $25 based on cumulative sales. No material amounts were paid to Sangamo under this agreement in either 2013 or 2012.

Other Matters

The Company is involved in legal proceedings incidental to its business, as described below:

Insurance and Other Contingent Liabilities and Commitments

The Company is subject to potential liabilities arising out of present and future lawsuits and claims related to product liability, personal injury, contract, commercial, intellectual property, tax, environmental, employment and other matters that arise in the ordinary course of business. The Company's operations and a number of its products are highly regulated by various governmental agencies around the world and the Company is periodically involved in reviews, investigations and proceedings by governmental agencies. Failure to meet the standards and licensing requirements of these agencies can lead to penalties which can include substantial fines and/or operating restrictions.

The Company accrues for potential liabilities when it is probable that future costs (including legal fees and expenses) will be incurred and such costs can be reasonably estimated. Although the Company believes the amounts reserved are probable and appropriate based on available information, the process of estimating losses involves a considerable degree of judgment by management and the ultimate amounts could vary materially. The Company has self-insured retention limits and has obtained insurance to provide coverage above the self-insured limits for claims made against it, subject to certain limitations and exclusions. At December 31, 2013, (i) reserves have been provided to cover expected payments for these self-insured amounts, (ii) there were no contingent liabilities that management believes are reasonably likely to have a material adverse effect on the Company's consolidated financial condition, results of operations, cash flows or liquidity and (iii) there were no material commitments outside of the normal course of business. Material commitments in the normal course of business include notes payable, long-term debt, lease commitments and pension and other post-retirement benefit obligations which are disclosed in Note 7 – Notes Payable, Note 8 – Long-Term Debt, Note 10 – Lease Commitments and Note 16 – Pension and Post-retirement Benefit Plans, respectively, to the Company's consolidated financial statements in Item 8 – Financial Statements and Supplementary Data of Part II of this Report.

Aggregate Contractual Obligations

The following table presents contractual obligations of the Company at December 31, 2013:

	Payments due by period				
Contractual Obligations	**Total**	**Less than 1 year**	**1–3 years**	**3–5 years**	**More than 5 years**
Long-term debt	$ 300	$ —	$ —	$ —	$ 300
Interest payments related to long-term debt	69	10	20	20	19
Operating lease obligations	126	32	44	32	18
Purchase obligations (1)	276	149	64	50	13
Total	$ 771	$ 191	$ 128	$ 102	$ 350

(1) Purchase obligations include open purchase orders, long-term service and supply agreements and other contractual obligations.

See Note 8 – Long-Term Debt and Note 10 – Lease Commitments to the Company's consolidated financial statements contained in Item 8 – Financial Statements and Supplementary Data of Part II of this Report for additional disclosures related to long-term debt and lease commitments, respectively.

See Note 16 – Pension and Post-retirement Benefit Plans to the Company's consolidated financial statements contained in Item 8 – Financial Statements and Supplementary Data of Part II of this Report for obligations with respect to the Company's pension and post-retirement medical benefit plans. Obligations related to the pension and post-retirement benefit plans are not included within the above table.

The above table excludes $37 of liabilities related to uncertain tax positions. See Note 12 – Income Taxes to the Company's consolidated financial statements contained in Item 8 – Financial Statements and Supplementary Data of Part II of this Report for detail on this obligation.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

Inflation

Management recognizes that inflationary pressures may have an adverse effect on the Company through higher asset replacement costs and higher material and other operating costs. The Company tries to minimize these effects through focused cost reduction programs and productivity improvements as well as price increases to its customers. It is management's view that inflation, net of customer price increases, has not had a significant impact on the Company's consolidated financial statements during the three years ended December 31, 2013.

Market Risk Sensitive Instruments and Positions

The market risk inherent in the Company's financial instruments and positions represents the potential loss arising from adverse changes in interest rates and foreign currency exchange rates.

Interest Rates

At December 31, 2013, the Company's outstanding debt represented 11.2 percent of total book capitalization. Approximately 82 percent of the Company's outstanding debt at December 31, 2013 is at a fixed rate. We believe that cash flows from operations, cash on hand and available credit facilities are sufficient to meet the anticipated cash requirements of operating the business. It is management's view that market risk or variable interest rate risk, based on current conditions, will not significantly impact the Company's results of operations or financial condition, including liquidity. Interest rates are further described in Note 7 – Notes Payable and Note 8 – Long-Term Debt to the consolidated financial statements in Item 8 – Financial Statements and Supplementary Data of Part II of this Report.

Foreign Currency Exchange Rates

The functional currency of the Company's international subsidiaries is generally the currency in the respective country of residence of the subsidiary. The translation from the functional currencies to the U.S. Dollar for sales and expenses is based on the average exchange rate during the period, and for assets and liabilities, the exchange rate at the reporting date. Changes in foreign currency exchange rates have affected and may continue to affect the Company's sales, expenses, net income, assets, liabilities and cash flows. The impact of changes in foreign currency exchange rates decreased diluted earnings per share by $0.05 and $0.22 for the years ended December 31, 2013 and 2012, respectively, when compared to their respective prior periods. The impact of changes in foreign currency exchange rates increased diluted earnings per share by $0.16 for the year ended December 31, 2011 when compared to the prior year.

The Company transacts business in many parts of the world and is subject to risks associated with changing foreign currency exchange rates. Accordingly, the Company uses both derivative instruments designated as cash flow hedges as well as derivative instruments that are not designated as hedging instruments to mitigate this risk.

The market risk of these contracts represents the potential loss in fair value of net currency positions at period-end due to an adverse change in foreign currency exchange rates. The Company does not enter into foreign currency contracts for speculative trading purposes. The Company's policy is to manage the foreign currency risks associated with forecasted intercompany inventory purchases and existing assets and liabilities, principally intercompany receivables and payables, through foreign currency forward exchange contracts.

Cash Flow Hedges

A significant portion of the Company's cost of products and services sold is denominated in the U.S. Dollar, while approximately 60 percent of the Company's net sales are denominated in other local currencies. Intercompany inventory purchases, which are sourced primarily from subsidiaries with U.S. Dollar functional currencies, are sold to customers by international subsidiaries in other local currencies. In the third quarter of 2012, the Company implemented a program to use foreign currency forward exchange contracts to mitigate the foreign currency risk associated with these forecasted intercompany inventory purchases. These derivatives have been designated as cash flow hedges for accounting purposes.

The market risk on these cash flow hedge contracts at December 31, 2013, assuming a hypothetical 10 percent change in foreign currency exchange rates, would be approximately $52 on income before income taxes.

Derivatives Not Designated As Hedging Instruments

The Company also uses foreign currency forward exchange contracts, which are not designated as hedging instruments, to hedge the value of certain intercompany receivables and payables denominated in foreign currencies. The Company's objective is to minimize the impact of foreign currency exchange rate changes during the period of time between the original transaction date and its cash settlement.

The market risk on these foreign currency forward exchange contracts at December 31, 2013, assuming a hypothetical 10 percent change in foreign currency exchange rates, would be approximately $3 on income before income taxes. Such impact would be substantially offset by remeasurement of the exchange rate on hedged items.

The Company continues to assess the potential impact of recent trends in the global economic environment on the availability of and its access to these contracts in the open market, as well as the ability of the counterparties to meet their obligations. While we continue to monitor the impacts of the uncertainties in the Eurozone, management does not believe that a significant risk exists of these contracts becoming unavailable in the global marketplace within the next twelve months.

Item 8. Financial Statements and Supplementary Data.

Sigma-Aldrich Corporation
Consolidated Statements of Income
($ In Millions, Except Per Share Data)

	Years ended December 31,		
	2013	**2012**	**2011**
Sales	**$ 2,704**	$ 2,623	$ 2,505
Cost of products and services sold	**1,343**	1,276	1,181
Gross profit	**1,361**	1,347	1,324
Selling, general and administrative expenses	**612**	605	597
Research and development expenses	**66**	69	72
Restructuring and other charges	**22**	14	8
Operating income	**661**	659	647
Interest, net	**4**	4	7
Income before income taxes	**657**	655	640
Provision for income taxes	**166**	195	183
Net income	**$ 491**	$ 460	$ 457
Net income per share - Basic	**$ 4.09**	$ 3.80	$ 3.78
Net income per share - Diluted	**$ 4.06**	$ 3.77	$ 3.72
Weighted average number of shares outstanding - Basic	**120**	121	121
Weighted average number of shares outstanding - Diluted	**121**	122	123
Dividends per share	**$ 0.86**	$ 0.80	$ 0.72

See accompanying notes to consolidated financial statements.

Sigma-Aldrich Corporation
Consolidated Statements of Comprehensive Income
($ In Millions)

	Years ended December 31,		
	2013	**2012**	**2011**
Net income	$ 491	$ 460	$ 457
Other comprehensive income/(loss), net of tax:			
Foreign currency translation gain/(loss), net	—	23	(39)
Pension and post retirement, net	55	10	(22)
Unrealized gain/(loss) on securities, net	(3)	3	(4)
Unrealized gain/(loss) on forward exchange contracts, net	(1)	3	—
Total other comprehensive income/(loss)	51	39	(65)
Comprehensive income	$ 542	$ 499	$ 392

See accompanying notes to consolidated financial statements.

Sigma-Aldrich Corporation
Consolidated Balance Sheets
($ In Millions, Except Per Share Data)

	December 31, 2013	December 31, 2012
ASSETS		
Current assets:		
Cash and cash equivalents	**$ 722**	$ 724
Accounts receivable	**382**	356
Inventories	**699**	722
Deferred taxes	**31**	32
Other	**87**	95
Total current assets	**1,921**	1,929
Property, plant and equipment:		
Property, plant and equipment	**2,098**	2,011
Less - accumulated depreciation	**(1,292)**	(1,182)
Property, plant and equipment, net	**806**	829
Goodwill	**691**	691
Intangibles, net	**255**	282
Other	**132**	89
Total assets	**$ 3,805**	$ 3,820
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Notes payable	**$ 65**	$ 383
Accounts payable	**152**	160
Payroll	**64**	55
Income taxes	**25**	26
Other	**77**	77
Total current liabilities	**383**	701
Long-term debt	**300**	300
Pension and post-retirement benefits	**73**	135
Deferred taxes	**74**	64
Other	**80**	74
Total liabilities	**910**	1,274
Stockholders' equity:		
Common stock, $1.00 par value; 300 million shares authorized; 202 million shares issued at December 31, 2013 and December 31, 2012; 119 million shares outstanding at December 31, 2013 and 120 million shares outstanding at December 31, 2012	**202**	202
Capital in excess of par value	**322**	276
Common stock in treasury, at cost, 83 million shares at December 31, 2013 and 82 million shares at December 31, 2012	**(2,407)**	(2,271)
Retained earnings	**4,658**	4,270
Accumulated other comprehensive income	**120**	69
Total stockholders' equity	**2,895**	2,546
Total liabilities and stockholders' equity	**$ 3,805**	$ 3,820

See accompanying notes to consolidated financial statements.

Sigma-Aldrich Corporation
Consolidated Statements of Stockholders' Equity
($ In Millions)

	Common Stock	Capital in Excess of Par Value	Common Stock in Treasury	Retained Earnings	Accumulated Other Comprehensive Income/(Loss)	Total Stockholders' Equity
Balance, December 31, 2010	$ 202	$ 194	$ (2,051)	$ 3,536	$ 95	$ 1,976
Net income	—	—	—	457	—	457
Other comprehensive (loss)	—	—	—	—	(65)	(65)
Dividends	—	—	—	(86)	—	(86)
Exercise of stock options	—	21	16	—	—	37
Restricted stock unit grant	—	3	4	—	—	7
Stock-based compensation expense	—	7	—	—	—	7
Stock repurchases	—	—	(134)	—	—	(134)
Balance, December 31, 2011	$ 202	$ 225	$ (2,165)	$ 3,907	$ 30	$ 2,199
Net income	—	—	—	460	—	460
Other comprehensive income	—	—	—	—	39	39
Dividends	—	—	—	(97)	—	(97)
Exercise of stock options	—	36	18	—	—	54
Restricted stock unit grant	—	6	—	—	—	6
Stock-based compensation expense	—	9	—	—	—	9
Stock repurchases	—	—	(124)	—	—	(124)
Balance, December 31, 2012	$ 202	$ 276	$ (2,271)	$ 4,270	$ 69	$ 2,546
Net income	—	—	—	491	—	491
Other comprehensive income	—	—	—	—	51	51
Dividends	—	—	—	(103)	—	(103)
Exercise of stock options	—	24	11	—	—	35
Restricted stock unit grant	—	7	(1)	—	—	6
Stock-based compensation expense	—	15	—	—	—	15
Stock repurchases	—	—	(146)	—	—	(146)
Balance, December 31, 2013	$ 202	$ 322	$ (2,407)	$ 4,658	$ 120	$ 2,895

Activity in common stock shares issued and common stock shares in treasury is summarized below (in millions):	Common Stock Issued	Common Stock in Treasury
Balance, December 31, 2010	202	80
Exercise of stock options	—	(1)
Stock repurchases	—	2
Balance, December 31, 2011	202	81
Exercise of stock options	—	(1)
Stock repurchases	—	2
Balance, December 31, 2012	202	82
Exercise of stock options	—	(1)
Stock repurchases	—	2
Balance, December 31, 2013	202	83

See accompanying notes to consolidated financial statements.

Sigma-Aldrich Corporation
Consolidated Statements of Cash Flows
($ in Millions)

	Years ended December 31,		
	2013	**2012**	**2011**
Cash flows from operating activities:			
Net income	**$ 491**	$ 460	$ 457
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	**138**	136	106
Deferred income taxes	**(8)**	34	6
Stock-based compensation expense	**22**	17	18
Restructuring, net of payments	**8**	—	—
Other	**(15)**	(5)	(1)
Changes in operating assets and liabilities:			
Accounts receivable	**(32)**	(15)	(35)
Inventories	**12**	(44)	(63)
Accounts payable	**(8)**	10	23
Income taxes	**3**	(10)	5
Other, net	**30**	(16)	(21)
Net cash provided by operating activities	**641**	567	495
Cash flows from investing activities:			
Capital expenditures	**(100)**	(114)	(104)
Purchases of investments	**(100)**	(97)	(65)
Proceeds from sales of investments	**83**	97	55
Acquisitions of businesses, net of cash acquired	**—**	(391)	(75)
Proceeds from sale of net assets	**13**	—	—
Other, net	**(4)**	(6)	(2)
Net cash (used in) investing activities	**(108)**	**(511)**	(191)
Cash flows from financing activities:			
Net issuance/(repayment) of short-term debt	**(318)**	161	81
Repayment of long term debt	**—**	—	(100)
Dividends	**(103)**	(97)	(86)
Share repurchases	**(146)**	(124)	(134)
Proceeds from exercise of stock options	**27**	41	34
Excess tax benefits from stock-based payments	**7**	13	5
Net cash (used in) financing activities	**(533)**	(6)	(200)
Effect of foreign currency exchange rate changes on cash	**(2)**	9	(8)
Net change in cash and cash equivalents	**(2)**	59	96
Cash and cash equivalents at January 1	**724**	665	569
Cash and cash equivalents at December 31	**$ 722**	$ 724	$ 665
Supplemental disclosures of cash flow information:			
Income taxes paid	**$ 160**	$ 156	$ 162
Interest paid, net of capitalized interest	**$ 4**	$ 8	$ 13

See accompanying notes to consolidated financial statements.

NOTE 1: Summary of Significant Accounting Policies

Nature of Operations. The Company develops, manufactures, purchases and distributes a broad range of high quality biochemical and organic chemical products, kits and services that are used in scientific research, including genomic and proteomic research, biotechnology, pharmaceutical development, the diagnosis of disease and as key components in pharmaceutical, diagnostics and high technology manufacturing.

Principles of Consolidation. The consolidated financial statements include the accounts of the Company and all majority-owned subsidiaries. All significant intercompany accounts and transactions have been eliminated.

Financial Instruments. Financial instruments are recorded at fair value, except as described in Note 8 – Long-Term Debt.

Sales. Product sales, which include shipping and handling fees billed to customers, are recognized upon transfer of title of the product to the customer, which generally occurs upon shipment to the customer, and is not dependent upon any post-shipment obligations. Sales of services are recognized utilizing the proportional performance method, whereby sales for each stage of a project are recognized based upon the stage's cost as a proportion of the total cost that will be incurred for that project.

R&D. Expenditures relating to the development of new products, services and processes, including significant improvements to existing products, services or processes, are expensed as incurred as R&D.

Income Taxes. The provision for income taxes is based on pretax income reported in the consolidated statements of income and currently enacted tax rates for each jurisdiction. No provision has been made for U.S. income taxes on the undistributed earnings of the Company's international subsidiaries where the earnings are considered permanently reinvested.

Deferred tax assets and liabilities are recognized for the future tax benefits or liabilities attributable to differences between the consolidated financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The Company regularly reviews its deferred tax assets for recoverability and establishes a valuation allowance when it believes that such assets may not be recovered, taking into consideration historical operating results, expectations of future earnings, changes in its operations and the expected timing of the reversals of existing temporary differences.

Cash and Cash Equivalents. Cash and cash equivalents include cash on hand and investments with original maturities of less than three months.

Property, Plant and Equipment. The cost of property, plant and equipment is depreciated over the estimated useful lives of the assets using the straight-line method with lives generally ranging from 3 to 12 years for machinery and equipment, 3 to 7 years for information technology and 15 to 40 years for buildings and improvements. Depreciation expense was $111, $104 and $89 for the years ended December 31, 2013, 2012 and 2011, respectively. The Company capitalizes interest as part of the cost of constructing major facilities and equipment.

Goodwill. ASC Subtopic 350-20 "Goodwill" requires the Company to assess goodwill for impairment rather than to systematically amortize goodwill against earnings. This goodwill impairment test compares the fair value of a reporting unit to its carrying amount, including goodwill. The Company operates as one reporting unit and its fair value exceeds its carrying value, including goodwill. The Company has determined that no impairment of goodwill existed at December 31, 2013 or 2012.

Long-Lived Assets. Long-lived assets are reviewed for impairment whenever conditions indicate that the carrying value of the assets may not be fully recoverable. Such impairment tests are based on a comparison of the pretax undiscounted cash flows expected to be generated by the asset to the recorded value of the asset. If impairment is indicated, the asset value is written down to its market value if readily determinable or its estimated fair value based on discounted cash flows. Any significant unanticipated changes in business or market conditions that vary from current expectations could have an impact on the fair value of these assets and any potential associated impairment. The Company has determined that no indications of impairment existed at December 31, 2013 or 2012.

Foreign Currency Translation. Most of the Company's non-U.S. operations use local currency as their functional currency. Subsidiaries that do not use the U.S. Dollar as their functional currency translate assets and liabilities at period end exchange rates and profit and loss accounts at the weighted average exchange rates during the reporting period. Resulting translation gains and losses are included as a separate component of stockholders' equity in AOCI. Assets and liabilities denominated in a currency other than the subsidiary's functional currency are translated to the subsidiary's functional currency at period end exchange rates. Resulting gains and losses are recognized in the consolidated statements of income.

Use of Estimates. The preparation of consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of sales and expenses during the periods presented. Actual results could differ from those estimates under different assumptions or conditions.

Reclassifications. The accompanying consolidated financial statements for prior years contain certain reclassifications to conform with the presentation used in 2013.

Effect of New Accounting Standards

In February 2013, the FASB issued ASU No. 2013-02, "Reporting of Amounts Reclassified Out of Accumulated Other Comprehensive Income" that requires entities to disclose either on the face of or in the notes to the financial statements the effects of reclassifications out of AOCI. For items reclassified out of AOCI and into net income in their entirety, entities must disclose the effect of the reclassification on each affected net income item. For items that are not reclassified in their entirety into net income, entities must provide a cross reference to other required disclosures. This ASU does not change the items currently reported in other comprehensive income and is effective for annual reporting periods beginning after December 15, 2012 and interim periods within those years. The adoption of these provisions did not have a material impact on the consolidated financial statements of the Company.

