



MERCK KGAA, DARMSTADT, GERMANY UBS GLOBAL HEALTHCARE CONFERENCE

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Agenda

- 01** Company overview
- 02** Life Science
- 03** Executive summary and outlook
- 04** Back-up



01

COMPANY OVERVIEW

Group

Portfolio of three high-tech businesses



Healthcare

Leading in specialty pharma markets

- Biologics and small-molecules
- Research focus: Oncology, Immunology & Immuno-Oncology
- Over-the-counter medicine



Life Science

Leading life science company

- Tools and services for biotech research & production
- Tools and laboratory supply for the academic research and industrial testing



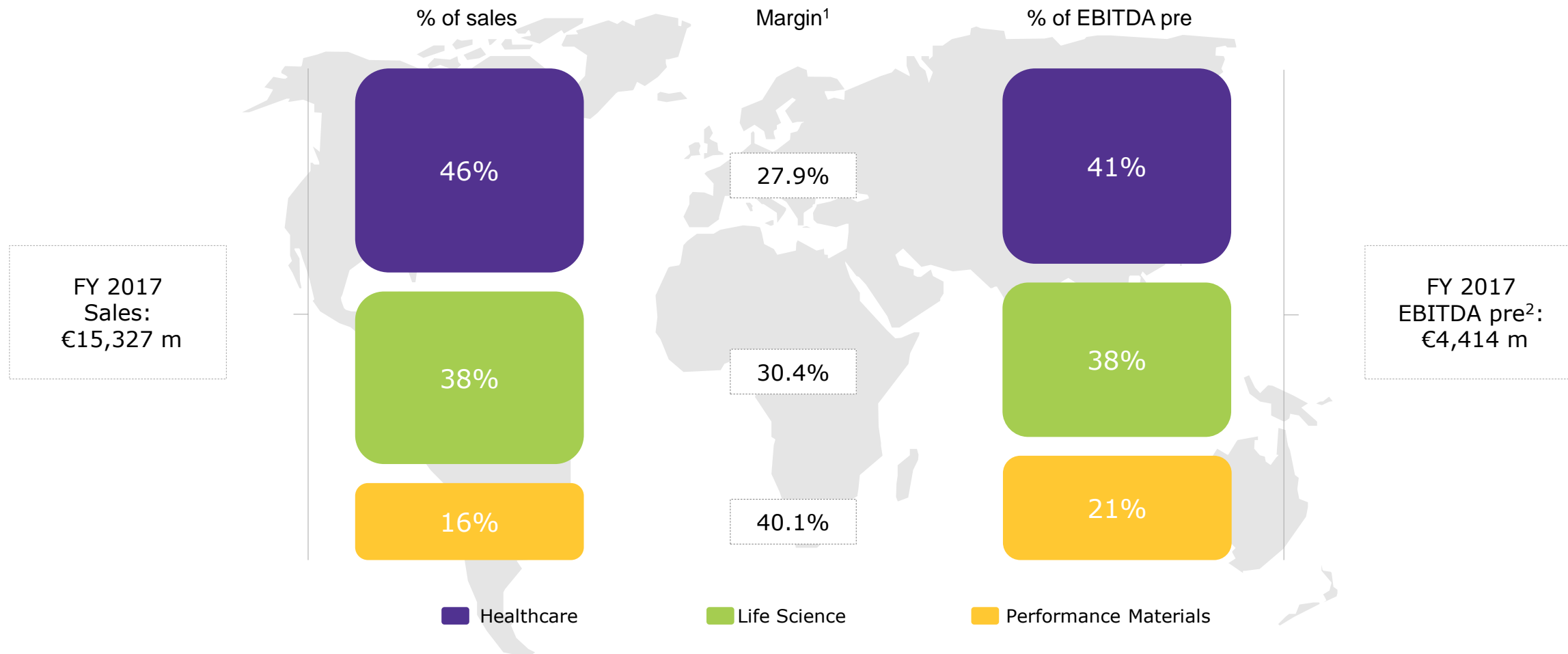
Performance Materials

Market leader in specialty materials

- Innovative display materials
- Effect pigments and functional materials
- High-tech materials for electronics

Group

Strong businesses with attractive margins



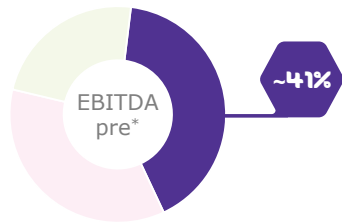
¹EBITDA pre margin in % of net sales; ²Including Corporate/Others (-€301 m)

Group

Clear set of priority goals to be realized by 2018



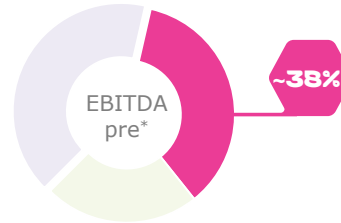
Healthcare



- Maximize growth of existing franchises
- Deliver pipeline: one product launch or indication p.a. from 2017