NOTE 2: Allowance for Doubtful Accounts

Changes in the allowance for doubtful accounts for the years ended December 31, 2013 and 2012 are as follows:

	2013	2012
Balance, beginning of year	**$ 7**	$ 6
Additions	**1**	1
Deductions	**(1)**	—
Balance, end of year	**$ 7**	$ 7

NOTE 3: Inventories

The principal categories of inventories at December 31, 2013 and 2012 are as follows:

	2013	2012
Finished goods	**$ 575**	$ 585
Work in process	**27**	36
Raw materials	**97**	101
Total	**$ 699**	$ 722

Inventories are determined using a weighted average actual cost method and are valued at the lower of cost or market.

The Company regularly reviews inventories on hand and records a provision for slow-moving and obsolete inventory, inventory not meeting quality standards and inventory subject to expiration. The provision for slow-moving and obsolete inventory is based on current estimates of future product demand, market conditions and related management judgment. Any significant unanticipated changes in future product demand or market conditions that vary from current expectations could have an impact on the value of inventories.

NOTE 4: Property, Plant and Equipment, net

The principal categories of property, plant and equipment, net at December 31, 2013 and 2012 are as follows:

	2013	2012
Land	**$ 56**	$ 57
Buildings and improvements	**854**	843
Machinery and equipment	**1,099**	1,050
Construction in progress	**89**	61
Less - accumulated depreciation	**(1,292)**	(1,182)
Property, plant and equipment, net	**$ 806**	$ 829

NOTE 5: Acquisitions

For the year ended December 31, 2013, the Company did not complete any acquisitions.

On January 31, 2012, the Company completed its acquisition of all of the outstanding shares of BioReliance, a provider of global biopharmaceutical testing services. BioReliance provides services that include biologic, specialized toxicology and animal health testing to pharmaceutical, biopharmaceutical, diagnostics and other life science customers worldwide. As a provider of biological safety testing, its service offering helps facilitate the development, manufacturing and commercialization of biological drugs and helps enable its clients to register their products worldwide. As a service provider of toxicology studies, BioReliance also enables its clients to launch new small molecule drugs worldwide. BioReliance is headquartered in Rockville, Maryland, with additional operations in Glasgow and Stirling, Scotland and sales offices in Tokyo, Japan and Bangalore, India.

This acquisition was accounted for using the acquisition method of accounting and, accordingly, its results were included in the Company's consolidated financial statements from the date of acquisition. Total consideration to acquire BioReliance was $353 (net of $11 of cash acquired) and was funded with a combination of existing cash and short-term debt. The process of assigning fair values to the assets acquired and liabilities assumed was complete as of December 31, 2012 and was recognized as follows:

Assigned Fair Value	
Current assets	$ 23
Property, plant and equipment	44
Goodwill	212
Intangibles:	
Customer relationships	108
Technical knowledge	21
Trademarks and trade names	2
Other	4
Other assets	2
Deferred tax asset	5
Deferred tax liabilities	(48)
Other liabilities	(20)
Total	**$ 353**

Goodwill resulting from the acquisition is largely attributable to the existing workforce of BioReliance and synergies expected to arise as a result of the acquisition. BioReliance's global pharmaceutical testing services are intended to enable the Company to build a specialized services platform that complements its existing product and technology strengths. The objective of the acquisition is to expand the Company's participation in the biological drug market and help forge deeper and stronger strategic ties with existing and new customers. The goodwill was not deductible for tax purposes.

BioReliance contributed $111 to the Company's 2012 net sales after its acquisition on January 31, 2012. Had the BioReliance acquisition been completed as of the beginning of 2011, the Company's unaudited pro forma net sales for the years ended December 31, 2012 and 2011 would have been $2,632 and $2,631, respectively. Net income of BioReliance was not material to the Company's consolidated statements of income for the years ended December 31, 2012 and 2011, either on a reported or pro forma basis.

NOTE 6: Intangible Assets

The Company's amortizable and unamortizable intangible assets at December 31, 2013 and 2012 are as follows:

	Cost		Accumulated Amortization	
	2013	2012	2013	2012
Amortizable intangible assets:				
Patents	**$ 14**	$ 14	**$ 9**	$ 8
Licenses	**48**	47	**22**	17
Customer relationships	**254**	255	**77**	61
Technical knowledge	**48**	48	**19**	15
Other	**29**	29	**23**	22
Total amortizable intangible assets	**$ 393**	$ 393	**$ 150**	$ 123
Unamortizable intangible assets:				
Goodwill	**$ 717**	$ 717	**$ 26**	$ 26
Trademarks and trade names	**20**	20	**8**	8
Total unamortizable intangible assets	**$ 737**	$ 737	**$ 34**	$ 34

During the year ended December 31, 2013, the Company did not acquire any intangible assets or goodwill. During the year ended December 31, 2012, the Company added $155 of acquired intangible assets and $222 of acquired goodwill for acquisitions made during 2012.

The Company recorded amortization expense related to amortizable intangible assets of $27, $32 and $17 for the years ended December 31, 2013, 2012 and 2011, respectively. Amortizable intangible assets are amortized over their estimated useful lives, which range from one to twenty years, using the straight-line method. The Company expects to record annual amortization expense for all existing intangible assets in a range from approximately $21 to $24 from 2014 through 2018.

The changes in net goodwill for the years ended December 31, 2013 and 2012 are as follows:

	2013	2012
Balance, beginning of year	**$ 691**	$ 466
Acquisitions and divestitures	**(2)**	222
Impact of foreign currency exchange rates	**2**	3
Balance, end of year	**$ 691**	$ 691

Acquisition and divestiture activity during the current period is related to the finalization of purchase accounting for certain acquisitions as well as the writeoff of goodwill associated with the sale of the net assets of SAGE Labs in April 2013.

NOTE 7: Notes Payable

Notes payable consist of the following at December 31, 2013 and 2012:

	December 31, 2013		December 31, 2012	
	Outstanding	Weighted Average Rate	Outstanding	Weighted Average Rate
Notes payable				
Commercial paper [1]	**$ 65**	**0.1%**	$ 381	0.2%
$200.0 European revolving credit facility, due March 13, 2014 [2]	—	—	—	—
Sigma-Aldrich Korea limited credit facility, due June 30, 2014 [3]	—	—	—	—
Sigma-Aldrich Japan GK credit facilities [4]	—	—	—	—
Other short-term credit facilities [5]	—	—	2	1.5%
Total notes payable	**$ 65**	**0.1%**	$ 383	0.2%

(1) The Company has a $600 five-year revolving credit facility with a syndicate of banks in the United States that supports the Company's commercial paper program. On December 2, 2013, the Company entered into an amendment to extend the termination date of the facility to May 10, 2018 from May 10, 2017. At December 31, 2013 and December 31, 2012, the Company did not have any borrowings outstanding under this facility. However, the amount available under the facility is reduced by the amount of commercial paper outstanding. The facility contains financial covenants that require the maintenance of a ratio of consolidated debt to total capitalization of no more than 65.0 percent and an aggregate amount of subsidiary debt plus consolidated secured debt of no more than 25.0 percent of total net worth. The Company's total consolidated debt as a percentage of total capitalization and aggregate amount of subsidiary debt plus consolidated secured debt as a percentage of total net worth, as defined in the underlying credit agreement, was 11.7 percent and 0.0 percent, respectively, at December 31, 2013.

(2) This facility contains financial covenants that require the maintenance of consolidated net worth of at least $750, a ratio of consolidated debt to total capitalization of no more than 55.0 percent and an aggregate amount of subsidiary debt plus consolidated secured debt of no more than 25.0 percent of total net worth. The Company's consolidated net worth, consolidated debt as a percentage of total capitalization and aggregate amount of subsidiary debt plus consolidated secured debt as a percentage of total net worth, as defined in the underlying credit agreement, were $2,754, 11.7 percent and 0.0 percent, respectively, at December 31, 2013.

(3) There were no outstanding borrowings under this facility, which had a total commitment of 20 billion Korean Won ($19), at December 31, 2013.

(4) Sigma-Aldrich Japan GK has two credit facilities having a total commitment of 2 billion Japanese Yen ($19), with one facility due April 30, 2014 and the other representing a line of credit with no expiration. There were no borrowings under the facilities at December 31, 2013.

(5) There were no borrowings under these facilities, which have total commitments in U.S. Dollar equivalents of $3, at December 31, 2013.

The Company has provided guarantees with respect to certain subsidiaries for any outstanding borrowings from the European revolving credit facility and the short-term credit facilities of the wholly-owned Korean and Japanese subsidiaries. At December 31, 2013, there were no existing events of default that would require the Company to honor these guarantees.

As of December 31, 2013, the Company had sufficient net worth to allow for borrowing the full capacity under each facility without any restriction related to compliance with the respective financial debt covenants.

NOTE 8: Long-Term Debt

Long-term debt consists of the following at December 31, 2013 and 2012:

	December 31, 2013		December 31, 2012	
	Outstanding	Weighted Average Rate	Outstanding	Weighted Average Rate
Senior notes, due November 1, 2020 [1]	**$ 300**	**3.4%**	$ 300	3.4%
Total long-term debt	**$ 300**	**3.4%**	$ 300	3.4%

(1) The Company has $300 of 3.375% Senior Notes due November 1, 2020. Interest on the notes is payable May 1 and November 1 of each year. The notes may be redeemed, in whole or in part at the Company's option, (i) at any time at specific redemption prices plus accrued interest or (ii) three months prior to the maturity date at a redemption price equal to 100% percent of the principal amount plus accrued interest.

Total interest expense incurred on short-term and long-term debt, net of amounts capitalized, was $9, $8 and $13 in 2013, 2012 and 2011, respectively.

The fair value of long-term debt was approximately $298 and $315 at December 31, 2013 and 2012, respectively. The fair value of long-term debt was based upon a discounted cash flow analysis that used the aggregate cash flows from principal and interest payments over the life of the debt and current market interest rates.

NOTE 9: Financial Derivatives and Risk Management

The Company transacts business in many parts of the world and is subject to risks associated with changing foreign currency exchange rates. Accordingly, the Company uses both derivative instruments designated as cash flow hedges as well as derivative instruments that are not designated as hedges to help mitigate this risk. These derivative instruments are comprised of foreign currency forward exchange contracts, which are classified within Level 2 of the fair value hierarchy as their fair value is determined by using foreign currency market spot rates and forward points observable at commonly quoted intervals. The Company does not enter into foreign currency contracts for speculative trading purposes.

Cash Flow Hedges

A significant portion of the Company's cost of products and services sold is denominated in the U.S. Dollar, while approximately 60 percent of the Company's net sales are denominated in other currencies. Intercompany inventory purchases, which are sourced primarily from subsidiaries with U.S. Dollar functional currencies, are sold to customers by international subsidiaries in other local currencies. In the third quarter of 2012, the Company implemented a program to utilize foreign currency forward exchange contracts to mitigate the foreign currency risk associated with these forecasted intercompany inventory purchases.

These foreign currency forward exchange contracts have been designated as hedges of the variability of cash flows related to forecasted inventory purchases due to changes in foreign currency exchange rates. Changes in fair value of these derivatives are deferred in AOCI within stockholders' equity until the underlying hedged items are recognized in net income. Accordingly, the Company records cash flow hedge gains or losses within cost of products and services sold when the related inventory is sold to a customer. To the extent any portion of the hedge contract is determined to be ineffective, the increase or decrease in value of the contract prior to maturity will be recognized in income immediately. The cash flow impact from these derivatives is classified in the operating activities section of the Company's consolidated statements of cash flows, which is the same category as the underlying items being hedged. Gains or losses related to the ineffective portion of these hedging instruments were not material for the years ended December 31, 2013 and 2012. At December 31, 2013 and 2012, the Company had a notional principal amount of $298 and $254, respectively, in foreign currency forward exchange contracts outstanding.

The following table summarizes the fair values of the foreign currency forward exchange contracts designated as cash flow hedges at December 31, 2013 and 2012:

		Years ended December 31,	
Item	**Reporting Location**	**2013**	**2012**
Forward exchange contracts asset derivative	Other current assets	**$ 5**	$ 6
Forward exchange contracts liability derivative	Other current liabilities	**6**	3
Gain recognized in AOCI, net	AOCI	**2**	3

The following table summarizes the effect of the foreign currency forward exchange contracts designated as cash flow hedges on the Company's consolidated statements of comprehensive income for the years ended December 31, 2013 and 2012, net of immaterial tax effects.

		Years ended December 31,	
Item	**Reporting Location**	**2013**	**2012**
Gain recognized in OCI, net	OCI	**$ 4**	$ 3
Gain reclassified from AOCI into net income	Costs of products and services sold	5	—

As of December 31, 2013, the majority of these contracts are in established currencies including the Euro, Japanese Yen and British Pound. During the next 12 months, the Company expects an immaterial amount of unrealized gains included in AOCI, based on their valuation as of December 31, 2013, will be reclassified into income. The Company generally does not hedge its exposure to the exchange rate variability of future cash flows beyond the next ensuing twenty-four months.

Derivatives Not Designated As Hedging Instruments

The Company also uses foreign currency forward exchange contracts, which are not designated as hedging instruments, to hedge the value of certain intercompany receivables and payables denominated in foreign currencies. The Company's objective is to minimize the impact of foreign currency exchange rate changes during the period of time between the original transaction date and its cash settlement. Gains and losses on these contracts are recorded in SG&A, based on the difference in the contract rate and the spot rate at the end of each month for all contracts still in force, and are typically offset either partially or completely by transaction gains and losses on the related intercompany receivables and payables. The duration of the contracts typically does not exceed six months. As of December 31, 2013, the majority of these contracts are in established currencies including the Euro, British Pound and Japanese Yen. The impact of these contracts was not material to the consolidated financial statements as of and for the years ended December 31, 2013 and 2012. The notional amount of open foreign currency forward exchange contracts at December 31, 2013 and 2012 was $199 and $196, respectively.

NOTE 10: Lease Commitments

The Company and its subsidiaries lease manufacturing, office and warehouse facilities and computer equipment under non-cancelable operating leases expiring at various dates. Rent expense was $43, $42 and $41 in 2013, 2012, and 2011, respectively. Minimum rental commitments for non-cancelable leases in effect at December 31, 2013, are as follows:

2014	$ 32
2015	25
2016	19
2017	17
2018	15
2019 and thereafter	18

NOTE 11: Restructuring and Other Charges

	2013	2012	2011
Restructuring costs	**$ 10**	$ 9	$ 8
Licensing dispute settlement	**7**	—	—
Costs related to mergers and acquisitions	**5**	5	—
Total restructuring and other charges	**$ 22**	$ 14	$ 8

Restructuring Costs

Programs Implemented During 2013

In the third quarter of 2013, the Company committed to a restructuring plan to exit a manufacturing site in Europe. This exit activity impacts approximately 90 employees and is intended to further reduce the Company's fixed cost structure. Total restructuring costs are expected to be $12, comprised of $9 to reduce the value of the assets impacted by these restructuring activities and $3 of employee termination costs. During the year ended December 31, 2013, $10 of these restructuring costs were recognized.

Programs Implemented During 2012

In the second quarter of 2012, the Company committed to a restructuring plan to exit various sales office locations in Europe. These exit activities impacted approximately 30 employees and were intended to further reduce the Company's fixed cost structure by streamlining the sales force in Europe. Total restructuring costs associated with this plan were $4 and were incurred during 2012. As of December 31, 2012, all exit activities were complete.

In the third quarter of 2012, the Company committed to a restructuring plan to reduce global headcount by approximately 130 employees to further reduce the Company's fixed cost structure. Total restructuring costs associated with this plan were $5 and were incurred during 2012. As of December 31, 2012, all exit activities were complete.

Programs Implemented Prior to 2012

In the fourth quarter of 2009, the Company committed to a restructuring plan that included exit activities at five manufacturing sites in the U.S. and Europe. These exit activities impacted approximately 240 employees and were intended to reduce the Company's fixed cost structure and better align its global manufacturing and distribution footprint. Total restructuring costs associated with this plan were $41 and were incurred as follows: $8 in 2011, $24 in 2010 and $9 in 2009. As of December 31, 2011, all exit activities were complete.

Licensing Dispute Settlement

Costs of $7 were incurred during the second quarter of 2013 for the settlement of a licensing dispute associated with certain products.

Costs Related to Mergers and Acquisitions

Third party costs of $5 associated with merger and acquisition activity were incurred during the second quarter of 2013. Third party costs of $5 were incurred during the first quarter of 2012 related to the January 2012 acquisition of BioReliance and the March 2012 acquisition of Research Organics.

NOTE 12: Income Taxes

The components of income before income taxes consist of the following for the years ended December 31:

	2013	2012	2011
United States operations	**$ 365**	$ 386	$ 438
International operations	**292**	269	202
Total income before taxes	**$ 657**	$ 655	$ 640

The provision for income taxes consists of the following for the years ended December 31:

	2013	2012	2011
Current:			
Federal	**$ 118**	$ 108	$ 136
State and local	**12**	13	8
International	**40**	40	38
Total current	**170**	161	182
Deferred:			
Federal	**(5)**	15	(6)
State and local	**(3)**	3	(3)
International	**4**	16	10
Total deferred	**(4)**	34	1
Provision for income taxes	**$ 166**	$ 195	$ 183

The items accounting for the difference between income taxes computed at the U.S. federal statutory rate and the Company's effective tax rate are as follows for the years ended December 31:

	2013	2012	2011
Statutory tax rate	**35.0%**	35.0%	35.0%
U.S. manufacturing deduction	**(1.1)**	(1.2)	(2.0)
State and local income taxes, net of federal benefit	**1.0**	1.7	0.8
Research and development credits	**(0.6)**	—	(0.6)
International tax rates	**(6.8)**	(5.2)	(3.5)
Tax audits and unrecognized tax positions	**0.6**	(0.2)	(0.8)
Tax rate and law changes	**(1.4)**	(0.2)	—
Other, net	**(1.4)**	(0.1)	(0.3)
Total effective tax rate	**25.3%**	29.8%	28.6%

The tax audits and unrecognized tax positions provided a net benefit in 2012 and 2011 as a result of statute of limitation expirations of open examination periods by the taxing authorities. The international taxes benefit is primarily the result of certain countries in which the Company operates having lower statutory tax rates than the U.S. statutory tax rate and for 2012 and 2011, the benefits associated with certain international restructurings. The tax rate and law changes benefit in 2013 was primarily the result of changes in the UK statutory tax rate and the retroactive extension of the 2012 U.S. R&D tax credit in 2013.

Undistributed earnings of the Company's international subsidiaries amounted to approximately $1,417 at December 31, 2013. No U.S. income taxes have been provided for these undistributed earnings as the Company intends to indefinitely reinvest these earnings abroad. If the Company were to distribute these earnings in the form of dividends or otherwise, the Company would be subject to both U.S. income taxes (subject to an adjustment for international tax credits) and withholding taxes payable to various international jurisdictions. At this time, it is not practicable to determine the amount of deferred income taxes that would be payable on the unremitted international earnings of the Company, assuming such earnings were distributed.

Deferred income tax provisions reflect the effect of temporary differences between consolidated financial statement and tax reporting of income and expense items. The net deferred tax assets/liabilities at December 31, 2013 and 2012 resulted from the following temporary differences:

	2013	2012
Deferred tax assets:		
Inventories	**$ 23**	$ 27
Net operating loss carryforwards	**9**	14
Post-retirement benefits and other employee benefits	**43**	46
Pension benefits	**4**	20
Other	**22**	19
Total deferred tax assets	**101**	126
Valuation allowances	**(4)**	(5)
Net deferred tax assets	**97**	121
Deferred tax liabilities:		
Property, plant and equipment, and intangibles	**(131)**	(138)
Total deferred tax liabilities	**(131)**	(138)
Net deferred tax assets (liabilities)	**$ (34)**	$ (17)

The net operating loss carryforwards relate to domestic and international operations. At December 31, 2013, $9 of these deferred tax assets expire between 2014 and 2033. The Company has provided valuation allowances on these deferred tax assets of approximately $4. Realization of deferred tax assets representing net operating loss carryforwards for which a valuation allowance has not been provided is dependent on generating sufficient taxable income prior to expiration of the loss carryforwards.

Deferred tax assets and liabilities in the preceding table, netted by taxing jurisdiction, are included in the following captions in the Company's consolidated balance sheets at December 31:

	2013	2012
Deferred tax assets	**$ 31**	$ 32
Other assets	**11**	17
Other accrued expenses	**(2)**	(2)
Deferred tax liabilities	**(74)**	(64)
Net deferred tax assets (liabilities)	**$ (34)**	$ (17)

Uncertain Tax Positions. The Company and its subsidiaries file income tax returns for U.S. federal and various state, local and international taxes, as applicable. The Company is no longer subject to, with limited exceptions, U.S. federal, state and local, or non-U.S. income tax examinations by tax authorities for years prior to 2005.