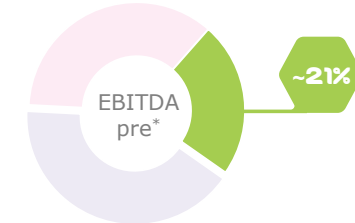
Life science



- Focus on seamless integration and deliver cost synergies
- Leverage strategic capabilities for value creation



Performance Materials



- Drive innovation and technology leadership across all businesses
- Innovate in applications also beyond displays

**MERCK KGaA,
Darmstadt,
Germany**

- Deleverage to <2x net debt / EBITDA pre in 2018
- No large acquisitions (>€500 m) until end of 2018 (unless financed by divestments)
- Dividend policy that ensures a sustainable and resilient development



02 LIFE SCIENCE

Life Science
Focusing on profitable growth



- 1 **attractive Market**
- 2 **strong performance during integration**
- 3 **dynamic strategy for future growth**

Life Science

Serving customers across the highly attractive life science industry

RESEARCH

~€42 bn

Low single digit



Academic and government institutions

Biopharma R&D

Industry R&D



- Growth in volume of experiments
- Mild growth in academic funding
- Investment in industry R&D

PROCESS

~€38 bn

High single digit



Pharmaceutical companies

Small biotech

Contract manufacturing organizations



- Drug volume growth
 - from biologics
 - from emerging modalities
- Continued shift to single-use

APPLIED

~€45 bn

Mid single digit



Diagnostic manufacturers

Clinical testing labs

Food & Beverage manufacturers

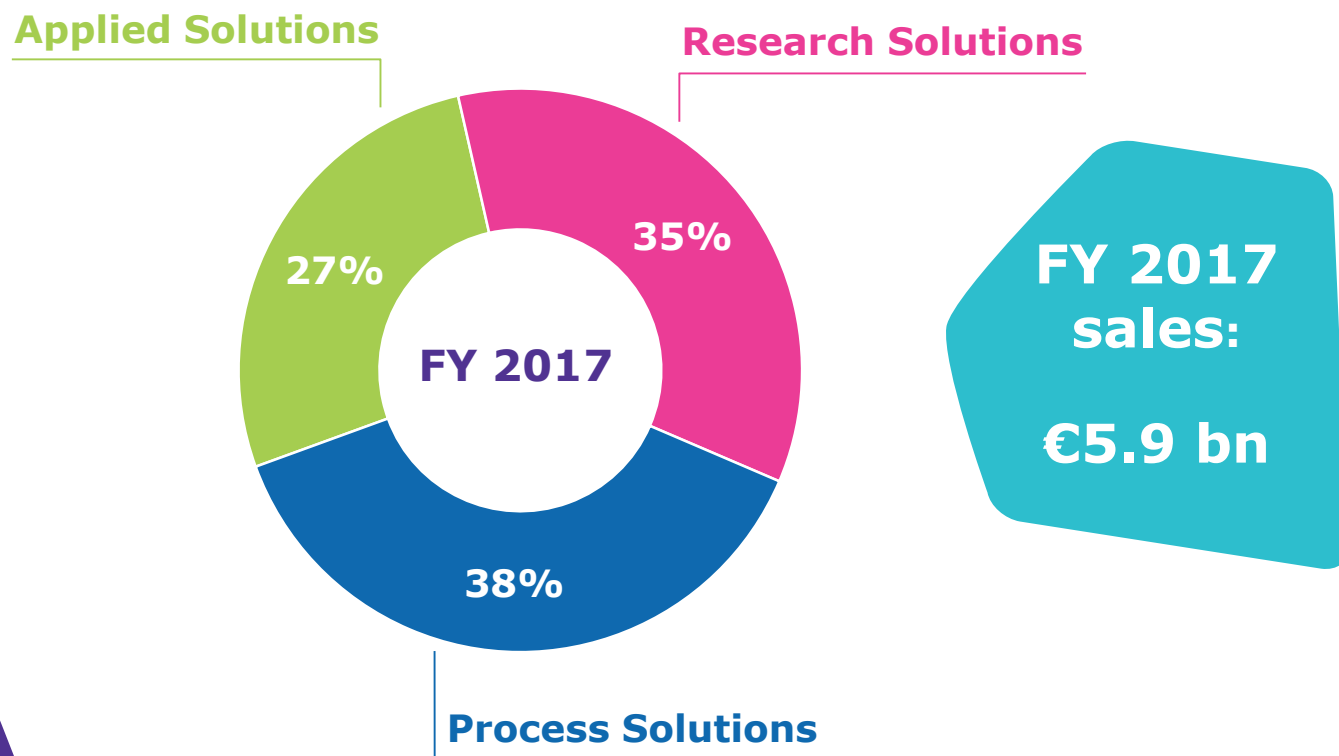


- Volume growth from
 - Population growth
 - Rise in quality standards
 - Increased testing needs

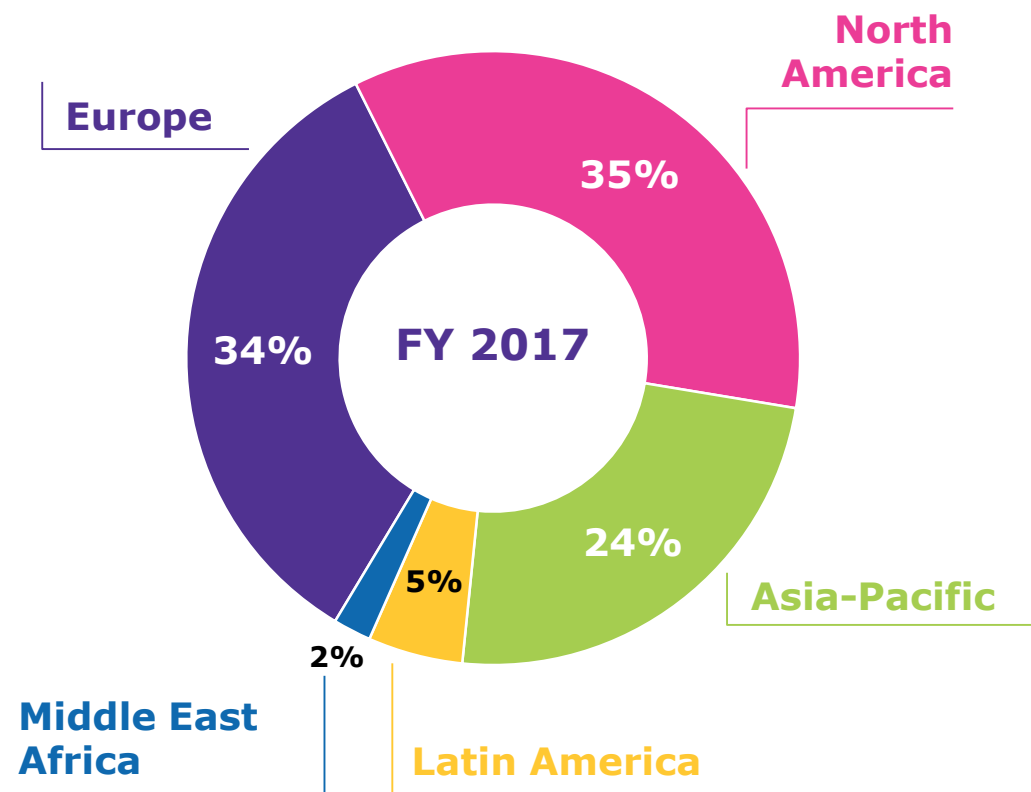
Life Science

A balanced portfolio and geographic presence

Sales by business unit

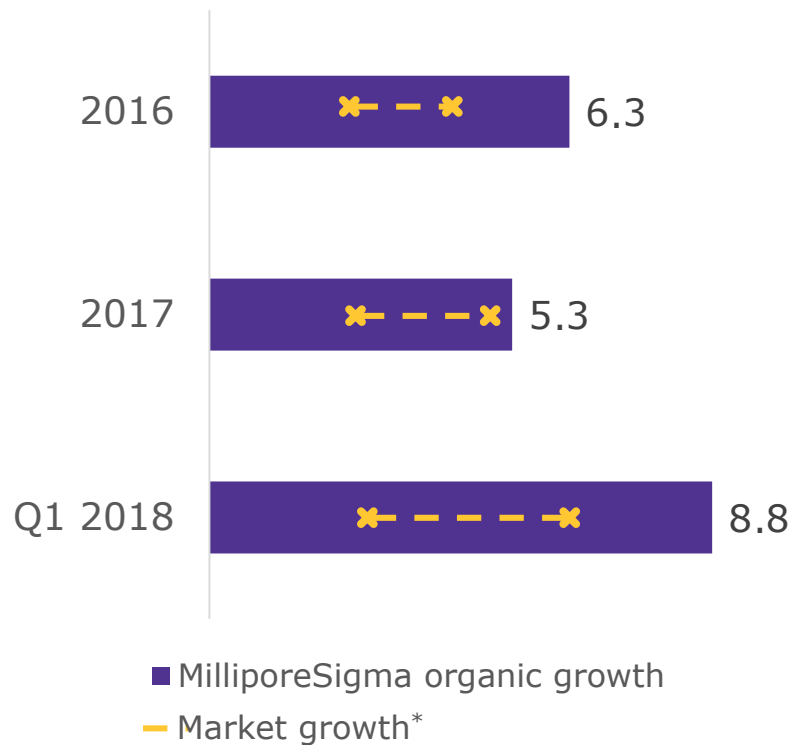


Sales by region



Market leading growth and profitability maintained during integration

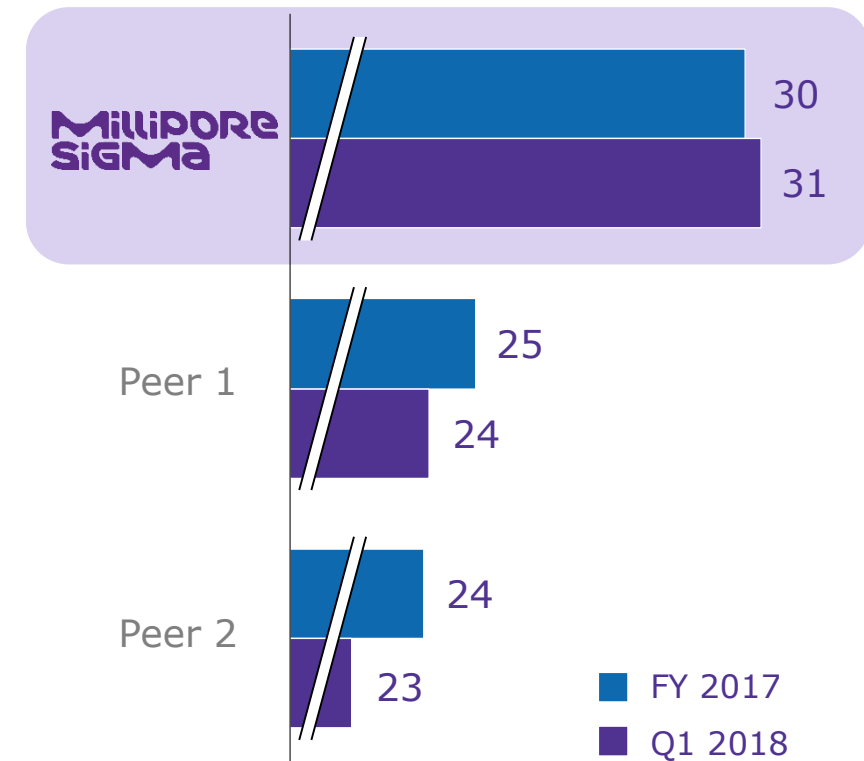
MilliporeSigma organic sales growth vs market*, % YoY



MilliporeSigma net sales €m



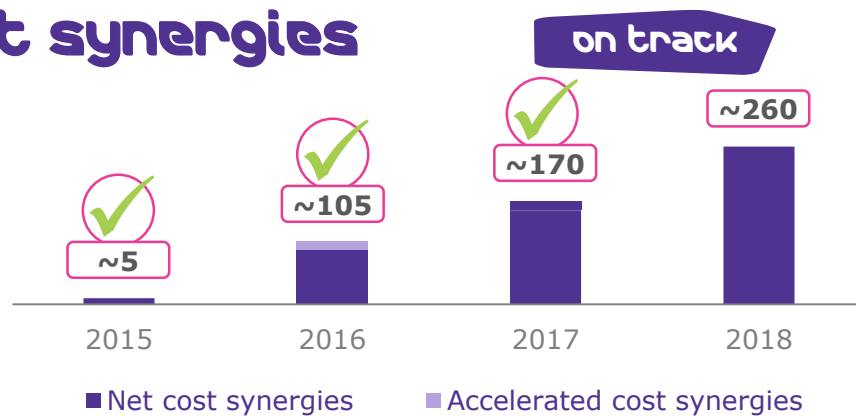
EBITDA pre margins % of sales



Integration of Sigma and synergy generation progressing well

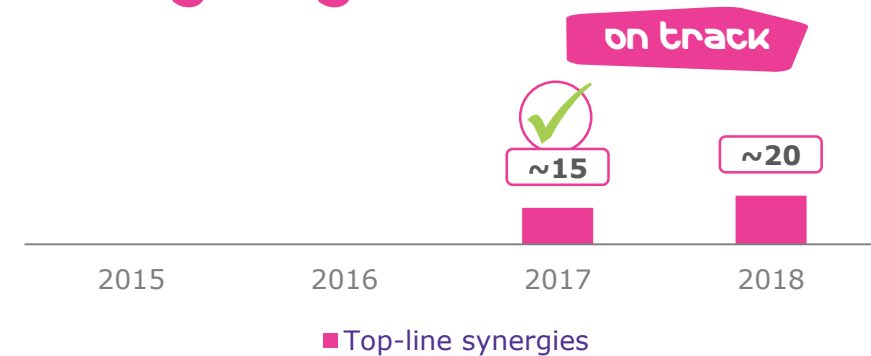
on track to deliver planned synergies of ~ €280 M until 2018

cost synergies



- **Network consolidation and operational transformation ongoing**
 - Consolidated 10 manufacturing and distribution sites
 - Announced consolidation of 5 further sites
- **Combination of customer service centers and offshoring of transactional tasks**

Topline synergies



- **Continued integration of sigmaaldrich.com**
 - ~80% of relevant products in U.S. and EU are available online
 - >1/3 of Merck KGaA, Darmstadt, Germany eCommerce orders now contain products from both legacy companies
- **Complete offering in Process Solutions**