The following table sets forth changes in the total gross unrecognized tax benefits, excluding interest and penalties, for the years ended December 31:

	2013	2012	2011
Balance, beginning of year	**$ 33**	$ 33	$ 21
Tax positions related to current year:			
Additions	**7**	4	6
Reductions	**—**	—	—
Tax positions related to prior years:			
Additions	**2**	1	18
Reductions	**(1)**	(1)	(3)
Settlements	**—**	—	—
Statutes of limitation expirations	**(4)**	(4)	(9)
Balance, end of year	**$ 37**	$ 33	$ 33

At December 31, 2013, 2012 and 2011, respectively, there are $24, $20 and $21 of net unrecognized tax benefits that, if recognized, would affect the annual effective tax rate.

The Company believes it is reasonably possible that the unrecognized tax benefits at December 31, 2013 may decrease by approximately $2 due to audit activity and statute of limitation expirations in several jurisdictions within 12 months of December 31, 2013.

The Company accrues interest, net of tax and penalties, related to unrecognized tax benefits as components of its income tax provision. The Company recognized no expense in 2013 and approximately $1 of expense and $2 of benefit in 2012 and 2011, respectively, related to interest and penalties. The Company accrued approximately $3 for payment of interest, net of tax and penalties, as of December 31, 2013 and 2012.

NOTE 13: Contingent Liabilities and Commitments

The Company is involved in legal proceedings generally incidental to its business, as described below:

Insurance and Other Contingent Liabilities and Commitments

The Company is subject to potential liabilities arising out of present and future lawsuits and claims related to product liability, personal injury, contract, commercial, intellectual property, tax, environmental, employment and other matters that arise in the ordinary course of business. The Company's operations and a number of its products are highly regulated by various governmental agencies around the world and the Company is periodically involved in reviews, investigations and proceedings by governmental agencies. Failure to meet the standards and licensing requirements of these agencies can lead to penalties which can include substantial fines and/or operating restrictions.

The Company accrues for potential liabilities when it is probable that future costs (including legal fees and expenses) will be incurred and such costs can be reasonably estimated. Although the Company believes the amounts reserved are probable and appropriate based on available information, the process of estimating losses involves a considerable degree of judgment by management and the ultimate amounts could vary materially. The Company has self-insured retention limits and has obtained insurance to provide coverage above the self-insured limits for claims made against it, subject to certain limitations and exclusions. At December 31, 2013, (i) reserves have been provided to cover expected payments for these self-insured amounts, (ii) there were no contingent liabilities that management believes are reasonably likely to have a material adverse effect on the Company's consolidated financial condition, results of operations, cash flows or liquidity and (iii) there were no material commitments outside of the normal course of business. Material commitments in the normal course of business include notes payable, long-term debt, lease commitments and pension and other post-retirement benefit obligations which are disclosed in Note 7 – Notes Payable, Note 8 – Long-Term Debt, Note 10 – Lease Commitments and Note 16 – Pension and Post-retirement Benefit Plans.

NOTE 14: Common Stock

The 2003 LTIP permits the granting of incentive or nonqualified stock options as well as stock appreciation rights, performance shares, RSUs and other stock-based awards. The 2003 LTIP permits the distribution of up to 11,000,000 shares of the Company's common stock, subject to increase for any shares forfeited under other equity compensation plans after the effective date of the 2003 LTIP. Shares issued under the 2003 LTIP may be authorized and unissued shares or treasury shares. This plan permits the award of non-qualified stock options and other stock-based awards to those members of the Board of Directors who

are not employees of the Company. Under the 2003 LTIP for 2012 and prior years, a non-employee Director received (i) an initial option to purchase 20,000 shares of Company common stock on the date of his or her initial election as a Director, (ii) 1,200 shares of stock granted on the first business day in January and (iii) additional awards of options to purchase 10,000 shares on the day after each annual shareholders' meeting if the non-employee Director had served on the Board for at least six months. Beginning in 2013, the Board (i) reduced the initial option grant for new Directors to two times their annual cash retainer, (ii) reduced the amount of additional option awards to an amount equal to 60 percent of a director's annual equity grant award and (iii) provided the other 40 percent in time-based RSUs, each of which vest one-third on each grant date anniversary. Incentive and nonqualified stock options may not have an option exercise price of less than the fair market value of the shares at the date of the grant. Including shares forfeited or swapped, 999,368 shares of the Company's common stock remain available for award under the 2003 LTIP at December 31, 2013.

As of December 31, 2013, the Company expects $22 of unrecognized expense related to granted, but nonvested stock-based compensation arrangements to be incurred in future periods. This expense is expected to be recognized over a weighted average period of 1.5 years.

Stock-based compensation expense is included in SG&A. The stock-based compensation expense for the years ended December 31, 2013, 2012 and 2011 was $22, $17 and $18, respectively. The tax benefit related to this expense was $7 for the year ended December 31, 2013 and $6 for the years ended December 31, 2012 and 2011.

Stock Options. The Company measures the total fair value of options on the grant date using the Black-Scholes option-pricing model and recognizes each grant's fair value as compensation cost over the period that the option vests. Options generally become exercisable from one to three years following the grant date and expire ten years after the grant date. During the year ended December 31, 2013, the Company granted a total of 791,760 stock options under the 2003 LTIP.

The weighted-average assumptions under the Black-Scholes option-pricing model for stock option grants are as follows:

	2013	2012	2011
Expected term (years)	**5.0**	4.9	4.8
Expected volatility	**31.86%**	32.92%	30.68%
Risk-free interest rate	**0.98%**	0.80%	2.17%
Dividend yield	**1.13%**	1.11%	1.13%

Expected term—The expected term of the options represents the period of time between the grant date and the time the options are either exercised or forfeited, including an estimate of future forfeitures for outstanding options. In accordance with SEC Staff Accounting Bulletin No. 107, the Company has used the "simplified" method for "plain vanilla" options to estimate the expected term of options granted prior to 2008.

Expected volatility—The expected volatility is calculated based on an average of the historical volatility of the Company's stock price for a period approximating the expected term.

Risk-free interest rate—The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of grant and a maturity that approximates the expected term.

Dividend yield—The dividend yield is based on the Company's authorized quarterly dividend, approved by the Board during the respective periods noted above, and the Company's expectation for dividend yields over the expected term.

A summary of the combined stock option activity and other data for the Company's stock option plans, including the 2003 LTIP, the Stock Option Plan of 2000 and the 1998 Directors' Non-Qualified Share Option Plans, for the year ended December 31, 2013 is as follows:

	Number of Stock Options	Wtd. Avg. Exercise Price Per Share	Wtd. Avg. Remaining Contractual Life	Aggregate Intrinsic Value
Stock Options outstanding, January 1, 2013	3,341,529	$ 47.03		
Granted	791,760	77.34		
Exercised	(788,982)	35.92		
Forfeited	(38,010)	68.07		
Stock Options outstanding, December 31, 2013	3,306,297	56.70	70.34 months	$ 123
Stock Options exercisable, December 31, 2013	2,214,272	47.83	52.89 months	$ 102

The aggregate intrinsic value of options exercised during the years ended December 31, 2013, 2012 and 2011 was $35, $52 and $30, respectively.

The weighted average grant date fair value of options granted during the years ended December 31, 2013, 2012 and 2011 was $20.11, $18.67 and $17.05 per share, respectively.

Performance Shares. Performance Share awards in 2013, 2012 and 2011 were 104,545, 224,560 and 220,305 shares, respectively. A summary of the criteria for the Performance Share awards can be found in the table below.

	2013 [1]	2012	2011
Service Period	Three years	Three years	Three years
Vesting Period	Cliff vest on December 31, 2015	Cliff vest on December 31, 2014	Cliff vest December 31, 2013
Payout Range [2]	0 percent to 200 percent	0 percent to 200 percent	0 percent to 150 percent
Metrics / Performance Criteria	- 40 percent based upon the Company's yearly return on invested capital (calculated each year of the service period) - 40 percent based upon the Company's three-year average sales growth (adjusted for changes in foreign currency exchange rates) - 20 percent based on the Company's total shareholder return relative to certain competitors	- 40 percent based upon the Company's three-year average return on equity ratio calculation - 40 percent based upon the Company's three-year average sales growth (adjusted for changes in foreign currency exchange rates) - 20 percent based on the Company's total shareholder return relative to certain competitors	- 50 percent based upon the Company's three-year average return on equity ratio calculation - 50 percent based upon the Company's three-year average sales growth (adjusted for changes in foreign currency exchange rates)

(1) Of the 104,545 Performance Shares awarded in 2013, 30,290 were awarded on September 3, 2013 and subject to different performance criteria than those noted within the table above. These Performance Shares have a three year performance period beginning July 1, 2013 and ending June 30, 2016, with 50 percent vesting on the three-year anniversary of the award date and 50 percent vesting on the five-year anniversary of the award date. Performance is measured by the Company achieving "Cumulative Free Cash Flow" during the performance period equal to or greater than $900. For these specific awards, the Company expenses the expected cost of the awards over the respective vesting periods beginning on the grant date with half ending on the three-year anniversary of the award date and half ending on the five-year anniversary of the award date.

(2) The payout range is determined at the end of the performance period.

Subject to meeting the performance criteria, the Performance Share grants will be paid in shares of the Company's common stock. Such shares do not pay or accumulate dividends, if any, during the vesting period. The Company expenses the expected cost of the awards over the vesting period beginning on the grant date and ending on December 31 of the third subsequent fiscal year, except for those discussed in note (1) above. The expense for the entire number of Performance Shares awarded is dependent upon the probability of achieving the specific financial targets and is recorded ratably over the vesting period.

A summary of the Company's nonvested Performance Shares as of December 31, 2013, and changes during the year then ended, is reflected in the table below.

	Number of Performance Units	Wtd. Avg. Grant Date Fair Value
Nonvested Performance Shares outstanding, January 1, 2013	320,485	$ 67.97
Granted	104,545	75.00
Vested [1]	(136,282)	63.95
Forfeited [2]	(33,311)	67.59
Nonvested Performance Shares outstanding, December 31, 2013	255,437	72.45

(1) Represents the entire amount of Performance Shares which vested during the year ended December 31, 2013. Of these vested Performance Shares, 510 were paid out in 2013 and the remainder were outstanding as of December 31, 2013.
(2) Includes reductions due to employee terminations and reductions as a result of the Company not meeting certain performance targets.

The weighted average grant date fair value of Performance Shares granted during the years ended December 31, 2013, 2012 and 2011 was $75.00, $71.73 and $63.89, respectively.

Stock Awards. On January 3, 2012 and 2011, each non-employee Director received 1,200 shares of Company common stock. The 2012 and 2011 stock awards were expensed in the first quarter of 2012 and 2011, respectively, based on the fair market value of the Company's common stock at the date of grant. In 2013, the Company began granting the Directors stock options and RSUs in lieu of common stock awards.

Restricted Stock Units. The Company measures the total fair value of RSUs on the grant date using the Company's stock price at the time of the grant less the present value of the expected dividend stream during the vesting period. During the year ended December 31, 2013, the Company granted a total of 98,165 RSUs. RSUs awarded during the year have a vesting period of three years with some awards vesting one-third each year and most awards cliff vesting at the end of the three year period. The awards are expensed over their respective vesting period.

A summary of the Company's nonvested RSUs as of December 31, 2013, and changes during the year then ended, is reflected in the table below.

	Number of RSUs	Wtd. Avg. Grant Date Fair Value
Nonvested RSUs outstanding, January 1, 2013	50,000	$ 66.16
Granted	98,165	74.30
Vested [1]	(17,862)	66.02
Forfeited [2]	(6,527)	71.73
Nonvested RSUs outstanding, December 31, 2013	123,776	72.35

(1) Represents the entire amount of RSUs that vested during the year ended December 31, 2013. Of the RSUs that vested, 17,862 were paid out in 2013.
(2) Includes reductions due to employee terminations.

The weighted average grant date fair value of RSUs granted during the years ended December 31, 2013, 2012 and 2011 was $74.30, $71.45 and $61.24, respectively.

NOTE 15: Company Operations by Business Unit

The business unit structure is the Company's approach to serving customers and reporting sales rather than any internal division used to allocate resources. Net sales for the Company's business units are as follows:

	2013	2012	2011
Research	**$ 1,402**	$ 1,398	$ 1,427
Applied	**629**	598	581
SAFC	**673**	627	497
Total	**$ 2,704**	$ 2,623	$ 2,505

The Company's Chief Operating Decision Maker is the CEO. The CEO and the Board review profit and loss information on a consolidated basis to assess performance and make overall operating decisions as well as resource allocations. The Company's business units are closely interrelated in their activities and share services such as order entry, billing, technical services, e-commerce, purchasing and inventory control, and also share production and distribution facilities. Additionally, these units are supported by centralized functional areas such as finance, human resources, quality, safety and compliance and information technology. Further, the Company's CEO, CFO and business unit Presidents participate in compensation programs in which a portion of their incentive compensation paid is based upon consolidated Company results for sales growth (and for the business unit Presidents, the sales growth in the business unit for which they are responsible), consolidated Company operating income, consolidated Company free cash flow and individual/business unit objectives based on consolidated Company EPS (and for the business unit Presidents, the profitability for certain sites within their respective business unit). Based on these factors, the Company has concluded that it operates in one segment.

Sales are attributed to countries based upon the location from which the product was shipped or services were performed. Products shipped from the U.S. to unaffiliated customer destinations outside of the U.S. are presented in the summary below:

Year	Amount	Year	Amount	Year	Amount
2013	**$ 60**	2012	$ 61	2011	$ 48

Geographic financial information is as follows:

	2013	2012	2011
Net sales to unaffiliated customers:			
United States	**$ 1,026**	$ 987	$ 898
International	**1,678**	1,636	1,607
Total	**$ 2,704**	$ 2,623	$ 2,505
Long-lived assets at December 31:			
United States	**$ 523**	$ 549	$ 506
International	**357**	351	319
Total	**$ 880**	$ 900	$ 825

NOTE 16: Pension and Post-retirement Benefit Plans

The Company maintains several retirement plans covering substantially all U.S. employees and employees of certain international subsidiaries. Pension benefits are generally based on years of service and compensation. The Company also maintains post-retirement medical benefit plans covering some of its U.S. employees. Benefits are subject to deductibles, co-payment provisions and coordination with benefits available under Medicare. The Company has made a determination that the prescription drug benefits it provides are actuarially equivalent to the benefits provided under the Medicare Prescription Drug, Improvement and Modernization Act of 2003.

In the fourth quarter of 2012, the Board approved and management communicated changes to our U.S. defined benefit pension plan so that, effective December 31, 2012, the pension plan would be frozen and future retirement service benefits would no longer be accrued under the plan. The freeze of future benefit accruals resulted in a reduction of the Company's projected benefit obligation of $16. As a result of the freeze, participants under the plan are no longer accruing service-based benefits and are being treated as inactive for accounting purposes. Effective January 1, 2013, the affected employees were eligible for additional contributions under an enhanced defined contribution plan.

Effective January 1, 2014, the Swiss defined benefit plan was amended from a final pay plan to a cash balance-type plan. The change resulted in a reduction of the Company's projected benefit obligation of $11.

The following chart reconciles the funded status of the plans with amounts included in the Company's consolidated balance sheets:

	Pension Plans				Post-Retirement Medical Benefit Plans	
	United States		International			
	2013	2012	2013	2012	2013	2012
Reconciliation of funded status of the plans and the amounts included in the Company's Consolidated Balance Sheets at December 31:						
Change in benefit obligations						
Beginning obligations	**$ 178**	$ 170	**$ 299**	$ 260	**$ 47**	$ 52
Service cost	**—**	10	**9**	8	**1**	1
Interest cost	**6**	7	**8**	9	**1**	2
Participant contributions	**—**	—	**3**	3	**1**	1
Plan amendments	**—**	—	**(11)**	—	**—**	—
Plan curtailments	**—**	(16)	**—**	—	**—**	—
Plan settlements	**(7)**	—	**(6)**	—	**—**	—
Benefits and expenses paid	**(1)**	(6)	**(7)**	(5)	**(2)**	(1)
Actuarial loss (gain)	**(7)**	13	**(12)**	16	**(9)**	(8)
Changes in foreign currency exchange rates	**—**	—	**6**	8	**—**	—
Ending obligations	**$ 169**	$ 178	**$ 289**	$ 299	**$ 39**	$ 47
Changes in plans assets						
Beginning fair value	**$ 158**	$ 138	**$ 228**	$ 198	**$ —**	$ —
Actual return on plan assets	**31**	19	**20**	17	**—**	—
Employer contributions	**—**	7	**8**	8	**1**	—
Participant contributions	**—**	—	**3**	3	**1**	1
Plan settlements	**(7)**	—	**(3)**	—	**—**	—
Benefits and expenses paid	**(1)**	(6)	**(7)**	(5)	**(2)**	(1)
Changes in foreign currency exchange rates	**—**	—	**6**	7	**—**	—
Ending fair value	**$ 181**	$ 158	**$ 255**	$ 228	**$ —**	$ —
Reconciliation of funded status						
Funded status	**$ 12**	$ (20)	**$ (34)**	$ (71)	**$ (39)**	$ (47)
Net Consolidated Balance Sheet asset/(liability)	**$ 12**	$ (20)	**$ (34)**	$ (71)	**$ (39)**	$ (47)

	Pension Plans				Post-Retirement Medical Benefit Plans	
	United States		International			
	2013	2012	2013	2012	2013	2012
Amounts recognized in the Company's Consolidated Balance Sheets:						
Non current assets	**$ 12**	$ —	**$ 2**	$ —	**$ —**	$ —
Current liabilities	**—**	—	**—**	—	**(2)**	(3)
Pension and post-retirement benefits	**—**	(20)	**(36)**	(71)	**(37)**	(44)
Net amount recognized	**$ 12**	$ (20)	**$ (34)**	$ (71)	**$ (39)**	$ (47)
Reconciliation of amounts recognized in the Company's Consolidated Balance Sheets						
Prior service (cost) credit	**$ —**	$ —	**$ 11**	$ (1)	**$ 4**	$ 5
Net (loss) gain	**(30)**	(58)	**(39)**	(65)	**15**	7
Accumulated other comprehensive (loss) income	**$ (30)**	$ (58)	**$ (28)**	$ (66)	**$ 19**	$ 12
Accumulated contributions in excess of (less than) net periodic benefit cost	**42**	38	**(6)**	(5)	**(58)**	(59)
Net amount liability recognized in statement of financial position	**$ 12**	$ (20)	**$ (34)**	$ (71)	**$ (39)**	$ (47)

	Pension Plans						Post-Retirement Medical Benefit Plans		
	United States			International					
	2013	2012	2011	2013	2012	2011	2013	2012	2011
Changes in plan assets and benefit obligations recognized in other comprehensive income									
New prior service cost	**$ —**	$ —	$ —	**$ (11)**	$ —	$ —	**$ —**	$ —	$ —
Net loss (gain) arising during the year	**(27)**	(11)	15	**(21)**	9	19	**(8)**	(8)	2
Effect of changes in foreign currency exchange rates on amounts included in AOCI	**—**	—	—	**—**	2	(1)	**—**	—	—
Amounts recognized as a component of net periodic benefit cost									
Amortization or curtailment recognition of prior service credit	**—**	—	—	**—**	—	—	**1**	1	1
Amortization or settlement recognition of net loss	**(1)**	(5)	(4)	**(6)**	(4)	(2)	**—**	—	—
Total recognized in other comprehensive loss (income)—pretax	**$ (28)**	$ (16)	$ 11	**$ (38)**	$ 7	$ 16	**$ (7)**	$ (7)	$ 3
Total recognized in net periodic benefit cost and other comprehensive loss	**$ (31)**	$ (5)	$ 20	**$ (28)**	$ 18	$ 26	**$ (6)**	$ (5)	$ 6
Estimated amounts that will be amortized from accumulated other comprehensive income over the next fiscal year									
Prior service (cost) credit	**$ —**	$ —	$ —	**$ 1**	$ —	$ —	**$ 1**	$ 1	$ 1
Net loss	**—**	(1)	(5)	**(1)**	(4)	(4)	**1**	—	—
Total estimated amortization	**$ —**	$ (1)	$ (5)	**$ —**	$ (4)	$ (4)	**$ 2**	$ 1	$ 1