Research Solutions

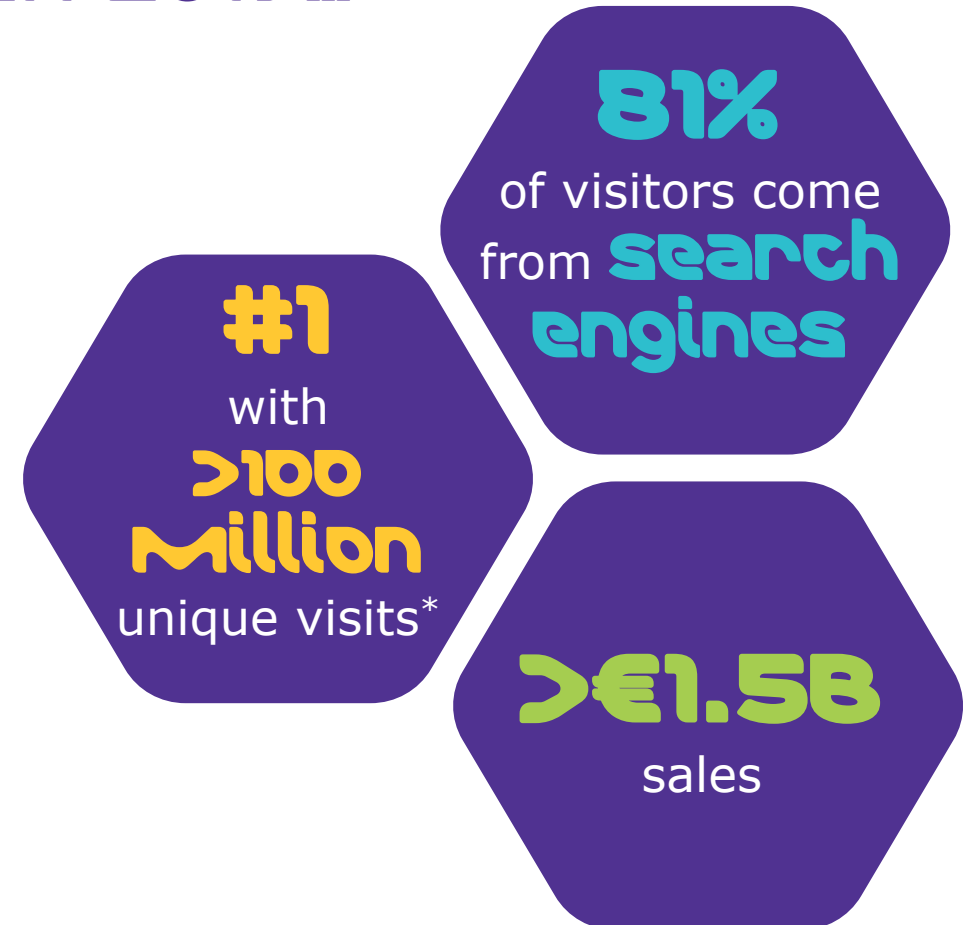
Robust E-commerce capability

customer experience



*Alexa report

IN 2017...



Process Solutions

Our end-to-end portfolio for manufacturing mAbs



MAKE

Produce antibodies



PURIFY

Remove cell debris, virus, etc.



FORMULATE

Final drug product



EX-CELL®
Advanced™
CHO Fed-batch
Medium
**Cell culture media
to enhance cell
growth**