The components of the net periodic benefit costs are as follows:

	Pension Plans						Post-Retirement Medical Benefit Plans		
	United States			International					
	2013	2012	2011	2013	2012	2011	2013	2012	2011
Service cost	**$ —**	$ 10	$ 8	**$ 9**	$ 8	$ 9	**$ 1**	$ 1	$ 1
Interest cost	**6**	7	7	**8**	9	9	**1**	2	3
Expected return on plan assets	**(11)**	(11)	(11)	**(11)**	(10)	(10)	**—**	—	—
Amortization	**1**	5	5	**4**	4	2	**(1)**	(1)	(1)
Settlement loss	**1**	—	—	**—**	—	—	**—**	—	—
Net periodic benefit cost	**$ (3)**	$ 11	$ 9	**$ 10**	$ 11	$ 10	**$ 1**	$ 2	$ 3

The rate assumptions associated with the pension and post-retirement medical benefit plans to determine benefit obligations and additional year-end information are as follows:

	Pension Plans				Post-Retirement Medical Benefit Plans	
	United States		International			
	2013	2012	2013	2012	2013	2012
Assumptions to determine benefit obligations						
Discount rate	**4.45%**	3.60%	**3.36%**	2.96%	**4.80%**	3.90%
Compensation rate increase	**n/a**	n/a	**2.74%**	2.59%	**n/a**	n/a
Measurement date	**Dec-31**	Dec-31	**Dec-31**	Dec-31	**Dec-31**	Dec-31
Additional year-end information						
Accumulated benefit obligation	**$ 169**	$ 178	**$ 271**	$ 268	**n/a**	n/a
Plans with accumulated benefit obligations in excess of plan assets:						
Projected benefit obligation	**$ —**	$ 178	**$ 189**	$ 206	**n/a**	n/a
Accumulated benefit obligation	**—**	178	**176**	183	**n/a**	n/a
Fair value of plan assets	**—**	158	**153**	140	**n/a**	n/a
Plans with projected benefit obligations in excess of plan assets:						
Projected benefit obligation	**$ —**	$ 178	**$ 189**	$ 299	**$ 39**	$ 47
Fair value of plan assets	**—**	158	**153**	228	**—**	—

The rate assumptions associated with the pension and post-retirement medical benefit plans to determine periodic pension costs are as follows:

	Pension Plans						Post-Retirement Medical Benefit Plans		
	United States			International					
	2013	2012	2011	2013	2012	2011	2013	2012	2011
Discount rate	**3.60%**	4.35%	5.05%	**2.96%**	3.52%	3.69%	**3.90%**	4.50%	5.25%
Expected rate of return on plan assets	**7.75%**	8.25%	8.25%	**4.87%**	4.98%	4.85%	**n/a**	n/a	n/a
Compensation rate increase	**n/a**	3.55%	3.55%	**2.59%**	2.95%	3.05%	**n/a**	n/a	n/a

The expected employer contributions and benefit payments are shown in the following table for the pension and post-retirement medical benefit plans:

Cash Flows	Year	Pension Plans		Post-Retirement Medical Benefit Plans[1]	Expected Medicare Subsidy Receipts
		United States	International		
Expected employer contributions	2014	$ —	$ 6	$ 2	n/a
Expected benefit payments for year ending December 31st	2014	13	6	2	—
	2015	13	6	2	—
	2016	13	8	2	—
	2017	13	7	3	—
	2018	13	8	3	—
	Next 5 years	58	48	13	2

(1) Expected payments for Post-Retirement Medical Benefit Plans are shown net of the expected Medicare subsidy receipts.

Pension Plans. For purposes of selecting a discount rate, the present value of the cash flows as of the measurement date is determined using the spot rates from the Mercer Above Mean Yield Curve, and based on the present values, a single equivalent discount rate is developed. This rate is the single uniform discount rate that, when applied to the same cash flows, results in the same present value of the cash flows as of the measurement date. The plans are assumed to continue in force for as long as the assets are expected to be invested. In estimating the expected long-term rate of return on assets, appropriate consideration is given to historical performance for the major asset classes held or anticipated to be held by the pension plans and to current forecasts of future rates of return for those asset classes. Cash flow and expenses are taken into consideration to the extent that the expected return would be affected by them. Because assets are held in qualified trusts, expected returns are not reduced for taxes.

The assets of the pension plans are invested with professional asset managers to produce a diversified portfolio. The Company believes the investments are sufficiently diversified to maintain a reasonable level of risk without unduly sacrificing return. Target asset allocations and weighted average asset allocations at December 31, 2013 are as follows:

	Target Allocations		Weighted Average Asset Allocations	
	U.S. Plan	International Plans	U.S. Plan	International Plans
Equity Securities	57–93%	38–50%	75%	45%
Real Estate	—	6–12%	—	10%
Debt Securities	10–40%	36–57%	25%	41%
Other	0–5%	0–10%	—	4%

Fair Value Measurements at December 31, 2013

Assets	Quoted Prices in Active Markets for Identical Assets (Level 1[1])	Significant Other Observable Inputs (Level 2[2])	Total
Real estate	$ —	$ 22	$ 22
Common/collective trust funds — equity	—	260	260
Common/collective trust funds — government debt	—	18	18
Common/collective trust funds — Corporate and other non-government debt	—	126	126
Common/collective trust funds — real estate	—	1	1
Cash and cash equivalents	5	4	9
Total	**$ 5**	**$ 431**	**$ 436**

Fair Value Measurements at December 31, 2012

Assets	Quoted Prices in Active Markets for Identical Assets (Level 1[(1)])	Significant Other Observable Inputs (Level 2[(2)])	Total
Corporate stocks — common	$ 8	$ —	$ 8
Government debt	8	—	8
Corporate and other non-government debt	16	—	16
Real estate	—	22	22
Common/collective trust funds — equity	—	223	223
Common/collective trust funds — government debt	—	12	12
Common/collective trust funds — Corporate and other non-government debt	—	88	88
Cash and cash equivalents	4	—	4
Other	—	5	5
Total	**$ 36**	**$ 350**	**$ 386**

(1) Level 1 instruments use observable market prices for the identical item in active markets and have the most reliable valuations.

(2) Level 2 instruments are valued through broker/dealer quotation or through market-observable inputs for similar items in active markets. Equity securities categorized as Level 2 assets are primarily non-exchange-traded commingled or collective funds where the underlying securities have observable prices available from active markets. Valuation is based on the net asset value of fund units held as derived from the fair value of the underlying assets.

Investment Strategy. The U.S. pension plan's overall investment strategy is to hold a mix of approximately 75 percent of investments in U.S. and International equities and 25 percent in bonds. Equities are managed in passive and managed funds across various asset classes. Bond funds contain government and investment-grade bonds.

The trustee has engaged an investment manager for the U.S. pension plan that has the responsibility of selecting investment fund managers with demonstrated experience and expertise, and funds with demonstrated historical performance meeting the pension plan's investment guidelines.

The UK pension plan's overall investment strategy is to hold a mix of approximately 70 percent of investments in equities (42 percent UK equities and 28 percent non-UK equities) and 30 percent in bonds. Equities are managed in passive and managed funds. Bond funds contain government and investment grade bonds. A small portion of investments are held in insured annuities.

The Swiss pension plan's overall target investment strategy is to achieve a mix of 27.5 percent equities, 54.5 percent bonds, 15 percent real estate and 3 percent other. Equities are invested in large Swiss companies and institutional funds. Bond funds contain government and investment-grade bonds. Real estate holdings are in an institutional real estate fund.

The trustees of the international plans have engaged institutions that are believed to be reputable to invest the various plans' assets in funds with demonstrated historical performance and manage the various plans' assets in accordance with investment guidelines developed by the trustees.

Post-Retirement Medical Benefit Plans. For purposes of selecting a discount rate, the present value of the cash flows as of the measurement date is determined using the spot rates from the Mercer Above Mean Yield Curve, and based on the present values, a single equivalent discount rate is developed. This rate is the single uniform discount rate that, when applied to the same cash flows, results in the same present value of the cash flows as of the measurement date. Assumed health care cost trend rates have a significant effect on the amounts reported for the post-retirement medical benefit plans. Medical costs were assumed to increase at an annual rate of 7.69 percent in 2013, decreasing ratably to a growth rate of 4.5 percent in 2030 and remaining at 4.5 percent per year thereafter. The effects of a one-percentage point increase or decrease in the assumed health care cost trend rates on the aggregate service and interest cost components and on the post-retirement benefit obligations are not material to the Company's consolidated financial statements. Benefits are funded as claims are paid.

401(k) Retirement Savings Plan. The Company's 401(k) retirement savings plan provides retirement benefits to eligible U.S. employees in addition to those provided by the pension plan. The 401(k) plan permits participants to voluntarily defer a portion of their compensation, subject to Internal Revenue Code limitations. The Company also contributes a percentage of the employee's salary per year to the account of each eligible employee plus a percentage of the employee's salary deferral. The Company's policy is to fully fund the 401(k) plan. The cost for the 401(k) plan was $22, $11 and $9 for the years ended December 31, 2013, 2012 and 2011 respectively.

NOTE 17: Other Assets and Liabilities

Other current assets

Other current assets are summarized as follows:

	December 31, 2013	December 31, 2012
Other receivables	**$ 36**	$ 36
Prepaid expenses	**22**	29
Certificates of deposit	**27**	27
Other current assets	**2**	3
Total other current assets	**$ 87**	$ 95

Other assets

Other assets are summarized as follows:

	December 31, 2013	December 31, 2012
Other investments	**$ 11**	$ 16
Cash value of life insurance policies	**34**	29
Deferred taxes	**11**	17
Long term certificates of deposit	**33**	—
Pension and post-retirement asset	**14**	—
Other non-current assets	**29**	27
Total other assets	**$ 132**	$ 89

Other current liabilities

Other current liabilities are summarized as follows:

	December 31, 2013	December 31, 2012
Legal and professional	**$ 5**	$ 6
Pension and post-retirement liability	**2**	3
Freight	**7**	7
Other accrued expenses	**63**	61
Total other current liabilities	**$ 77**	$ 77

Other liabilities

Other liabilities are summarized as follows:

	December 31, 2013	December 31, 2012
Deferred compensation	**$ 31**	$ 31
Non-current income taxes	**37**	33
Other non-current liabilities	**12**	10
Total other non-current liabilities	**$ 80**	$ 74

NOTE 18: Earnings Per Share

Basic EPS is calculated using the weighted average number of shares outstanding during each period. The diluted EPS calculation includes the impact of dilutive equity compensation awards.

A reconciliation of basic and diluted EPS, together with the related shares outstanding in millions for the years ended December 31, is as follows:

	2013	2012	2011
Net income available to common shareholders	**$ 491**	$ 460	$ 457
Weighted average shares			
Basic shares	**120**	121	121
Effect of dilutive securities—options outstanding	**1**	1	2
Diluted shares	**121**	122	123
Net income per share—Basic	**$ 4.09**	$ 3.80	$ 3.78
Net income per share—Diluted	**$ 4.06**	$ 3.77	$ 3.72

Potential common shares totaling 1 million were excluded from the calculation of weighted average shares for the years ended December 31, 2013 and 2012, because their effect was considered to be anti-dilutive. There were no common shares excluded from the calculation of weighted average shares for the year ended December 31, 2011.

NOTE 19: Share Repurchases

At December 31, 2013 and 2012, the Company had repurchased a total of 101 million and 99 million shares, respectively, of an authorized repurchase of 110 million shares. There were 119 million shares outstanding as of December 31, 2013. The Company expects to continue to offset in whole or in part the dilutive impact of issuing share-based incentive compensation with future share repurchases. The Company may repurchase additional shares, but the timing and amount, if any, will depend on market conditions and other factors.

NOTE 20: Accumulated Other Comprehensive Income

The following table shows the components of AOCI for the twelve months ended December 31, 2013.

	Foreign Currency Translation Adjustment Income (Loss), Net	Pension and Post-Retirement Benefit Plans Income (Loss), Net	Unrealized Gain (Loss) on Securities, Net	Unrealized Gain (Loss) on cash flow hedges, Net	Total
Beginning balance	$ 141	$ (78)	$ 3	$ 3	$ 69
Other comprehensive income before reclassification	—	51	3	4	58
Less: Amounts reclassified from accumulated other comprehensive income (loss) to net income	—	(4)	6	5	7
Net current-period other comprehensive income (loss)	—	55	(3)	(1)	51
Ending balance	$ 141	$ (23)	$ —	$ 2	$ 120

The following table shows the components of AOCI for the twelve months ended December 31, 2012.

	Foreign Currency Translation Adjustment Income (Loss), Net	Pension and Post-Retirement Benefit Plans Income (Loss), Net	Unrealized Gain (Loss) on Securities, Net	Unrealized Gain (Loss) on cash flow hedges, Net	Total
Beginning balance	$ 118	$ (88)	$ —	$ —	$ 30
Other comprehensive income before reclassification	23	4	3	3	33
Less: Amounts reclassified from accumulated other comprehensive income (loss) to net income	—	(6)	—	—	(6)
Net current-period other comprehensive income (loss)	23	10	3	3	39
Ending balance	$ 141	$ (78)	$ 3	$ 3	$ 69

The following table shows the components of AOCI for the twelve months ended December 31, 2011.

	Foreign Currency Translation Adjustment Income (Loss), Net	Pension and Post-Retirement Benefit Plans Income (Loss), Net	Unrealized Gain (Loss) on Securities, Net	Total
Beginning balance	$ 157	$ (66)	$ 4	$ 95
Other comprehensive income (loss) before reclassification	(39)	(26)	(3)	(68)
Less: Amounts reclassified from accumulated other comprehensive income (loss) to net income	—	(4)	1	(3)
Net current-period other comprehensive income (loss)	(39)	(22)	(4)	(65)
Ending balance	$ 118	$ (88)	$ —	$ 30

During 2013, amounts reclassified from AOCI include gains of $5 into cost of products and services sold and gains of $2 into SG&A. During 2012 and 2011, amounts reclassified from AOCI include losses of $6 and $3 into SG&A, respectively. These adjustments are net of immaterial tax effects.

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders
Sigma-Aldrich Corporation:

We have audited the accompanying consolidated balance sheets of Sigma-Aldrich Corporation and subsidiaries (the Company) as of December 31, 2013 and 2012, and the related consolidated statements of income, comprehensive income, stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2013. We also have audited the Company's internal control over financial reporting as of December 31, 2013, based on criteria established in *Internal Control - Integrated Framework (1992)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on these consolidated financial statements and an opinion on the Company's internal control over financial reporting based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audits of the consolidated financial statements included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Sigma-Aldrich Corporation and subsidiaries as of December 31, 2013 and 2012, and the results of their operations and their cash flows for each of the years in the three-year period ended December 31, 2013, in conformity with U.S. generally accepted accounting principles. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2013, based on criteria established in *Internal Control - Integrated Framework (1992)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

/s/ KPMG LLP

St. Louis, Missouri
February 6, 2014

Selected Quarterly Financial Data (Unaudited):

The following tables present certain unaudited consolidated quarterly financial information for each quarter of 2013 and 2012. Year-to-date EPS amounts may be different than the sum of the applicable quarters due to differences in weighted average shares outstanding for the respective periods.

	2013 Quarter Ended			
	March 31	June 30	Sept. 30	Dec. 31
Net sales	$ 675	$ 681	$ 664	$ 684
Gross profit	344	341	334	342
Net income	122	119	119	131
Net income per share—Basic	1.02	0.99	0.99	1.09
Net income per share—Diluted	1.01	0.98	0.98	1.08

Amounts impacting comparability include pretax third party costs related to merger and acquisition activity of $5 for the quarter ended June 30, 2013, pretax licensing dispute settlement costs of $7 for the quarter ended June 30, 2013 and pretax restructuring charges of $10 for the quarter ended September 30, 2013.

	2012 Quarter Ended			
	March 31	June 30	Sept. 30	Dec. 31
Net sales	$ 665	$ 664	$ 639	$ 655
Gross profit	355	340	324	328
Net income	117	115	112	116
Net income per share—Basic	0.97	0.95	0.93	0.97
Net income per share—Diluted	0.96	0.94	0.92	0.96

Amounts impacting comparability include pretax transaction cost related to recent acquisitions of $5 for the quarter ended March 31, 2012, and pretax restructuring charges of $0, $4, $4 and $1 for the quarters ended March 31, June 30, September 30, and December 31, 2012, respectively.

Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures.

Controls and Procedures

The Company's management, under the supervision and with the participation of the Company's CEO and CFO, carried out an evaluation of the effectiveness of the design and operation of the Company's disclosure controls and procedures as of December 31, 2013. Based upon their evaluation, the CEO and CFO concluded that the Company's disclosure controls and procedures (as defined in Rule 13a-15(e) under the Exchange Act) are effective as of that date to provide reasonable assurance that the information required to be disclosed by the Company in the reports it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC and that information required to be disclosed by the Company in the reports it files or submits under the Exchange Act is accumulated and communicated to the Company's management, including the CEO and the CFO, as appropriate to allow timely decisions regarding required disclosure. They have also determined in their evaluation that there was no change in the Company's internal controls over financial reporting during the quarter ended December 31, 2013 that has materially affected or is reasonably likely to materially affect the Company's internal control over financial reporting.

Management's Report On Internal Control Over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Exchange Act Rule 13a–15(f)). Under the supervision of and with the participation of management, including our principal executive officer and principal financial officer, we assessed the effectiveness of our internal control over financial reporting as of December 31, 2013. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in the Internal Control-Integrated Framework (1992). Management has concluded that, as of December 31, 2013, our internal control over financial reporting is effective based on these criteria.

Item 9B. Other Information.

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

Information under the captions "Board of Directors Nominees, Qualifications and Diversity," "Shareholder Proposals" and "Section 16(a) Beneficial Ownership Reporting Compliance" of the 2014 Proxy Statement, which will be filed within 120 days after December 31, 2013, is incorporated herein by reference. For information with respect to executive officers of the Company, see "Executive Officers of the Registrant" included in Item 1- Business of Part I of this Report.

Audit Committee and Audit Committee Financial Expert

Information under the caption "Directors Meetings and Committees—Audit Committee" of the 2014 Proxy Statement is incorporated herein by reference.

Code of Ethics

Information under the caption "Related Party Disclosure" of the 2014 Proxy Statement is incorporated herein by reference.

Item 11. Executive Compensation.

Information under the captions "Director Compensation," "Compensation Discussion and Analysis," "Compensation Committee Report" and "Information Concerning Executive Compensation" of the 2014 Proxy Statement is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

Information under the captions "Security Ownership of Directors, Executive Officers and Principal Beneficial Owners" and "Equity Compensation Plan Information" of the 2014 Proxy Statement is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

Information under the captions "Board of Directors Nominees, Qualifications and Diversity" and "Related Party Disclosure" of the 2014 Proxy Statement is incorporated herein by reference.

Item 14. Principal Accounting Fees and Services.

Information under the caption "Audit Firm Fee Summary" of the 2014 Proxy Statement is incorporated herein by reference.

PART IV

Item 15. Exhibits, Financial Statement Schedules.

(a) **Documents Filed as Part of this Report**

1 Financial Statements.

See Item 8 - Financial Statements and Supplementary Data of Part II of this Report.

2 Financial Statement Schedules.

All schedules are omitted as they are not applicable, not required or the information is included in the consolidated financial statements or related notes to the consolidated financial statements.

3 Exhibits.

See Index to Exhibits on page F-1 of this Report.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

SIGMA-ALDRICH CORPORATION
(Registrant)

By	/s/ Michael F. Kanan	February 6, 2014
	Michael F. Kanan, Vice President and Corporate Controller	Date

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

By	/s/ Rakesh Sachdev	February 6, 2014
	Rakesh Sachdev, President, Chief Executive Officer and Director (Principal Executive Officer)	Date
By	/s/ Jan A. Bertsch	February 6, 2014
	Jan A. Bertsch, Executive Vice President and Chief Financial Officer (Principal Financial Officer)	Date
By	/s/ Michael F. Kanan	February 6, 2014
	Michael F. Kanan, Vice President and Corporate Controller (Principal Accounting Officer)	Date
By	/s/ Rebecca M. Bergman	February 6, 2014
	Rebecca M. Bergman, Director	Date
By	/s/ George M. Church	February 6, 2014
	George M. Church, Director	Date
By	/s/ Michael L. Marberry	February 6, 2014
	Michael L. Marberry, Director	Date
By	/s/ W. Lee McCollum	February 6, 2014
	W. Lee McCollum, Director	Date
By	/s/ Avi M. Nash	February 6, 2014
	Avi M. Nash, Director	Date
By	/s/ Steven M. Paul	February 6, 2014
	Steven M. Paul, Director	Date
By	/s/ J. Pedro Reinhard	February 6, 2014
	J. Pedro Reinhard, Director	Date
By	/s/ D. Dean Spatz	February 6, 2014
	D. Dean Spatz, Director	Date
By	/s/ Barrett A. Toan	February 6, 2014
	Barrett A. Toan, Chairman and Director	Date

INDEX TO EXHIBITS

These Exhibits are numbered in accordance with the Exhibit Table of Item 601 of Regulation S-K:

Exhibit Number	Exhibit Description	Filed Herewith	Incorporated by Reference			
			Form	Period Ending	Exhibit	Filing Date
2.1	Agreement and Plan of Merger, dated January 8, 2012, by and among Sigma-Aldrich Corporation, Sigma-Aldrich Holding LLC, Sigma-Aldrich Acquisition LLC, BioReliance Holdings, Inc., and Avista Capital Partners GP, LLC		8-K		2.1	01/09/12
3.1	Certificate of Incorporation, as amended		10-K	12/31/11	3.1	02/13/12
3.2	Sigma-Aldrich Corporation By-Laws, as amended		10-Q	06/30/12	3.2	07/24/12
4.1	Indenture dated October 28, 2010, between Sigma-Aldrich Corporation and Deutsche Bank Trust Company Americas, as trustee		8-K		4.1	10/28/10
4.2	Form of Global Note representing the 3.375% Notes due November 1, 2020, dated as of October 28, 2010, between Sigma- Aldrich Corporation and Deutsche Bank Trust Company Americas, as Trustee		8-K		4.2	10/28/10
10.1	Form of Change in Control Agreement for Named Executive Officer (similar agreements also exist for certain executive officers)*		8-K		10(b)	11/16/10
10.2	Sigma-Aldrich Corporation 2003 Long-Term Incentive Plan*		Def. Proxy		Appendix A	03/14/11
10.3	Form of Performance Share Award Agreement, issued under the Sigma-Aldrich Corporation 2003 Long-Term Incentive Plan*		8-K		10(a)	02/14/11
10.4	Form of Incentive Stock Option Agreement issued under the Sigma-Aldrich Corporation 2003 Long-Term Incentive Plan*		8-K		10(b)	02/14/11
10.5	Form of Non-Qualified Stock Option Agreement issued under the Sigma-Aldrich Corporation 2003 Long-Term Incentive Plan*		8-K		10(c)	02/14/11
10.6	Form of Restricted Stock Unit Agreement issued under the Sigma-Aldrich Corporation 2003 Long-Term Incentive Plan*		8-K		10(a)	02/23/11
10.7	Sigma-Aldrich Corporation Cash Bonus Plan*		8-K		10.1	05/06/10
10.8	Form of Performance Share Award Agreement (revised), issued under the Sigma-Aldrich Corporation 2003 Long-Term Incentive Plan*		10-Q	03/31/12	10.1	04/24/12
10.9	Form of Restricted Stock Unit Agreement (annual grant), issued under the Sigma-Aldrich Corporation 2003 Long-Term Incentive Plan*		10-Q	03/31/13	10.1	04/25/13
10.10	Form of Performance Share Award Agreement (revised to replace ROE with ROIC as performance metric), issued under the Sigma-Aldrich Corporation 2003 Long-Term Incentive Plan*		10-Q	03/31/13	10.2	04/25/13
10.11	Executive Employment Agreement dated as of February 14, 2011, by and between Sigma-Aldrich Corporation and Rakesh Sachdev *		8-K		10(a)	02/14/11
10.12	Amended and Restated Executive Employment Agreement, dated as of September 3, 2013, by and between Sigma-Aldrich Corporation and Rakesh Sachdev*		10-Q	09/30/13	10.1	10/22/13
10.13	Performance Share Award Agreement for Rakesh Sachdev under the Sigma-Aldrich Corporation 2003 Long-Term Incentive Plan (Five-Year Vest), dated as of September 3, 2013*		10-Q	09/30/13	10.2	10/22/13

10.14	Performance Share Award Agreement for Rakesh Sachdev under the Sigma-Aldrich Corporation 2003 Long-Term Incentive Plan (Three-Year Vest), dated as of September 3, 2013*		10-Q	09/30/13	10.3	10/22/13
10.15	Non-Qualified Stock Option Agreement for Rakesh Sachdev under the Sigma-Aldrich Corporation 2003 Long-Term Incentive Plan, dated as of September 3, 2013*		10-Q	09/30/13	10.4	10/22/13
10.16	Description of Material Compensatory Arrangements Contained in Offer Letter Between Sigma-Aldrich Corporation and Jan A. Bertsch*		10-Q	03/31/12	10.2	04/24/12
10.17	Form of Indemnification Agreement (similar agreements also exist for certain executive officers)*		8-K		10(a)	11/16/10
10.18	European Revolving Credit Facility Agreement and Form due March 13, 2014, dated March 13, 2007, between Sigma-Aldrich Corporation and a syndicate of banks		8-K		10.1	03/14/07
10.19	Credit Agreement, dated as of May 10, 2012, by and among Sigma-Aldrich Corporation, as Borrower, certain lenders party thereto and Wells Fargo Bank, National Association, as Administrative Agent		10-Q	06/30/12	10.1	07/24/12
10.20	Amendment No. 1 to Credit Agreement, dated as of December 2, 2013, by and among Sigma-Aldrich Corporation, as Borrower, certain lenders party thereto and Wells Fargo Bank, National Association, as Administrative Agent	X				
10.21	2005 Flexible Deferral Plan*		S-8		4.1	11/09/11
10.22	First Amendment to 2005 Flexible Deferral Plan*		S-8		4.2	11/09/11
10.23	Deferred Election Form to 2005 Flexible Deferral Plan (contained as Exhibit 1 to the plan)*		10-K	12/31/10	10(ab)	02/09/11
10.24	Supplemental Retirement Plan*		10-K	12/31/10	10(ac)	02/09/11
10.25	401(k) Restoration Plan*	X				
21	Subsidiaries of Registrant	X				
23	Consent of Independent Registered Public Accounting Firm	X				
31.1	Certification of Chief Executive Officer required by Rule 13a-15(e) and 15d-15(e) under the Exchange Act	X				
31.2	Certification of Chief Financial Officer required by Rule 13a-15(e) and 15d-15(e) under the Exchange Act	X				
32.1	CEO Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes- Oxley Act of 2002	X				
32.2	CFO Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes- Oxley Act of 2002	X				
101.INS	XBRL Instance Document	X				
101.SCH	XBRL Taxonomy Extension Schema Document	X				
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document	X				
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document	X				
101.LAB	XBRL Taxonomy Extension Label Linkbase Document	X				
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document	X				
*	Represents management contract or compensatory plan or arrangement					

Exhibit 10.20

AMENDMENT NO. 1

to

CREDIT AGREEMENT

THIS AMENDMENT NO. 1 TO CREDIT AGREEMENT (the "Amendment") is made as of December 2, 2013 (the "Effective Date"), by and among SIGMA-ALDRICH CORPORATION (the "Borrower"), the financial institutions listed on the signature pages hereto (the "Lenders") and WELLS FARGO BANK, NATIONAL ASSOCIATION, in its capacity as administrative agent (the "Administrative Agent") under that certain Credit Agreement dated as of May 10, 2012 by and among the Borrower, the financial institutions party thereto and the Administrative Agent (as amended, supplemented or otherwise modified prior to the date hereof, the "Credit Agreement"). Defined terms used herein and not otherwise defined herein shall have the meaning given to them in the Credit Agreement.

WITNESSETH

WHEREAS, the Borrower, the Lenders and the Administrative Agent are parties to the Credit Agreement; and

WHEREAS, the Borrower has requested that the Administrative Agent and the Lenders amend the Credit Agreement to extend the Revolving Loan Termination Date on the terms and conditions set forth herein;

WHEREAS, the Borrower, the Administrative Agent and the Lenders have agreed to amend the Credit Agreement on the terms and conditions set forth herein;

NOW, THEREFORE, in consideration of the premises set forth above, the terms and conditions contained herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto have agreed to the following amendments to the Credit Agreement:

1. Amendments to the Credit Agreement. Effective as of the Effective Date and subject to the satisfaction of the conditions precedent set forth in Section 2 below, the Credit Agreement is hereby amended as follows:

    1.1. The definition of "Revolving Loan Termination Date" appearing in Section 1.1 of the Credit Agreement is amended to delete the reference to "May 10, 2017" appearing therein and to substitute "May 10, 2018" therefor.

    1.2. Schedule II to the Credit Agreement (Revolving Commitments) is amended and restated in its entirety as set forth on Annex I hereto.

    1.3. Schedule 4.9 to the Credit Agreement (Subsidiaries) is amended and restated in its entirety as set forth on Annex II hereto.

2. Conditions of Effectiveness. The effectiveness of this Amendment is subject to the conditions precedent that:

    (a) the Administrative Agent shall have received:

(i) duly executed counterparts of this Amendment from the Borrower, each Lender and the Letter of Credit Issuer;

(ii) duly certified resolutions of the Borrower (in form and substance reasonably acceptable to the Administrative Agent) authorizing the execution, delivery and performance of this Amendment and of the Credit Agreement as amended hereby; and

(iii) payment of all fees and expenses due and payable as of the date hereof.

(b) the Administrative Agent shall have made such reallocations of each Lender's Revolving Commitment Percentage of the Revolving Credit Exposure under the Credit Agreement as are necessary such that the Revolving Credit Exposure with respect to such Lender reflects such Lender's Revolving Commitment Percentage of the Revolving Credit Exposure under the Credit Agreement as amended hereby. The Borrower hereby agrees to compensate each Lender for any and all losses, costs and expenses incurred by such Lender in connection with the sale and assignment of any LIBOR Loans and the reallocation described in this clause (b), in each case on the terms and in the manner set forth in Section 2.12 of the Credit Agreement.

3. Representations and Warranties and Reaffirmations of the Borrower.

3.1. The Borrower hereby represents and warrants that (i) this Amendment and the Credit Agreement as previously executed and as modified hereby constitute legal, valid and binding obligations of the Borrower and are enforceable against the Borrower in accordance with their terms (except as enforceability may be limited by bankruptcy, insolvency, fraudulent conveyances, reorganization or similar laws relating to or affecting the enforcement of creditors' rights generally, general equitable principles (whether considered in a proceeding in equity or at law) and requirements of reasonableness, good faith and fair dealing), and (ii) no Default or Event of Default has occurred and is continuing.

3.2. Upon the effectiveness of this Amendment and after giving effect hereto, the Borrower hereby reaffirms all covenants, representations and warranties, in all material respects (or, to the extent qualified by materiality or material adverse effect, in all respects), made in the Credit Agreement as modified hereby, and agrees that all such covenants, representations and warranties shall be deemed to have been remade as of the Effective Date, except that any such covenant, representation, or warranty that was made as of a specific date shall be considered reaffirmed only as of such date.

4. Reference to the Effect on the Credit Agreement.

4.1. Upon the effectiveness of Section 1 hereof, on and after the date hereof, each reference in the Credit Agreement (including any reference therein to "this Credit Agreement," "hereunder," "hereof," "herein" or words of like import referring thereto) or in any other Loan Document shall mean and be a reference to the Credit Agreement as modified hereby.

4.2. Except as specifically modified above, the Credit Agreement and all other documents, instruments and agreements executed and/or delivered in connection therewith, shall remain in full force and effect, and are hereby ratified and confirmed.

4.3. The execution, delivery and effectiveness of this Amendment shall not operate as a waiver of any right, power or remedy of the Administrative Agent or the Lenders, nor constitute a waiver of any provision of the Credit Agreement or any other documents, instruments and agreements executed and/or delivered in connection therewith.

5. GOVERNING LAW. THIS AMENDMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK.

6. Headings. Section headings in this Amendment are included herein for convenience of reference only and shall not constitute a part of this Amendment for any other purpose.

7. Counterparts. This Amendment may be executed by one or more of the parties to this Amendment on any number of separate counterparts and all of said counterparts taken together shall be deemed to constitute one and the same instrument. Delivery of a counterpart of this Amendment by facsimile or other electronic transmission shall be effective as delivery of a manually executed counterpart of this Amendment.

[REMAINDER OF PAGE INTENTIONALLY BLANK]

IN WITNESS WHEREOF, this Amendment has been duly executed as of the day and year first above written.

SIGMA-ALDRICH CORPORATION,
as the Borrower

By: /s/ Jan A. Bertsch
Name: Jan Bertsch
Title: Executive Vice President and Chief Financial Officer

By: /s/ Mike Hollenkamp
Name: Mike Hollenkamp
Title: Vice President and Treasurer

WELLS FARGO BANK, NATIONAL ASSOCIATION,
as Administrative Agent, as Letter of Credit Issuer and as a Lender

By: /s/ Daniel R. Van Aken
Name: Daniel R. Van Aken
Title: Director

BANK OF AMERICA, N.A., as a Lender

By: /s/ Patricia M. Watson
Name: Patricia M. Watson
Title: Senior Vice President

JPMORGAN CHASE BANK, N.A., as a Lender

By: /s/ Krys Szremski
Name: Krys Szremski
Title: Vice President

THE BANK OF TOKYO-MITSUBISHI UFJ, LTD., as a Lender

By: /s/ Mark Campbell
Name: Mark Campbell
Title: Authorized Signatory

U.S. BANK NATIONAL ASSOCIATION, as a Lender

By: /s/ Kenneth R. Fieler
Name: Kenneth R. Fieler
Title: Vice President

DEUTSCHE BANK AG NEW YORK BRANCH, as a Lender

By: /s/ Ming K. Chu
Name: Ming K. Chu
Title: Vice President

By: /s/ Heidi Sandquist
Name: Heidi Sandquist
Title: Director

MORGAN STANLEY BANK, N.A., as a Lender

By: /s/ Kelly Chin
Name: Kelly Chin
Title: Authorized Signatory

COMMERCE BANK, as a Lender

By: /s/ Ben Costello
Name: Ben Costello
Title: Officer

THE NORTHERN TRIST COMPANY, as a Lender

By: /s/ Roger McDougal
Name: Roger McDougal
Title: Senior Vice President

SCHEDULE II

REVOLVING COMMITMENTS

Lender	Commitment
Wells Fargo Bank, National Association	$ 100,000,000
Bank of America, N.A.	$ 100,000,000
JPMorgan Chase Bank, N.A.	$ 100,000,000
The Bank of Tokyo-Mitsubishi UFJ. Ltd.	$ 75,000,000
U.S.Bank National Association	$ 75,000,000
Deutsche Bank AG New York Branch	$ 50,000,000
Morgan Stanley Bank, N.A.	$ 50,000,000
Commerce Bank	$ 25,000,000
The Northern Trust Company	$ 25,000,000
Total Revolving Commitments	$ 600,000,000

SCHEDULE 4.9

SUBSIDIARIES

Attached.

SCHEDULE 4.9

Sigma-Aldrich Corporation
Subsidiaries List as of November 18, 2013

Name of Entity	Principal Place of Business	Description of Operations	State or Country of Incorporation	Year of Incorporation
[6, 8] Sigma-Aldrich Corporation - St. Louis, MO		Manufacturer/ Sales Chemicals	Delaware	1975
1. [1, 8] Sigma-Aldrich Co. LLC	St. Louis, Missouri	Manufacturer/ Sales Chemicals	Delaware	2011
(A) Sigma Second Street Redevelopment Corporation	St. Louis, Missouri	Real Estate	Missouri	1983
(B) Barton/Second Streets Redevelopment Corp.	St. Louis, Missouri	Real Estate	Missouri	1988
(C) Barton Real Estate Holdings, Inc.	St. Louis, Missouri	Real Estate	Missouri	1988
(D) Sigma Redevelopment Corporation	St. Louis, Missouri	Real Estate	Missouri	1979
(E) 3506 South Broadway Redevelopment Corp.	St. Louis, Missouri	Real Estate	Missouri	1995
(F) Second President Properties Company	St. Louis, Missouri	Real Estate	Missouri	1988
(G) Olive/Ewing/Laclede Redevelopment Corporation	St. Louis, Missouri	Real Estate	Missouri	2000
(H) Midwest Consultants Co.	St. Louis, Missouri	Real Estate	Missouri	1971
(I) Sigma-Aldrich China, Inc.	Shanghai, China	Sales of Chemicals	Missouri	1990
(J) Cerilliant Corporation	Round Rock, Texas	Manufacturer	Texas	2000
(K) Sigma-Aldrich RTC, Inc.	Laramie Wyoming	Manufacturer	Delaware	2010
(L) Supelco, Inc.	Bellefonte, Pennsylvania	Manufacturer	Delaware	1996
(M) FMI Holdings, Inc.	St. Louis, Missouri	Dormant/ Inactive	Delaware	1998
(N) Sigma Chemical Corp.	St. Louis, Missouri	Dormant/ Inactive	Missouri	2001
(O) Sigma-Genosys of Texas LLC	The Woodlands, Texas	Manufacturer	Texas	1987
(P) Sigma-Aldrich Manufacturing LLC	St. Louis, Missouri	Manufacturer	Missouri	2004
(Q) Aldrich Chemical Co. LLC	Milwaukee, Wisconsin	Manufacturer	Delaware	1996
(i) GLM Holdings, Inc.	Milwaukee, Wisconsin	Dormant/ Inactive	Wisconsin	1991
(i) Aldrich-Boranes, Inc.	Milwaukee, Wisconsin	Dormant/ Inactive	Delaware	1989
(i) Aldrich-APL, LLC	Urbana, Illinois	Manufacturer	Illinois	1995
(R) Sigma-Aldrich Business Holdings, Inc.	St. Louis, Missouri	Real Estate	Delaware	1996

		(i) Sigma-Aldrich Research Biochemicals, Inc.	Natick, Massachusetts	Manufacturer	Delaware	1997
	(S)	Sigma-Aldrich Lancaster, Inc.	St. Louis, Missouri	Holding Company	Missouri	1996
		(i) Techcare Systems, Inc.	St. Louis, Missouri	Distributor & Sales	California	1984
	(T)	Research Organics, Inc.	Cleveland, Ohio	Manufacturer	Ohio	1966
	(U)	Research Organics Foreign Trade Corporation	Cleveland, Ohio	Foreign Trade Corporation	Ohio	2008
	(V)	S and F Properties, Inc.	Cleveland, Ohio	Real Estate	Ohio	1986
	(W)	KL Acquisition Corp.	St. Louis, Missouri	Holding Company	Missouri	1990
		(i) Sigma-Aldrich Rus	Moscow, Russia	Sales of Chemicals	Russia	2005
		(i) Chemical Trade Limited	Moscow, Russia	Sales of Chemicals	Russia	1996
		(i) MedChem Limited	Moscow, Russia	Sales of Chemicals	Russia	1997
		(ii) SAF-Lab	Moscow, Russia	Sales of Chemicals	Russia	1998
		(ii) TechMed Biochem Limited	Moscow, Russia	Dormant/ Inactive	Russia	1994
	(X)	Sigma-Aldrich Logistik GmbH	Steinheim, Germany	Distributor	Germany	2004
	(Y)	[1] Sigma-Aldrich Grundstuecks GmbH & Co. K.G.	Steinheim, Germany	Real Estate	Germany	1974
	(Z)	Sigma-Aldrich Israel Ltd.	Rehovot, Israel	Manufacturer & Sales	Israel	1969
2.	[1]	Sigma-Aldrich Verwaltungs GmbH	Steinheim, Germany	Holding Company	Germany	1983
3.	[2, 6]	Sigma-Aldrich, Inc.	St. Louis, Missouri	Sales & Marketing	Wisconsin	1996
4.		Sigma-Aldrich Finance Co.	Hamilton, Bermuda	Holding Company	Missouri	1996
5.		SAFC Hitech, Inc.	Haverhill, Massachusetts	Manufacturing	Delaware	1996
6.		Sigma-Aldrich Insurance Company Ltd.	Hamilton, Bermuda	Insurance Company	Bermuda	2002
7.		SAFC, Inc.	Madison, Wisconsin	Pharmaceuticals	Wisconsin	1990
8.		SAFC-JRH Holding, Inc.	Lenexa, Kansas	Holding Company	Delaware	1998
	(A)	SAFC Biosciences, Inc.	Lenexa, Kansas	Manufacturer	Delaware	1994
9.		SAFC Carlsbad, Inc.	Carlsbad, California	Services	California	2001
10.		Sigma-Aldrich Holding LLC	St. Louis, Missouri	Holding Company	Delaware	2012
	(A)	BioReliance Holdings, Inc.	Rockville, Maryland	Holding Company	Delaware	2007
		(i) BioReliance Intermediate, Inc.	Rockville, Maryland	Holding Company	Delaware	2007
		(ii) BioReliance Corporation	Rockville, Maryland	Testing Services	Delaware	1996
		(ii) BioReliance U.K. Acquisition Limited	Glasgow, Scotland UK	Holding Company	United Kingdom	2007