2000L CellReady
bioreactor
**Tank for
cultivating cells**



Clarisolve®
clarification
filters
**Removing cell
debris**



FlexReady®
chromatography
Purifying mAbs



Viresolve® Pro
solution
**Removing viruses
from protein
solutions**



Pellicon®
cassette filters
**Washing and
removing cells,
lipids, particles**



Opticap® capsules
Sterile filtration

Provantage®

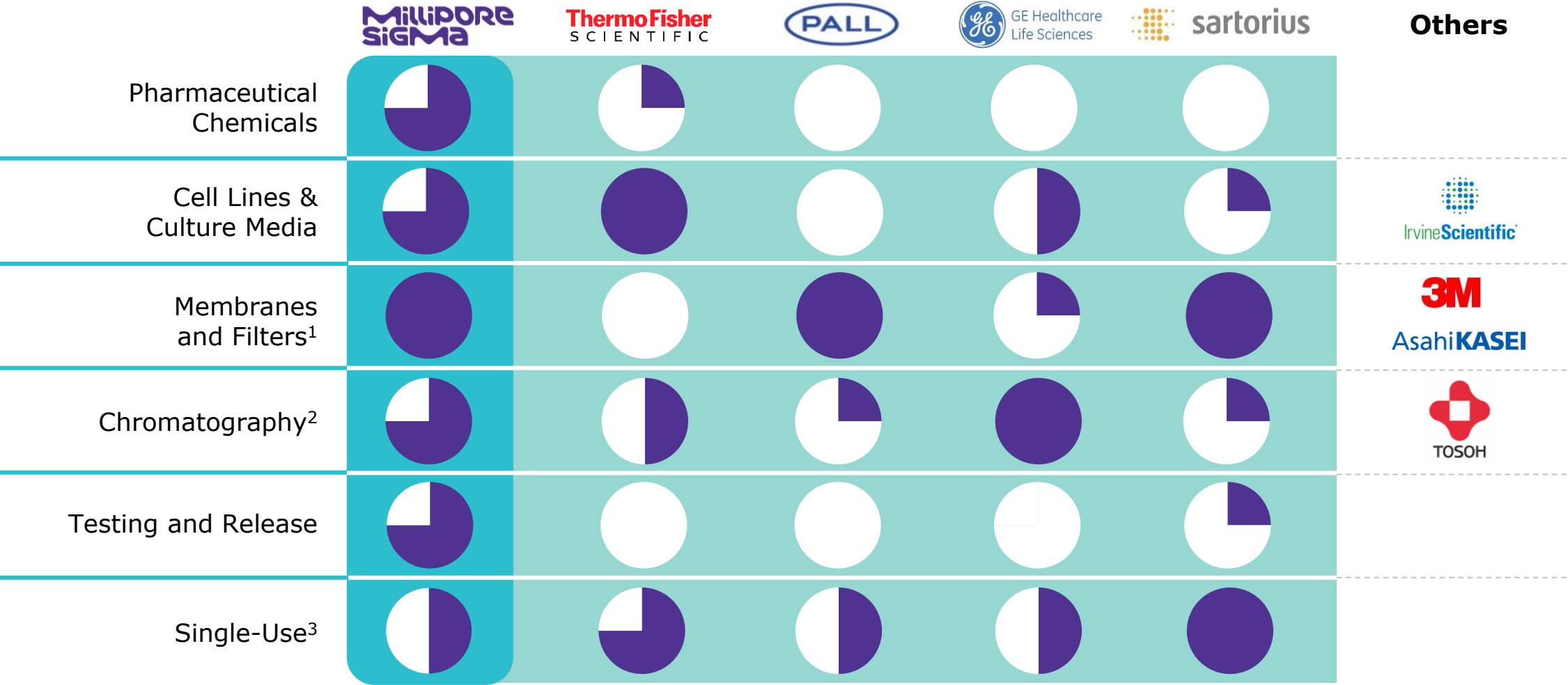
BioReliance®

EMPROVE®

cGMP SOLUTIONS & SERVICES

Process Solutions

We are the only company to span the entire value chain of our customers



Pie Charts represent completeness of product offering; ¹Includes Aseptic, Virus, Clarification, TFF; ²Includes resins, columns and hardware for separation and purification; ³Includes assemblies, bioreactors and components

Innovation

Focus on strategic growth initiatives will secure long-term growth



Evolutionary

Developing offerings to further existing platforms



Breakthrough

Developing new platforms and product categories

Strategic initiative



SINGLE-USE



END TO END



GENE EDITING & CELL THERAPY

Ambition

Establish leadership in the fast-growing **single-use** bioprocessing segment through standardization and capacity expansion

Offer **process development** services with our complete bioprocessing portfolio especially to small biotechs

Develop tools for **gene editing** and manufacturing services for **cell therapy**

Proof points

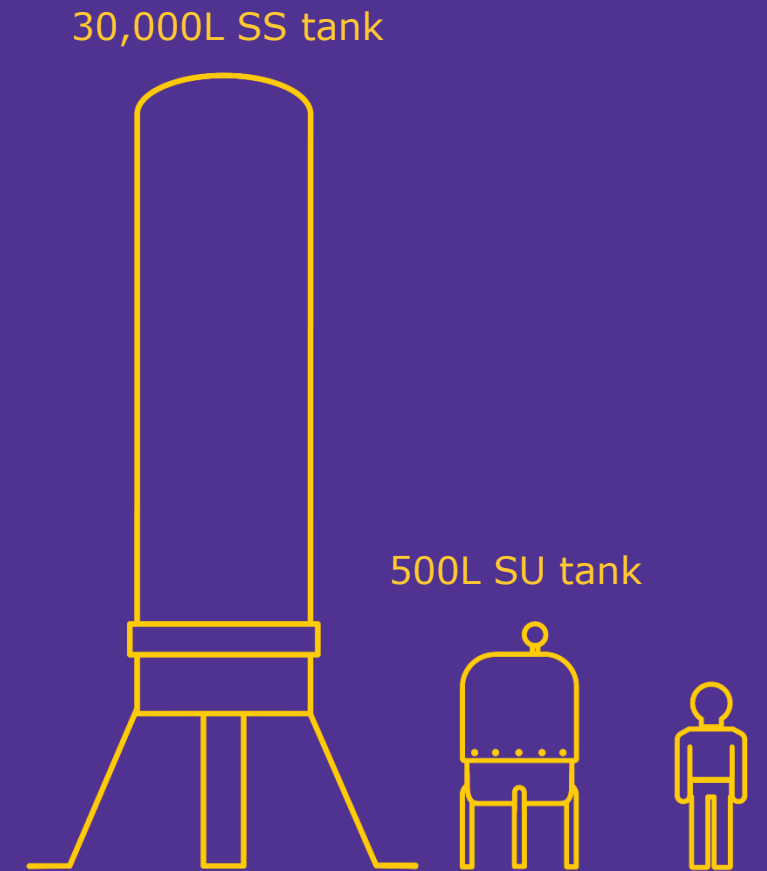
- ✓ **Customized offer** by segment
- ✓ **Facilities expanded** in Danvers & Shanghai