		(iii) BioReliance Limited	Glasgow, Scotland UK	Testing Services	United Kingdom	1990
		(iv) BioReliance KK	Tokyo, Japan	Sales of Chemicals	Japan	2008
		(iv) BioReliance Limited India	Bangalore, India	Branch/Liaison Office	India	
11.	Sigma-Aldrich Subsidiary I Corp.		St. Louis, Missouri	Holding Company	Delaware	2013
12.	[8] Sigma-Aldrich (Switzerland) Holding AG		Buchs, Switzerland	Holding Compnay	Switzerland	1950
	(A) [3, 4, 5, 7, 9] Sigma-Aldrich International GmbH		St. Gallen, Switzerland	Manufacturer/ Sales Chemicals	Switzerland	1999
	(i) Sigma-Aldrich Chemie GmbH		Buchs, Switzerland	Manufacturer	Switzerland	2011
	(i) Sigma-Aldrich Production GmbH		Buchs, Switzerland	Manufacturer	Switzerland	1999
	[10] (i) Sigma-Aldrich Oceania Pty. Ltd.		Castle Hill, NSW, Australia	Holding Company	Australia	2005
	[10] (ii) Sigma-Aldrich Pty., Ltd.		Castle Hill, NSW, Australia	Sales of Chemicals	Australia	1991
		(iii) SAFC Biosciences Pty. Ltd.	Victoria, NSW, Australia	Manufacturer	Austalia	2002
		(iii) Proligo Australia Pty. Limited	Castle Hill, NSW, Australia	Dormant/ Inactive	Australia	1997
	[10] (ii) Sigma-Aldrich Australian General Partnership		Castle Hill, NSW, Australia	Holding Company	Australia	2005
	(ii) Sigma-Aldrich New Zealand Co.		Auckland, New Zealand	Sales of Chemicals	New Zealand	2005
	(i) Sigma-Aldrich B.V.		Zwijndrecht, Netherlands	Holding Company	Netherlands	2000
		(ii)Sigma-Aldrich Chemie Holding GmbH	Munich, Germany	Holding Company	Germany	1985
		(iii) Sigma-Aldrich Chemie GmbH	Steinheim, Germany	Manufacturer	Germany	1974
		(iii) Sigma-Aldrich Producktions GmbH	Steinheim, Germany	Manufacturer	Germany	1998
		(iii) Sigma-Aldrich Biochemie GmbH	Hamburg, Germany	Manufacturer	Germany	1974
		(iv) Sigma-Aldrich Laborchemikalien GmbH	Seelze, Germany	Manufacturer	Germany	1997
	(i) Sigma-Aldrich Global S.a.r.l.		Luxembourg	Holding Company	Luxembourg	2010
	(i) Sigma-Aldrich S.a.r.l.		Luxembourg	Holding Company	Luxembourg	2010
		(ii) Sigma-Aldrich Canada Co.	Oakville, Ontario, Canada	Sales of Chemicals	Canada	1980

(i) Sigma-Aldrich Financial Services Limited	Dublin, Ireland	Holding Company	United Kingdom	1998
[7, 9] (i) Sigma-Aldrich Pte. Ltd.	Singapore, Singapore	Sales of Chemicals	Singapore	1994
(ii) Sigma-Aldrich (M) Sdn. Bhd.	Selangor, Malaysia	Sales of Chemicals	Malaysia	1997
(ii) Sigma-Aldrich Chemicals Private Ltd.	Bangalore, India	Manufacturer/ Sales Chemicals	India	2003
(ii) Sigma-Aldrich Pte. Ltd. VN R.O. (Branch)	Ho Chi Minh City, Vietnam	Branch/Liaison Office	Vietnam	2008
(ii) Sigma-Aldrich Holding Ltd.	Kyunggi do, Korea	Holding Company	Korea	1995
(iii) Sigma-Aldrich Korea Ltd.	Kyunggi do, Korea	Sales of Chemicals	Korea	2006
[7] (ii) Sigma-Aldrich Quimica, S.de R.L. de C.V.	Toluca, Mexico	Sales of Chemicals	Mexico	1993
(i) Silverberry Limited	Arklow, Ireland	Holding Company	Ireland	1999
(ii) Shrawdine Limited	Arklow, Ireland	Holding Company	Ireland	1999
(iii) Sigma-Aldrich Ireland Ltd.	Arklow, Ireland	Manufacturer/ Sales Chemicals	Ireland	1997
(iv) SAFC Arklow Limited	Arklow, Ireland	Dormant/ Inactive	Ireland	1982
[9] (i) Sigma-Aldrich spol. s.r.o.	Praque, Czech Republic	Sales of Chemicals	Czech Republic	1992
(ii) Sigma-Aldrich spol. s.r.o. organizacna-zlozka (Branch)	Bratislava, Slovakia	Sales of Chemicals	Slovakia	2009
(i) Sigma-Aldrich Denmark ApS	Broenby, Denmark	Sales of Chemicals	Denmark	1998
(i) Sigma-Aldrich Finland Oy	Helsinki, Finland	Sales of Chemicals	Finland	1994
(i) Sigma-Aldrich Kft.	Budapest, Hungary	Sales of Chemicals	Hungry	1993
(i) Sigma-Aldrich Norway AS	Oslo, Norway	Sales of Chemicals	Norway	1996
(i) Sigma-Aldrich Sp. z.o.o.	Poznan, Poland	Sales of Chemicals	Poland	1994
(i) Sigma-Aldrich Quimica S.L.	Madrid, Spain	Sales of Chemicals	Spain	1989
(ii) Sigma-Aldrich Quimica S.A. (Branch)	Sintra, Portugal	Sales of Chemicals	Portugal	1998
[4,5] (i) Sigma-Aldrich Sweden AB	Stockholm, Sweden	Sales of Chemicals	Sweden	1954
[5] (ii) Sigma-Aldrich de Argentina S.A.	Buenos Aires, Argentina	Sales of Chemicals	Argentina	1997
(ii) Sigma-Aldrich International GmbH (Branch)	Singapore, Singapore	Branch Office	Singapore	2013
[4] (i) Sigma-Aldrich Quimica Ltda. (Chile)	Santiago, Chile	Sales of Chemicals	Chile	2009

(i) Sigma-Aldrich (Shanghai) Trading Co., Ltd.	Shanghai, China	Sales of Chemicals	China	2005
(i) Sigma-Aldrich Hong Kong Holding Limited	Wan Chai, Hong Kong	Holding Company	Hong Kong	2007
(i) Sigma-Aldrich (Wuxi) Life Science & Technology Co., Ltd.	Jiangsu, China	Manufacturer/ Sales Chemicals	China	2008
(i) Sigma-Aldrich Japan G.K.	Tokyo, Japan	Sales of Chemicals	Japan	1986
(i) Sigma-Aldrich (Pty.) Ltd.	Kempton Park, South Africa	Sales of Chemicals	South Africa	1995
[3] (i) Sigma-Aldrich BVBA/SPRL	Bornem, Belgium	Sales of Chemicals	Belgium	1984
(i) Sigma-Aldrich Chemie B.V.	Zwijndrecht, Netherlands	Sales of Chemicals	Netherlands	1995
[3] (i) Sigma-Aldrich Italia S.r.l.	Milan, Italy	Holding Company	Italy	1987
(ii) Sigma-Aldrich S.r.l.	Milan, Italy	Sales of Chemicals	Italy	2000
(ii) Sigma-Aldrich Handels GmbH	Vienna, Austria	Sales of Chemicals	Austria	1993
(i) Sigma-Aldrich Holding S.a.r.l.	Lyon, France	Holding Company	France	2005
(ii)Aldrich Chemical Foreign Holding LLC	St. Louis, Missouri	Holding Company	Missouri	1989
(iii) Sigma-Aldrich Chimie SNC Partnership	Lyon, France	Holding Company	France	1989
(iv) Sigma-Aldrich Chimie S.a.r.l.	Lyon, France	Sales of Chemicals	France	1987
(ii)Sigma Chemical Foreign Holding LLC	St. Louis, Missouri	Holding Company	Missouri	1989
(B) Sigma-Aldrich Company Limited	Poole, England	Manufacturer/ Sales Chemicals	United Kingdom	1987
(i) Sigma- Aldrich Holdings Ltd.	Poole, England	Dormant/ Inactive	United Kingdom	1985
(ii) Sigma-Genosys Limited	Poole, England	Dormant/ Inactive	United Kingdom	1997
(ii) Sigma Chemical Co. Ltd.	Poole, England	Dormant/ Inactive	United Kingdom	1963
(iii)Wessex Biochemicals Ltd.	Poole, England	Dormant/ Inactive	United Kingdom	1963
(ii) Aldrich Chemical Co. Ltd.	Poole, England	Dormant/ Inactive	United Kingdom	1959
(iii) Webnest Ltd.	Poole, England	Dormant/ Inactive	United Kingdom	1973
(ii) Bristol Organics Ltd.	Poole, England	Dormant/ Inactive	United Kingdom	1970
(ii) B-Line Systems Limited	Poole, England	Dormant/ Inactive	United Kingdom	1990
(ii) UFC Ltd.	Poole, England	Dormant/ Inactive	United Kingdom	1983
(i) Pharmorphix Limited	Poole, England	Dormant/ Inactive	United Kingdom	2003

		(i) SAFC Biosciences Limited	Andover, England	Manufacturer	United Kingdom	1999
		(i) Epichem Group Limited	Bromborough, England	Holding Company	United Kingdom	1989
		(ii) SAFC Hitech Limited	Bromborough, England	Manufacturer	United Kingdom	1982
		(ii) SAFC Hitech Taiwan Co. Ltd.	Kaohsuing, Taiwan	Manufacturer/ Sales Chemicals	Taiwan	2001
		(ii) SAFC Hitech (Shanghai) Co. Ltd.	Waigaopiao, China	Sales of Chemicals	China	2004
		(ii) SAFC Hitech Korea Ltd.	Kyunggi do, Korea	Dormant/ Inactive	Korea	2005
	(C)	Fluka Chemical Corp.	St. Louis, Missouri	Dormant/ Inactive	Delaware	1996
	(D)	Fluka Chemical Company, Ltd.	Poole, England	Dormant/ Inactive	United Kingdom	1967
13.	[2, 6, 8]	Sigma-Aldrich Foreign Holding Co.	St. Louis, Missouri	Holding Company	Missouri	1989
	(A)	Sigma-Aldrich (OM) Ltd.	Athens, Greece	Sales of Chemicals	Greece	1997
	(B)	Sigma-Aldrich India (Branch)	Bangalore, India	Branch/Liaison Office	India	1992
[2]	(C)	Sigma-Aldrich Brasil Ltda.	Sao Paulo, Brazil	Sales of Chemicals	Brazil	1992
		(i) Vetec Quimica Fina Ltda.	Rio de Janeiro, Brazil	Manufacturer/ Sales Chemicals	Brazil	1978
[6]	(D)	Sigma-Aldrich (Thailand) Co., Ltd.	Bangkok, Thailand	Sales of Chemicals	Thailand	2010

The above colors represent the following:

— Dormant/Inactive Company

— Branch Office

[1] Ownership of Sigma-Aldrich Grundstuecks GmbH & Co. KG (Germany): Sigma-Aldrich Co. LLC - 94% and Sigma-Aldrich Verwaltungs GmbH - 6%.

[2] Ownership of Sigma-Aldrich Brasil Ltda.: Sigma-Aldrich Foreign Holding Co. - 76.7% and Sigma-Aldrich, Inc. - 23.3%.

[3] Ownership of Sigma-Aldrich BVBA/SPRL (Belgium): Sigma-Aldrich International GmbH - 99.96% and Sigma-Aldrich Italia Srl - .04%.

[4] Ownership of Sigma-Aldrich Quimica Ltda. (Chile): Sigma-Aldrich International GmbH - 99.99% and Sigma-Aldrich Sweden AB - .1.

[5] Ownership of Sigma-Aldrich de Argentina S.A.: Sigma-Aldrich Sweden AB - 51.49% and Sigma-Aldrich International GmbH - 48.51%.

[6] Ownership of Sigma-Aldrich (Thailand) Co., Ltd.: Sigma-Aldrich Foreign Holding Co. - 98%, Sigma-Aldrich Corporation - 1%, Sigma-Aldrich, Inc. - 1%.

[7] Ownership of Sigma-Aldrich Quimica S. de R.L. de C.V. (Mexico): Sigma-Aldrich Pte. Ltd. (Singapore) - 99.998% and Sigma-Aldrich International GmbH - .002%.

[8] Ownership of Sigma-Aldrich (Switzerland) Holding AG: Sigma-Aldrich Corporation - 73.94%, Sigma-Aldrich Co. LLC - 13.69%, Sigma-Aldrich Foreign Holding Co. - 12.37%.

[9] Ownership of Sigma-Aldrich spol. s.r.o. (Czech Republic): Sigma-Aldrich International GmbH - 99.683% and Sigma-Aldrich Pte. Ltd. (Singapore) - .317%.

[10] Ownership of Sigma-Aldrich Australia General Partnership: Sigma-Aldrich Oceania Pty. Ltd. - 99% and Sigma-Aldrich Pty. Ltd. - 1%.

Exhibit 10.25

SIGMA ALDRICH 401(k) RESTORATION PLAN

SIGMA ALDRICH 401(k) RESTORATION PLAN

Table of Contents

SIGMA ALDRICH 401(k) RESTORATION PLAN

(as adopted effective January 1, 2013)

SIGMA ALDRICH 401(k) RESTORATION PLAN

WHEREAS, Sigma-Aldrich Corporation maintains a form of profit sharing plan known as the "SIGMA-ALDRICH 401(K) RETIREMENT SAVINGS PLAN" ("401(k) Plan") designed to comply with the provisions of the United States Internal Revenue Code (the "Code") and the Employee Retirement Income Security Act of 1974 ("ERISA") applicable to tax-qualified employee benefit plans; and

WHEREAS, the compensation of each participant in the 401(k) Plan that exceeds the limit under Section 401(a)(17) of the Code for any year cannot be taken into account under the 401(k) Plan; and

WHEREAS, Sigma-Aldrich Corporation desires to adopt a nonqualified deferred compensation plan under which amounts equal to employer contributions for participants in the 401 (k) Plan which cannot be made due to the limit under Section 401(a)(17) of the Code will be credited.

ADOPTION OF THE PLAN AND EFFECTIVE DATE

Sigma-Aldrich Corporation does hereby adopt the Sigma-Aldrich 401(k) Restoration Plan ("Plan"), represented by this instrument, the provisions of which shall become effective as of January 1, 2013.

SECTION 1
DEFINITIONS

A. "Account" means the sum of the Participant's accounts set out in Section 4A.

B. "Administrative Committee" means the committee appointed in accordance with the provisions of the Sigma-Aldrich Corporation Benefit Plan Administrative Committee Charter for the purpose of administering the Plan.

C. "Beneficiary" means the Beneficiary of the Participant as defined in and determined under the 401(k) Plan.

D. "Bonus Plan" means the Sigma-Aldrich Corporation Cash Bonus Plan.

E. "Change in Control" means any of the following:

1. individuals who constitute the Incumbent Board cease for any reason to constitute at least a majority of the Board;

2. more than 25% of (x) the combined voting power of the then outstanding voting securities of the Company entitled to vote generally in the election of directors ("Outstanding Company Voting Securities") or (y) the then outstanding Shares of Stock ("Outstanding Company Common Stock") is directly or indirectly acquired or beneficially owned (as defined in Rule 13d-3 under the Exchange Act, or any successor rule thereto) by any individual, entity or group (within the meaning of Section 13(d)(3) or 14(d)(2) of the Exchange Act), provided, however, that the following acquisitions and beneficial ownership shall not constitute Changes in Control pursuant to this clause (ii):

   (a) any acquisition or beneficial ownership by the Company or a Subsidiary; or

   (b) any acquisition or beneficial ownership by any employee benefit plan (or related trust) sponsored or maintained by the Company or one of more of its Subsidiaries;

3. consummation of a reorganization, merger, share exchange or consolidation (a "Business Combination"), unless in each case following such Business Combination:

   (a) all or substantially all of the individuals and entities who were the beneficial owners, respectively, of the Outstanding Company Common Stock and Outstanding Company Voting Securities immediately prior to such Business Combination beneficially own, directly or indirectly, more than 50% of, respectively, the then outstanding shares of common stock and the combined voting power of the then outstanding voting securities entitled to vote generally in the election of directors or other governing body, as the case may be, of the entity resulting from such Business Combination (including, without limitation, an entity that as a result of such transaction owns the Company through one or more subsidiaries);

(b) no individual, entity or group (excluding any employee benefit plan (or related trust) of the Company or such corporation resulting from such Business Combination) beneficially owns, directly or indirectly, more than 25% of, respectively, the then outstanding shares of common stock of the corporation resulting from such Business Combination or the combined voting power of the then outstanding voting securities of such corporation entitled to vote generally in the election of directors or other governing body of the entity resulting from such Business Combination, except to the extent that such individual, entity or group owned more than 25% of the Outstanding Company Common Stock or Outstanding Company Voting Securities prior to the Business Combination; and

(c) at least a majority of the members of the board of directors or other governing body of the entity resulting from such Business Combination were members of the Incumbent Board at the time of the execution of the initial agreement, or of the action of the Board, approving such Business Combination;

4. the Company shall sell or otherwise dispose of all or substantially all of the assets of the Company (in one transaction or a series of transactions); or

5. the shareholders of the Company shall approve a plan to liquidate or dissolve the Company, and the Company shall commence such liquidation or dissolution.

Capitalized terms set forth in this Section 1E which are not otherwise defined in the Plan shall have the meaning set forth in the Sigma-Aldrich Corporation Long-Term Incentive Plan.

F. "Code" means the Internal Revenue Code of 1986, as amended.

G. "Company" means Sigma-Aldrich Corporation, a Delaware Corporation.

H. "Compensation" means:

1. Compensation as defined in and determined under the 401(k) Plan (but without regard to the limitation thereof under Section 401(a)(17) of the Code); plus

2. Participant Elective Deferrals as defined in and determined under the Deferral Plan.

I. "Controlled Group" means the Company and all other entities required to be aggregated with the Company under Section 414(b), (c) or (m) of the Code or the regulations issued pursuant to Section 414(o) of the Code.

J. "Credits" means any of the following types of Company Credits:

1. Matching Company Credits means those amounts credited to the Participant under Section 3A1.

2. Safe Harbor Credits means those amounts credited to the Participant under Section 3A2.

3. Discretionary Company Credits means those amounts credited to the Participant under Section 3B.

4. Special Discretionary Credits means those amounts credited to the Participant under Section 3C.

K. "Deferral Plan" the Sigma-Aldrich Corporation 2005 Flexible Deferral Plan.

L. "Disability" means Disability as defined in and determined under the 401(k) Plan.

M. "Effective Date" means January 1, 2013.

N. "Employee" means any individual who is classified as a common law employee on the payroll records of a member of the Controlled Group.

O. "ERISA" means the Employee Retirement Security Income Act of 1974, as now in effect or as hereafter amended.

P. "401(k) Plan" means the Sigma-Aldrich 401(k) Retirement Savings Plan.

Q. "Participant" means any or all of the following:

1. "Active Participant": for any Plan Year, an Employee who is or becomes eligible under Section 2A for Credits under Sections 3A and 3B for the Plan Year.

2. "Special Discretionary Participant": an Employee who is designated under Section 2B as being eligible for Special Discretionary Credits under Section 3C.

3. "Former Participant": for any Plan Year, an Employee who is not eligible under Section 2 for Credits under Sections 3A or 3B for the Plan Year, or for Special Discretionary Credits under Section 3C, but still has an Account under the Plan.

A Participant may, but need not, be both an Active Participant and a Special Discretionary Participant.

R. "Plan" means the Sigma-Aldrich 401(k) Restoration Savings Plan.

S. "Plan Administrator" means the Administrative Committee.

T. "Plan Year" means each twelve month period commencing on January 1 and ending on December 31.

U. "SERP" means the Sigma-Aldrich Supplemental Retirement Plan.

V. "Strategy and Design Committee" means a non-fiduciary committee with general responsibility for benefit plan design and benefit strategy.

W. "Year of Service" means a Year of Service as defined in and determined under the 401(k) Plan.

SECTION 2
ELIGIBILITY

Each Employee who is a member of a select group of management or highly compensated employees of the Company, within the meaning of ERISA, and:

A. who:

1. is eligible to participate in the 401(k) Plan; and

2. receives Compensation for a Plan Year which exceeds the limit under Section 401(a)(17) of the Code in effect for such Plan Year;

shall be eligible for Matching Company Credits and Safe Harbor Credits under Section 3A and Discretionary Company Credits under Section 3B for the Plan Year described in Section 2A.2 above; and/or

B. who is otherwise designated by the Company (or the Administrative Committee or other group designated by the Company) shall be eligible for Special Discretionary Credits under Section 3C.

SECTION 3
CREDITS

A. Matching Company Credits and Safe Harbor Credits. As of such date(s) as shall be determined by the Company in its sole discretion, each Active Participant shall be credited with the following amounts for each Plan Year:

1. A Matching Company Credit equal to 3.6% of such Active Participant's Compensation for such Plan Year, reduced by (i) the maximum amount of Matching Employer Contributions that could be made for such Participant under the 401(k) Plan (as defined therein) for such Plan Year, and (ii) any matching contribution credited to such Participant under the Deferral Plan for such Plan Year.

2. A Safe Harbor Credit equal to 4.5% of such Active Participant's Compensation, reduced by the amount contributed with respect to the Active Participant as a Safe Harbor Contribution under the 401(k) Plan (as defined therein) for such Plan Year.

B. Discretionary Company Credits. An Active Participant may be credited with a Discretionary Company Credit for each Plan Year:

1. from 0% to 1.5% of such Active Participant's Compensation for a Plan Year, which percentage shall be equal to the percentage, if any, of such Active Participant's Compensation (determined without regard to Section 1G2) contributed as a Discretionary Employer Contribution under the 401(k) Plan (as defined therein) for such Plan Year; reduced by

2. the amount of such Discretionary Employer Contribution, if any, allocated to such Active Participant for such Plan Year;

when the Company exceeds its performance plan. Such credit is not guaranteed and shall be determined in the sole discretion of the Company. An Active Participant shall be credited with a Discretionary Company Credit if and only if the Participant is an Active Participant on the last day of the Plan Year, unless otherwise determined by the Company (or the Administrative Committee or other group designated by the Company).

C. Special Discretionary Credits. A Special Discretionary Participant described in Section 2B may be credited with a Special Discretionary Credit in such amount, and at such times, as the Company (or the Administrative Committee or other group designated by the Company) determines, in its sole discretion.

D. Transition Rules.

1. For the Plan Year ending December 31, 2013, the aggregate amount credited to an Active Participant under Section 3A1, 3A2 and 3B shall be reduced, but not below zero, by the amount, if any, credited to such Active Participant on January 2, 2013 as an Annual Credit and, if applicable, a Discretionary Credit under the SERP (as defined therein). Any reduction required under this Section 3D1 shall be applied, to the extent necessary, against (a) first, the Discretionary Company Credit under Section 3B, (b)

then, the Matching Company Credit under Section 3A1, and (c) last, the Safe Harbor Credit under Section 3A2.

2. For the Plan Year ending December 31, 2014, the aggregate amount credited to an Active Participant under Section 3A1, 3A2 and 3B shall not be less than:

(a) if the payment under the Bonus Plan for the calendar year coinciding with such Plan Year is equal to or greater than the target bonus under the Bonus Plan for such calendar year, the amount, if any, credited to such Active Participant on January 2, 2013 as an Annual Credit and, if applicable, a Discretionary Credit under the SERP (as defined therein); or

(b) if the payment under the Bonus Plan for the calendar year coinciding with such Plan Year is less than the target bonus for such calendar year, the amount, if any, credited to such Active Participant on January 2, 2013 as an Annual Credit and, if applicable, a Discretionary Credit under the SERP (as defined therein) multiplied by a fraction, (i) the numerator of which is the sum of (A) such Active Participant's base salary for such calendar year, plus (B) such Active Participant's payment under the Bonus Plan for such calendar year, and (ii) the denominator of which is sum of (C) such Active Participant's base salary for such calendar year, plus (D) such Active Participant's target bonus under the Bonus Plan for such calendar year.

SECTION 4
PARTICIPANTS' ACCOUNTS

A. Maintenance of Credit Accounts: Four individual bookkeeping accounts shall be maintained with respect to each Participant:

1. the Company Match Account for any Matching Company Credits credited to the Participant,

2. the Safe Harbor Credit Account for any Safe Harbor Credits credited to the Participant,

3. the Discretionary Company Credit Account for any Discretionary Company Credits credited to the Participant, and

4. the Special Discretionary Credit Account for any Special Discretionary Credits credited to the Participant.

The Participant's Account shall mean the sum of the accounts in this Section 4A.

B. Earnings or Losses on Participant's Account. In addition to the Matching Company Credits, Safe Harbor Credits, Discretionary Company Credits and Special Discretionary Credits, if any, which shall be credited to a Participant's Company Match Account, Safe Harbor Credit Account, Discretionary Company Credit Account and Special Discretionary Credit Account, respectively, the Company shall also credit (or reduce) each such Account maintained with respect to each such Participant by an amount equal to the amount that would have been earned (or lost) if the amounts credited under this Plan had been invested in hypothetical investments designated by the Participant from time to time, based on a list of hypothetical investments specified by the Company (which, unless otherwise determined by the Company, shall be the list specified under the Deferral Plan). The Participant shall designate his or her hypothetical investment(s) on such form or by any other means, electronically or otherwise, as the Company may designate from time to time in the manner prescribed by the Company. The Company shall designate a rate of return or hypothetical investment on which earnings (or losses) will be based until the Participant makes a hypothetical investment election in accordance with the procedures established by the Company. A Participant may change his or her investment elections on a daily basis except as otherwise limited by the Company. Earnings (or losses) shall be credited to (or deducted from) the Participant's Account at least monthly (or more frequently at the discretion of the Company). Earnings (or losses) shall be credited to (or deducted from) an Account until all payments with respect to such Account have been made under this Plan. The Company shall not be liable or otherwise responsible for any decrease in a Participant's Account because of the performance of the designated investments. To the extent that a Participant or his or her Beneficiary acquires a right to receive payments from the Company under the provisions hereof, such right shall be no greater than the right of any unsecured general creditor of the Company or any subsidiary of the Company.

SECTION 5
VESTING

A. Vested Accounts. A Participant shall be fully vested in his Safe Harbor Credit Account at all times. A Participant shall be fully vested in his Company Match Account, Discretionary Company Credit Account and Special Discretionary Credit Account, regardless of Years of Service or any vesting schedule established under Section 5B:

1. if he:

   (a) dies;

   (b) attains age 65; or

   (c) incurs a Disability; or

2. upon the occurrence of a Change in Control;

while an Employee.

B. Termination of Employment.

1. Company Match Account and Discretionary Company Credit Account. A Participant shall be vested in the amounts credited to his Company Match Account and Discretionary Company Credit Account equal to the percentage obtained from the following vesting schedule on the basis of the number of full Years of Service which he has completed as of the date of his termination of employment.

VESTING SERVICE

Full Years of Service	Vesting Percentage
Less than 3	0%
3 or more	100%

Notwithstanding anything herein to the contrary, an Employee's pre-acquisition years of service with each Employer shall be counted for purposes of vesting.

2. Special Discretionary Credits. A Participant shall be vested in any Special Discretionary Credit, adjusted for earnings (or losses) thereon credited under Section 4B, in accordance with the vesting schedule established by the Company (or the Administrative Committee or other group designated by the Company) at the time that such Special Discretionary Credit is credited to his Special Discretionary Credit Account.

C. Forfeitures. The nonvested portion of the Account of a Participant whose employment with the Employer is terminated prior to becoming fully vested shall be forfeited immediately when such Participant has terminated employment. If a person who has incurred a forfeiture hereunder is reemployed by the Employer during a Plan Year before he or she has incurred five consecutive Breaks in Service, the amount in his or her Account balance which was forfeited shall be restored without adjustment for any subsequent earnings or losses.

SECTION 6
TERMINATION OF EMPLOYMENT AND DEATH BENEFITS

A. Termination of Employment. Upon termination of a Participant's employment for any reason other than death, the Participant's Account shall be valued on the first day of the seventh month immediately following the date of the Participant's termination of employment and the vested portion thereof shall be paid to the Participant in a lump sum within sixty (60) days after such valuation on such date as shall be determined by the Company.

Termination of employment of an individual means the Company and the Participant reasonably anticipate a permanent reduction in the Participant's level of bona fide services to a level less than fifty percent (50%) of the average level of bona fide services provided by the Participant in the immediately preceding thirty-six (36) months. Notwithstanding the preceding sentence, no termination of employment shall occur while the Participant is on military leave, sick leave, or other bona fide leave-of-absence which does not exceed six months or such longer period during which the Participant retains a right to reemployment with the Company pursuant to law or by contract. A leave of absence will be a bona fide leave-of-absence only if there is a reasonable expectation that the Participant will return to perform services for the Company.

B. Death Benefit. In the event the Participant dies prior to the receipt of the entire value of his or her Account, the Participant's Beneficiary shall be entitled to receive as a death benefit the value of (i) in the event of the Participant's death prior to termination of employment, the Participant's entire Account, or (ii) in the event of the Participant's death following termination of employment, the vested portion of the Participant's Account. The Participant's Account shall be valued on the first day of the month immediately following the date of the Participant's death and such Account or the vested portion thereof, as applicable, shall be paid to his or her Beneficiary in a lump sum within sixty (60) days after such valuation on such date as shall be determined by the Company.

C. Withholding. Notwithstanding any other provision herein, the Company shall be entitled to withhold from any amount payable hereunder any amount required to be withheld for income, employment or other federal, state or local taxes.

D. Distributions to Minors. In the event a minor is entitled to receive a distribution of benefits, the Plan Administrator may, in its discretion, pay said amount to the minor, his legal guardian or to the local probate court on behalf of the minor.

E. Lost Participants and Beneficiaries. In the event a distribution cannot be made because the Participant or Beneficiary entitled to such distribution cannot be located and the distribution remains unclaimed for two (2) years after the distribution date established by the Committee, then such amount shall be treated as a forfeiture in accordance with Section 5C. In the event such Participant or Beneficiary is subsequently located, the amount forfeited (without adjustment for any subsequent earnings or losses) shall be restored to the Participant's or Beneficiary's Account.

SECTION 7
UNFUNDED ARRANGEMENT

The distributions to Participants and their Beneficiaries hereunder shall be made from the general corporate assets of the Company. No person shall have any interest in any such assets by virtue of the provisions of this Plan. The Company's obligation hereunder shall be an unfunded and unsecured promise to pay money in the future. To the extent that any person acquires a right to receive payments from the Company under the provisions hereof, such right shall be no greater than the right of any unsecured general creditor of the Company; no such person shall have nor acquire any legal or equitable right, interest or claim in or to any such property or assets of the Company. Any Accounts maintained under this Plan shall be hypothetical in nature and shall be maintained for bookkeeping purposes only. Neither the Plan nor any account shall hold any actual funds or assets. In the event that the Company purchases any property to allow the Company to recover the cost of providing deferred compensation hereunder, in whole or in part, neither the Participant, his or her Beneficiaries nor any other persons shall have any rights therein whatsoever. The Company shall be the sole owner of any such property (and, in the event any such property consists of an insurance policy or policies insuring the life of a Participant, shall be the sole beneficiary thereof) and shall possess and may exercise all incidents of ownership therein.

SECTION 8
AMENDMENT OR TERMINATION OF PLAN

The Company reserves the right at any time and from time to time, through action of its Board of Directors or the Strategy and Design Committee, to amend, in whole or in part, any and all of the provisions of the Plan and to terminate the Plan, provided, however, that no such amendment or termination shall adversely affect a Participant's entitlement to benefits to amounts credited to his or her Account prior to the amendment or termination of the Plan. In the event the Plan is terminated, the Participants' Accounts shall become payable due to such termination to the extent permissible under the regulations promulgated by the Secretary of the Treasury pursuant to Section 409A of the Code and in the manner set forth therein.

SECTION 9
ADMINISTRATIVE COMMITTEE
AND ADMINISTRATION OF THE PLAN

A. Administrative Committee. The Administrative Committee shall be the Plan Administrator and shall be responsible for administering the Plan in accordance with the Sigma-Aldrich Corporation Benefit Plan Administrative Committee Charter and the powers and duties set forth therein, subject to the specific terms of the Plan.

B. Responsibility of the Company. The Company shall furnish the Administrative Committee with such clerical and other assistance as is necessary in the performance of its duties. The Administrative Committee is entitled to rely on such information as is supplied by the Company and shall have no duty or responsibility to verify such information except in accordance with its duties and responsibilities as set forth in the Sigma-Aldrich Corporation Benefit Plan Administrative Committee Charter.

C. Indemnification. To the maximum extent permitted by law, no member of the Administrative Committee shall be personally liable by reason of any contract or other instrument executed by him or on his behalf in his capacity as a member of such Committee nor for any mistake of judgment made in good faith, and the Company shall indemnify and hold harmless, directly from its own assets (including the proceeds of any insurance policy the premiums of which are paid from the Company's own assets), each member of the Administrative Committee and each other officer, employee, or director of the Company to whom any duty or power relating to the administration or interpretation of the Plan may be delegated or allocated, against any cost or expense (including reasonable counsel fees) or liability (including any sum paid in settlement of a claim with the approval of the Employer) arising out of any act or omission to act in connection with the Plan unless arising out of such person's own fraud or bad faith.

SECTION 10
CLAIMS PROCEDURE

A. Claim. A Participant or Beneficiary or other person who believes that he or she is being denied a benefit to which he or she is entitled (hereinafter referred to as "Claimant") may file a written request for such benefit with the Plan Administrator, setting forth his or her claim. The request must be addressed to: Plan Administrator, Sigma Aldrich 401(k) Restoration Savings Plan, 3050 Spruce Street, St. Louis, Missouri 63103. Notwithstanding anything in the Plan to the contrary, a claim must be filed within one year from the date such claim first accrues or the Claimant will be forever barred from pursuing such claim. A claim by a Claimant shall be deemed to have accrued on the earlier of (i) the date the Claimant's benefits commence or (ii) the date the Claimant became aware, or should have become aware, that his or her position regarding his or her entitlement to benefits is different from the Plan's or the Company's position regarding the Claimant's entitlement to benefits.

B. Claim Decision. Upon receipt of a claim, the Plan Administrator shall advise the Claimant that a reply will be forthcoming within 90 days and shall in fact deliver such reply in writing within such period. The Plan Administrator may, however, extend the reply period for an additional 90 days for reasonable cause. If the reply period will be extended, the Plan Administrator shall advise the Claimant in writing during the initial 90-day period indicating the special circumstances requiring an extension and the date by which the benefit determination is expected. If the claim is denied in whole or in part, the Plan Administrator will adopt a written opinion using language calculated to be understood by the Claimant setting forth:

1. the specific reason or reasons for the denial;

2. specific references to pertinent Plan provisions on which the denial is based;

3. a description of any additional material or information necessary for the Claimant to perfect the claim and an explanation why such material or such information is necessary;

4. appropriate information as to the steps to be taken if the Claimant wishes to submit the claim for review, including a statement of the Claimant's right to bring a civil action under Section 502(a) of ERISA following an adverse benefit determination on review; and

5. the time limits for requesting a review of the denial and for the actual review of the denial.

C. Request for Review. Within 60 days after the receipt by the Claimant of the written opinion described above, the Claimant may request in writing that the Plan Administrator review its prior determination. The Claimant or his or her duly authorized representative may submit written comments, documents, records or other information relating to the denial claim, which shall be considered in the review under this subsection without regard to whether such information was submitted or considered in the initial benefit determination.

The Claimant or his or her duly authorized representative shall be provided, upon request and free of charge, reasonable access to, and copies of, all documents, records and other information which (i) was relied upon by the Plan Administrator in making its initial claims decision, (ii) was submitted, considered or generated in the course of making the initial claims decision, without regard to whether such instrument was actually relied upon in making the decision or (iii) demonstrates compliance by the Plan Administrator with its administrative processes and safeguards designed to ensure and to verify that benefit claims determinations are made in accordance with governing Plan documents and that, where appropriate, the Plan provisions have been applied consistently with respect to similarly situated claimants. If the Claimant does not request a review of the Plan Administrator's determination by the Plan Administrator within such 60-day period, he or she shall be barred and estopped from challenging the Plan Administrator's determination.

D. Review on Appeal. Within a reasonable period of time, ordinarily not later than 60 days after the Plan Administrator's receipt of a request for review, the Plan Administrator will review its prior determination. If special circumstances require that the 60-day time period be extended, the Plan Administrator will so notify the Claimant within the initial sixty (60) day period indicating the special circumstances requiring an extension and the date by which the Plan Administrator expects to render its decision on review, which shall be as soon as possible but not later than one hundred twenty (120) days after receipt of the request for review. In the event that the Plan Administrator extends the determination period on review due to a Claimant's failure to submit information necessary to decide a claim, the period for making the benefit determination on review shall not take into account the period beginning on the date on which notification of extension is sent to the Claimant and ending on the date on which the Claimant responds to the request for additional information.

The Plan Administrator has discretionary authority to determine a Claimant's eligibility for benefits and to interpret the terms of the Plan. Benefits under the Plan will be paid only if the Plan Administrator decides in its discretion that the Claimant is entitled to such benefits. The decision of the Plan Administrator shall be final and non-reviewable unless found to be arbitrary and capricious by a court of competent review. Such decision will be binding upon the Company and the Claimant.

If the Plan Administrator makes an adverse benefit determination on review, the Plan Administrator will render a written opinion, using language calculated to be understood by the Claimant, setting forth:

1. the specific reason or reasons for the denial;

2. the specific references to pertinent Plan provisions on which the denial is based;

3. a statement that the Claimant is entitled to receive, upon request and free of charge, reasonable access to, and copies of, all documents, records and other information which (i) was relied upon by the Plan Administrator in making its decision, (ii) was submitted, considered or generated in the course of the Plan Administrator making its decision, without regard to whether such instrument was actually relied upon by the Plan Administrator in making its decision or (iii) demonstrates compliance by the Plan Administrator with its administrative processes and safeguards designed to ensure and to verify that benefit claims determinations are made in accordance with governing

Plan documents, and that, where appropriate, the Plan provisions have been applied consistently with respect to similarly situated claimants; and

4. a statement of the Claimant's right to bring a civil action under Section 502(a) of ERISA following the adverse benefit determination on such review.

E. Special Disability Provisions.

1. Notwithstanding anything herein, if a Claimant is denied a benefit because he or she is determined not to be disabled and he or she makes a claim pursuant to such denial, the provisions of this Section 10E shall apply. Upon receipt of a claim, the reply period shall be forty-five (45) days. If, prior to the end of such 45-day period, the claims reviewer determines that, due to matters beyond the control of the Plan, a decision cannot be rendered, the period for making the determination may be extended for up to thirty (30) days, and the claims reviewer shall notify the Claimant, prior to the expiration of such 45-day period, of the circumstances requiring an extension and the date by which the Plan expects to render a decision. If, prior to the end of the first 30-day extension period, the claims reviewer determines that, due to matters beyond the control of the Plan, a decision cannot be rendered within that extension period, the period for making the determination may be extended for up to an additional thirty (30) days, and the claims reviewer shall notify the Claimant, prior to the expiration of the first 30-day extension period, of the circumstances requiring the extension and the date by which the Plan expects to render a decision. In the case of any extension described in this paragraph, the notice of extension shall specifically explain the standards on which entitlement to a benefit is based, the unresolved issues that prevent a decision on the claim and the additional information needed to resolve those issues, and the Claimant shall be afforded forty-five (45) days within which to provide the specified information. If information is requested, the period for making the benefit determination shall be tolled from the date on which notification of an extension is sent to the Claimant until the date on which the Claimant responds to the request for information.

2. Within one hundred eighty (180) days after receiving the written notice of an adverse disposition of the claim, the Claimant may request in writing, and shall be entitled to, a review of the benefit determination. In deciding an appeal of any adverse benefit determination that is based in whole or in part on a medical judgment, the Plan shall consult with a health care professional who has appropriate training and experience in the field of medicine involved in the medical judgment. Such health care professional shall be an individual who is neither an individual who was consulted in connection with the adverse benefit determination that is the subject of the appeal nor the subordinate of any such individual. The medical or vocational experts whose advice was obtained on behalf of the Plan in connection with the Claimant's adverse benefit determination will be identified to the Claimant. If the Claimant does not request a review within one hundred eighty (180) days after receiving written notice of the original's disposition of the claim, the Claimant shall be deemed to have accepted the original written disposition.

3. A decision on review shall be rendered in writing by the Plan within a reasonable period of time, but ordinarily not later than forty-five (45) days after receipt of the

Claimant's request for review by the Plan, unless the Plan determines that special circumstances require an extension of time for processing the claim. If the Plan determines that an extension of time for processing is required, written notice of the extension shall be furnished to the Claimant prior to the termination of the initial forty-five (45) period. In no event shall such extension exceed a period of forty-five (45) days from the end of the initial period. The extension notice shall indicate the special circumstances requiring an extension of time and the date by which the Plan expects to render the determination on review. In the event the extension is due to a Claimant's failure to submit information necessary to decide the claim, the Claimant shall be afforded forty-five (45) days within which to provide the specified information, and the period for making the benefit determination on review shall be tolled from the date on which notification of the extension is sent to the Claimant until the date on which the Claimant responds to the request for additional information.

4. In the case of an adverse benefit determination on review, in addition to the information described above, the notice shall state: "You and your Plan may have other voluntary alternative dispute resolution options, such as mediation. One way to find out what may be available is to contact your local U.S. Department of Labor Office and your State insurance regulatory agency."

F. Venue for Litigation. In light of the Plan Administrator's substantial contacts with the State of Missouri, the fact that the Plan Administrator resides in Missouri and the Company is headquartered in St. Louis, Missouri, and the Company's establishment of, and the Plan Administrator's maintenance of, this Plan in Missouri, any cause of action brought by a Claimant, Employee, Participant, former Employee, Former Participant or any Beneficiary of such an individual involving benefits under the Plan shall be filed and conducted exclusively in the federal courts in the Eastern District of Missouri.

No action at law or in equity shall be brought to recover under the Plan prior to the expiration of 60 days after receipt by the Claimant of the written decision regarding the Claimant's request for review under the claims procedure, nor shall such action be brought at all unless within three years from receipt by the Claimant of such written decision by the final claims reviewer under the claims procedure.

SECTION 11
MISCELLANEOUS

A. Spendthrift. No benefit or beneficial interest provided under the Plan shall be subject in any manner to anticipation, alienation, sale, transfer, assignment, pledge, encumbrance or charge, either voluntary or involuntary, and any attempt to so alienate, anticipate, sell, transfer, assign, pledge, encumber or charge the same shall be null and void. No such benefit or beneficial interest shall be liable for or subject to the debts, contracts, liabilities, engagements or torts of any person to whom such benefits or funds are or may be payable.

B. Incapacity. If, in the opinion of the Company, a person to whom a benefit is payable is unable to care for his affairs because of illness, accident or any other reason, any payment due the person, unless prior claim therefor shall have been made by a duly qualified guardian or other duly appointed and qualified representative of such person, may be paid to some member of the person's family, or to some party who, in the opinion of the Company, has incurred expense for such person. Any such payment shall be a payment for the account of such person and shall be a complete discharge of any liability.

C. Employee Rights. The Employer, in adopting this Plan, shall not be held to create or vest in any Employee or any other person any interest, pension or benefits other than the benefits specifically provided herein, or to confer, upon any Employee the right to remain in the service of the Employer.

D. Uniform Services Employment and Reemployment Rights Act. Notwithstanding any provision of this Plan to the contrary, benefits and service credit with respect to qualified military service will be provided in accordance with applicable law and, to the extent applicable, Appendix I of the 401(k) Plan.

IN WITNESS WHEREOF, the Company has caused the Plan to be executed this 18th day of December, 2013.

SIGMA-ALDRICH CORPORATION

By: /s/ Doug Rau

Exhibit 21

SIGMA-ALDRICH CORPORATION
SUBSIDIARIES AS OF DECEMBER 31, 2013

Sigma-Aldrich Corporation (Delaware), the Registrant:

1) Sigma-Aldrich Co. LLC (Delaware)

    (A) Sigma-Aldrich Grundstücks GmbH & Co. KG (Germany)[1]

    (B) Sigma-Aldrich Israel Ltd. (Israel)

    (C) Sigma-Aldrich Lancaster, Inc. (Missouri)
        (1) Techcare Systems, Inc. (California)

    (D) KL Acquisition Corp. (Missouri)
        (1) Chemical Trade Limited (Russia)
        (2) MedChem Limited (Russia)
            (a) SAF-LAB (Russia)
        (3) "Sigma-Aldrich Rus" (Russia)

    (E) Sigma-Aldrich Manufacturing LLC (Missouri)

    (F) Aldrich Chemical Co. LLC (Delaware)
        (1) Aldrich-APL, LLC (Illinois)

    (G) Supelco, Inc. (Delaware)

    (H) Sigma-Genosys of Texas LLC (Texas)

    (I) Sigma-Aldrich Business Holdings, Inc. (Delaware)
        (1) Sigma-Aldrich Research Biochemicals, Inc. (Massachusetts)

    (J) Cerilliant Corporation (Texas)

    (K) Sigma-Aldrich RTC, Inc. (Delaware)

    (L) Research Organics, Inc. (Ohio)

    (M) Research Organics Foreign Trade Corporation (Ohio)

    (N) S and F Properties, Inc. (Ohio)

    (O) Sigma-Aldrich China, Inc. (Missouri)

2) Sigma-Aldrich, Inc. (Wisconsin)

3) SAFC Carlsbad, Inc. (California)

4) SAFC Hitech, Inc. (Delaware)

5) SAFC, Inc. (Wisconsin)

6) SAFC-JRH Holding Company, Inc. (Delaware)

    (A) SAFC Biosciences, Inc. (Delaware)

7) Sigma-Aldrich Holding LLC (Delaware)
    (A) BioReliance Holdings, Inc. (Delaware)
        (1) BioReliance Intermediate, Inc. (Delaware)
            (a) BioReliance Corporation (Delaware)
            (b) BioReliance UK Acquisition Limited (UK)
                i. BioReliance Limited (Scotland, UK)
                    i. BioReliance KK (Japan)

8) Sigma-Aldrich Subsidiary I Corp. (Delaware)

9) Sigma-Aldrich Finance Co. (Missouri)

10) Sigma-Aldrich Insurance Company Ltd. (Bermuda)

11) Sigma-Aldrich Verwaltungs GmbH (Germany)

12) Sigma-Aldrich Logistik GmbH (Germany)

13) Sigma-Aldrich Foreign Holding Co. (Missouri)
    (A) Sigma-Aldrich (OM) Ltd. (Greece)

    (B) Sigma-Aldrich Brasil Ltda. (Brazil)[2]

    (C) Sigma-Aldrich (Thailand) Co., Ltd. (Thailand)[8]

14) Sigma-Aldrich (Switzerland) Holding AG (Switzerland)[7]
    (A) Sigma-Aldrich International GmbH (Switzerland)
        (1) Sigma-Aldrich Oceania Pty. Limited (Australia)
            (a) Sigma-Aldrich Pty. Limited (Australia)
                i. SAFC Biosciences Pty. Ltd. (Australia)
            (b) Sigma-Aldrich Australia General Partnership (Australia)[9]
            (c) Sigma-Aldrich New Zealand Co. (New Zealand)

        (2) Sigma-Aldrich (Pty.) Ltd. (South Africa)

        (3) Sigma-Aldrich Quimica Ltda. (Chile)[5]

        (4) Sigma-Aldrich Japan GK (Japan)

        (5) Sigma-Aldrich (Shanghai) Trading Co. Ltd. (China)

        (6) Sigma-Aldrich Hong Kong Holding Limited (Hong Kong)
            (a) Sigma-Aldrich (Wuxi) Life Science & Technology Co., Ltd. (China)

        (7) Sigma-Aldrich Pte. Ltd. (Singapore)
            (a) Sigma-Aldrich (M) Sdn. Bhd. (Malaysia)
            (b) Sigma-Aldrich Chemicals Private Ltd. (India)[10]
            (c) Sigma-Aldrich Holding Ltd. (Korea)
                i. Sigma-Aldrich Korea Ltd. (Korea)
            (d) Sigma-Aldrich Quimica, S. de R.L. de C.V. (Mexico)[11]

        (8) Sigma-Aldrich Production GmbH (Switzerland)

        (9) Sigma-Aldrich Chemie GmbH (Switzerland)

(10) Sigma-Aldrich Belgium BVBA/SPRL (Belgium)[3]
  (a) Sigma-Aldrich Chemie BV (Netherlands)

(11) Sigma-Aldrich BV (Netherlands)
  (a) Sigma-Aldrich Global S.a.r.l. (Luxembourg)
  (b) Sigma-Aldrich Chemie Holding GmbH (Germany)
    i. Sigma-Aldrich Chemie GmbH (Germany)
    ii. Sigma-Aldrich Produktions GmbH (Germany)
    iii. Sigma-Aldrich Biochemie GmbH (Germany)
      i. Sigma-Aldrich Laborchemikalien GmbH (Germany)

(12) Sigma-Aldrich S.a.r.l. (Luxembourg)
  (a) Sigma-Aldrich Canada Co. (Canada)

(13) Sigma-Aldrich Denmark ApS (Denmark)

(14) Sigma-Aldrich Finland OY (Finland)

(15) Sigma-Aldrich Kft (Hungary)

(16) Sigma-Aldrich Italia S.r.l. (Italy)
  (a) Sigma-Aldrich S.r.l. (Italy)
  (b) Sigma-Aldrich Handels GmbH (Austria)

(17) Sigma-Aldrich Holding S.a.r.l. (France)
  (a) Aldrich Chemical Foreign Holding LLC (Missouri)
    i. Sigma-Aldrich Chimie SNC Partnership (France)[4]
      i. Sigma-Aldrich Chimie S.a.r.l.
  (b) Sigma Chemical Foreign Holding LLC (Missouri)

(18) Silverberry Limited (Ireland)
  (a) Shrawdine Limited (Ireland)
    i. Sigma-Aldrich Ireland Ltd. (Ireland)

(19) Sigma-Aldrich Financial Services Limited (United Kingdom)

(20) Sigma-Aldrich Norway AS (Norway)

(21) Sigma-Aldrich Sp. z.o.o. (Poland)

(22) Sigma-Aldrich Quimica S.L. (Spain)

(23) Sigma-Aldrich spol. s.r.o. (Czech Republic)[12]

(24) Sigma-Aldrich Sweden AB (Sweden)
  (a) Sigma-Aldrich de Argentina S.A. (Argentina)[6]

(B) Sigma-Aldrich Company Limited (United Kingdom)
  (1) SAFC Biosciences Limited (United Kingdom)

  (2) Epichem Group Limited (United Kingdom)
    (a) SAFC Hitech Ltd. (United Kingdom)
      i. Soulbrain Sigma-Aldrich Ltd. (Korea)[13]
    (b) SAFC Hitech Taiwan Co. Ltd. (Taiwan)
    (c) SAFC Hitech (Shanghai) Chemical Co. Ltd. (China)

[1] Ownership interest in Sigma-Aldrich Grundstücks GmbH & Co. KG (Germany) is Sigma-Aldrich Co. LLC- 94% and Sigma-Aldrich Verwaltungs GmbH- 6%.

[2]Ownership interest in Sigma-Aldrich Brasil Ltda. (Brazil) is Sigma-Aldrich Foreign Holding Co. - 76.7% and Sigma-Aldrich, Inc. - 23.3%.

[3]Ownership interest in Sigma-Aldrich BVBA/SPRL (Belgium) - Sigma-Aldrich International GmbH - 99.96%, Sigma-Aldrich Italia S.r.l. - .04%.

[4]Ownership interest in Sigma-Aldrich Chimie SNC (France) is Aldrich Chemical Foreign Holding LLC - 77% and Sigma Chemical Foreign Holding LLC- 23%.

[5]Ownership interest in Sigma-Aldrich Quimica Ltda. (Chile) is Sigma-Aldrich International GmbH - 99.99% and Sigma-Aldrich Sweden AB - 0.01%.

[6]Ownership interest in Sigma-Aldrich de Argentina SA (Argentina) is Sigma-Aldrich Sweden AB - 51.49% and Sigma-Aldrich International GmbH - 48.51%.

[7]Ownership interest in Sigma-Aldrich (Switzerland) Holding AG is Sigma-Aldrich Corporation - 73.94%, Sigma-Aldrich Co. LLC - 13.69% and Sigma-Aldrich Foreign Holding Co. - 12.37%.

[8]Ownership interest in Sigma-Aldrich (Thailand) Co., Ltd. (Thailand) is Sigma-Aldrich Foreign Holding Co. - 98%, Sigma-Aldrich Corporation - 1% and Sigma-Aldrich, Inc. - 1%.

[9]Ownership interest in Sigma-Aldrich Australia General Partnership (Australia) is Sigma-Aldrich Oceania Pty. Ltd.(Australia) - 99% and Sigma-Aldrich Pty. Ltd.(Australia) - 1%.

[10]Sigma-Aldrich Pte. Ltd. (Singapore) owns a nominal interest in Sigma-Aldrich Chemicals Private Limited (India) that is “held in trust” by Sigma-Aldrich (Switzerland) Holding AG.

[11]Ownership interest in Sigma-Aldrich Quimica, S. de R.L. de C.V. (Mexico) is Sigma-Aldrich Pte. Ltd. (Singapore) - 99.998% and Sigma-Aldrich International GmbH (Switzerland) - .002%.

[12]Ownership in Sigma-Aldrich spol. s.r.o. (Czech Republic) is Sigma-Aldrich International GmbH (Switzerland) - 99.683% and Sigma-Aldrich Pte. Ltd. (Singapore) - .317%.

[13] Ownership in Soulbrain Sigma-Aldrich Ltd. (Korea) is SAFC Hitech Ltd. (UK) - 50%, and joint venture partner, Soulbrain Ltd. - 50%.

Exhibit 23

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Sigma-Aldrich Corporation

We consent to the incorporation by reference in the registration statements (Nos. 333-74163 and 333-191845) on Form S-3 and the registration statements (Nos. 333-49912, 333-62541, 333-64661, 333-30528, 333-105033, 333-177866, and 333-183247) on Form S-8 of Sigma-Aldrich Corporation (the Company) of our report dated February 6, 2014, with respect to the consolidated balance sheets of Sigma-Aldrich Corporation as of December 31, 2013 and 2012, and the related consolidated statements of income, comprehensive income, stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2013, and the effectiveness of internal control over financial reporting as of December 31, 2013, which report appears in the December 31, 2013 annual report on Form 10-K of Sigma-Aldrich Corporation.

/s/ KPMG LLP

St. Louis, Missouri
February 6, 2014

Exhibit 31.1

CEO FORM 10-K CERTIFICATION

I, Rakesh Sachdev, certify that:

1. I have reviewed this Annual Report on Form 10-K of Sigma-Aldrich Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 6, 2014

/s/ Rakesh Sachdev

Rakesh Sachdev
President and Chief Executive Officer

Exhibit 31.2

CFO FORM 10-K CERTIFICATION

I, Jan A. Bertsch, certify that:

1. I have reviewed this Annual Report on Form 10-K of Sigma-Aldrich Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 6, 2014

/s/ Jan A. Bertsch

Jan A. Bertsch
Executive Vice President and Chief Financial Officer

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the annual report of Sigma-Aldrich Corporation (the "Company") on Form 10-K for the period ending December 31, 2013, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Rakesh Sachdev, President and Chief Executive Officer of the Company, certify, to the best of my knowledge, pursuant to 18 U.S.C. §1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Rakesh Sachdev

Rakesh Sachdev
President and Chief Executive Officer
Sigma-Aldrich Corporation
February 6, 2014

Exhibit 32.2

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the annual report of Sigma-Aldrich Corporation (the "Company") on Form 10-K for the period ending December 31, 2013 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Jan A. Bertsch, Executive Vice President and Chief Financial Officer of the Company, certify, to the best of my knowledge, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Jan A. Bertsch

Jan A. Bertsch
Executive Vice President and Chief Financial Officer
Sigma-Aldrich Corporation
February 6, 2014

Executive Leadership Team

Silji Abraham
Vice President &
Chief Information Officer

Jason T. Apter
Vice President & Managing
Director, Asia Pacific

Jan A. Bertsch
Executive Vice President &
Chief Financial Officer

Gilles A. Cottier
Executive Vice President &
President, SAFC Commercial

Eric M. Green
Executive Vice President &
President, Research

Michael Hollenkamp
Vice President & Treasurer

Michael F. Kanan
Vice President &
Corporate Controller

Daniel P. Key
Vice President &
Chief Supply Chain Officer

George L. Miller
Senior Vice President, General
Counsel & Secretary

Karen J. Miller
Senior Vice President, Corporate
Development & Corporate
Communications

Douglas W. Rau
Vice President,
Human Resources

Rakesh Sachdev
President &
Chief Executive Officer

Gerrit J.C. van den Dool
Vice President & Managing
Director, Europe, Middle East &
Africa

Franklin D. Wicks
Executive Vice President &
President, Applied

Board of Directors

Rebecca M. Bergman
Vice President, Research and
Technology for Cardiac Rhythm
Disease Management,
Medtronic, Inc.

George M. Church, Ph.D.
Professor of Genetics at the
Harvard Medical School &
Director of the Center for
Computational Genetics in
Cambridge, Massachusetts

Michael L. Marberry
President & CEO, J.M. Huber
Corporation

W. Lee McCollum
Former Executive Vice President
& Chief Financial Officer S.C.
Johnson & Son, Inc.

Avi M. Nash
Managing Director of Avi
Nash LLC (Former partner,
Goldman Sachs)

Steven M. Paul, M.D.
Director of the Appel Alzheimer's
Disease Research Institute &
Professor of Neurology, Psychiatry
& Pharmacology at Weill Cornell
Medical College

J. Pedro Reinhard
President of Reinhard and
Associates (Former CFO, Dow
Chemical Company)

Rakesh Sachdev
President &
Chief Executive Officer

D. Dean Spatz
Former Chairman & CEO,
Osmonics, Inc.

Barrett A. Toan
Former Chairman & CEO, Express
Scripts, Inc.

For the most up-to-date information about our Company visit our Investor Relations website at *sigma-aldrich.com*

Corporate Information

Annual Meeting
Date: May 6, 2014
Time: 11:00 a.m. CDT
Place: Sigma-Aldrich Life Science
and Technology Center,
2909 Laclede Avenue
St. Louis, Missouri 63103

General Information
Shares traded on NASDAQ
Global Select Market
Trading symbol: SIAL

Corporate Offices
Sigma-Aldrich Corporation
3050 Spruce Street
St. Louis, Missouri 63103
800-521-8956
Fax: 314-286-7874
Email: sig-ald@sial.com
Website: sigma-aldrich.com

Transfer Agent
American Stock Transfer
and Trust Company
New York, NY
800-937-5449

Forward-Looking Statements

The Form 10-K and other sections of this Annual Report include forward-looking statements and are subject to the discussion regarding such forward-looking statements that appear on page iii of the Form 10-K included herein.

Sigma-Aldrich Corporation
3050 Spruce Street
St. Louis, Missouri 63103

sigma-aldrich.com

QHX
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