- ✓ **15 customers** in Martillac
- ✓ **Additional site in Shanghai** opened in 2018 to augment Martillac & Boston

- ✓ **Foundational patents** in cutting & replacement for CrisprCas9
- ✓ Viral vector manufacturing site in **Carlsbad EMA/FDA approved**
- ✓ Supports **9 out of 10 top gene therapy products** manufacturers

Single-use Reimagining with single use technologies

	Traditional stainless facility	Single use facility
Capex required	~\$500M to \$1B	\$20-100MM
Time to construct	5-10 years	1.5 years
Change over time	4 weeks	0.5 days
Footprint	~>70,000 m ²	~11,000 m ²



End to end Enabling rapid development with end-to-end services

Burlington, MA, USA

- Opened Q4 '17



Martillac, France

- Since 2012



Shanghai, China

- Opened Q3 '17

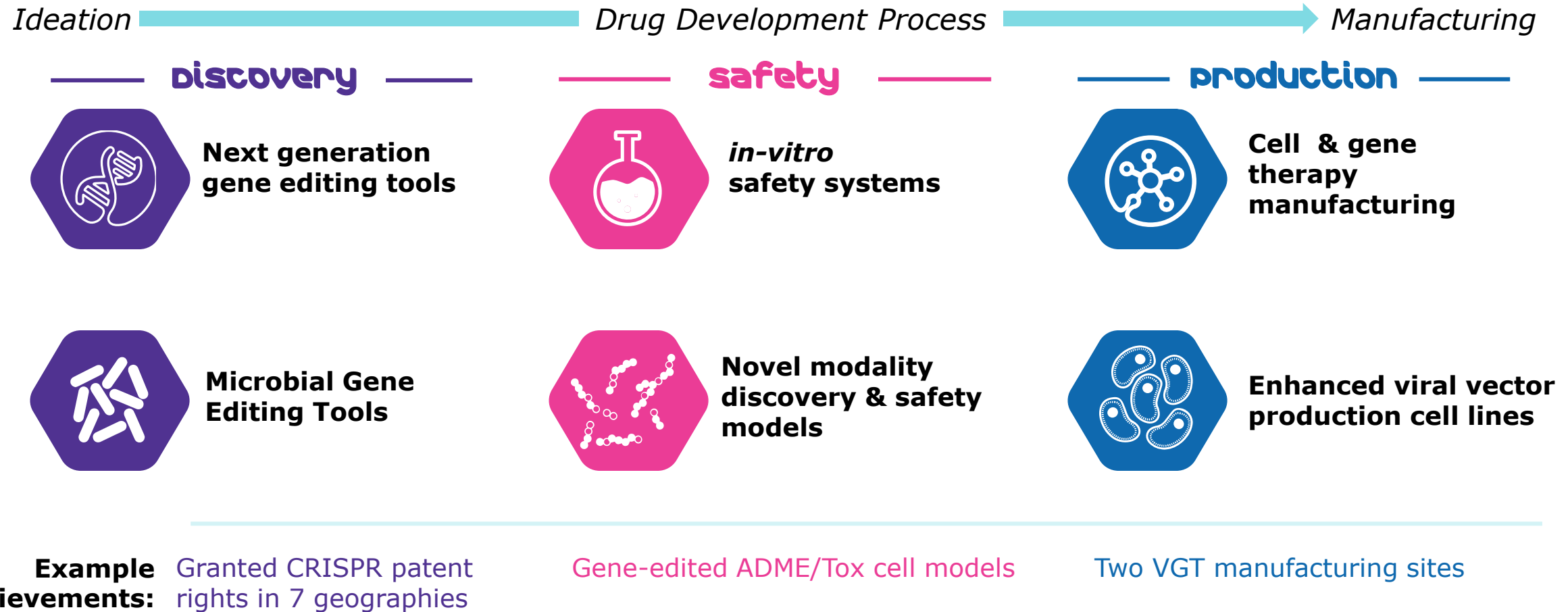


End-to-End

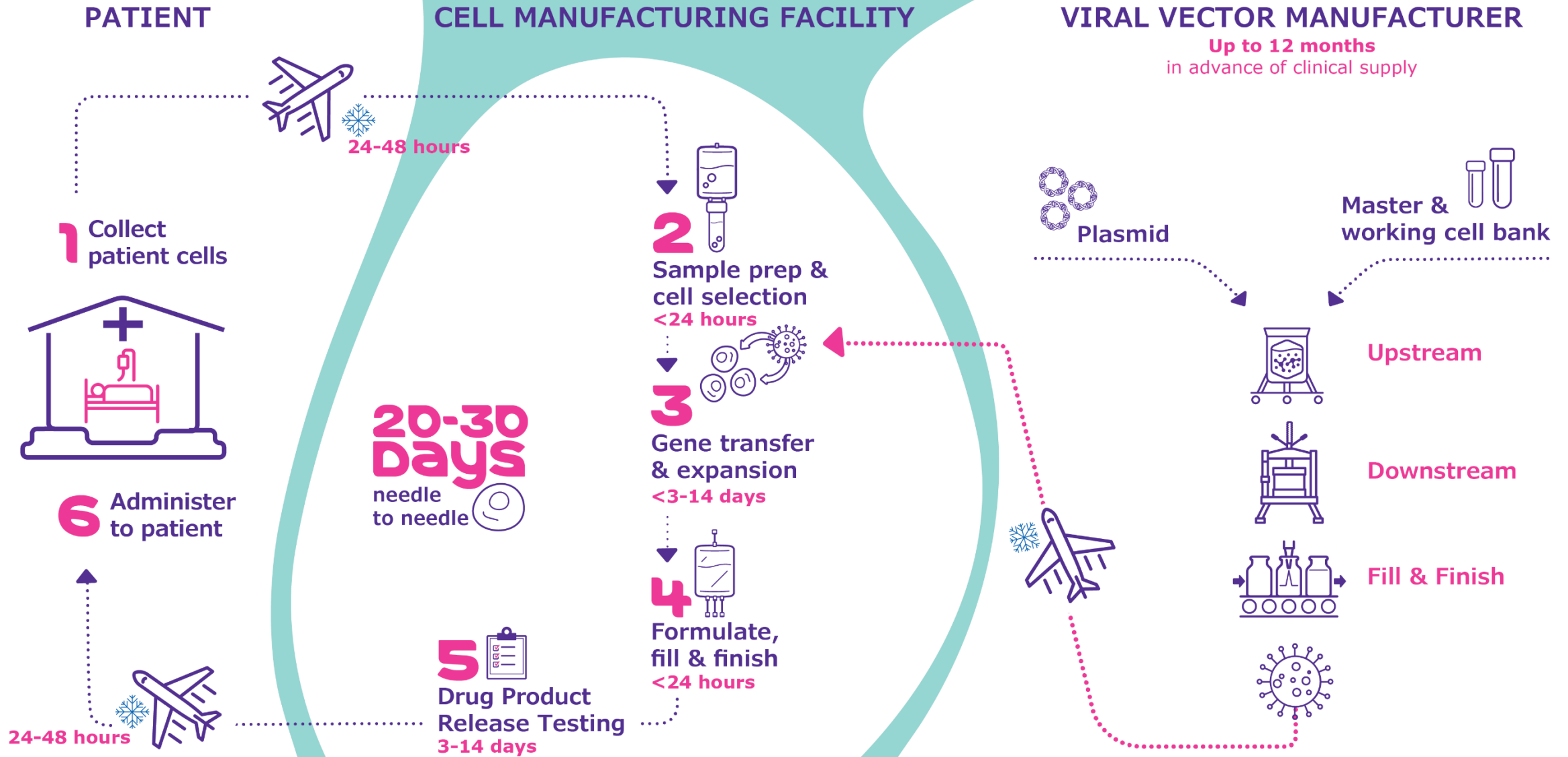
- Process development
- Pilot manufacturing
- GMP certified and FDA audited (Martillac)

Gene editing

Capability across the chain in cell and gene therapy



The Personalized Cell Therapy Challenge: **A Race Against Time**

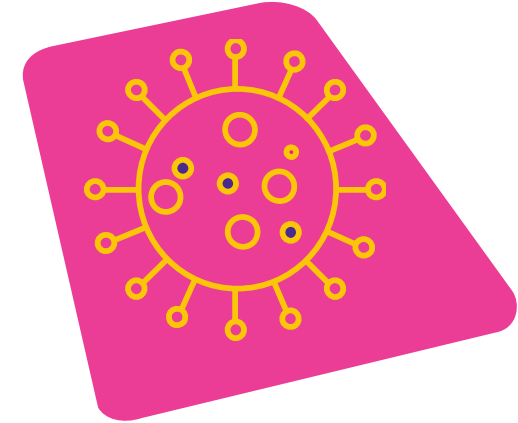


Cell therapy

We are collaborating to improve cell therapy

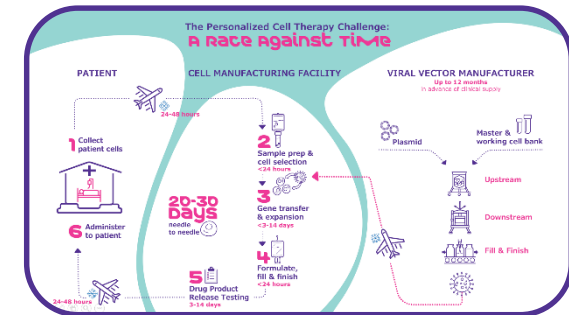
1

Process improvement to viral vector process



2

Simplifying the supply chain



3

Developing bed-side solution





03 EXECUTIVE SUMMARY AND OUTLOOK

Life Science
Focus on profitable growth



- 1 Leadership in attractive Markets
- 2 strong performance during integration
- 3 dynamic strategy for future growth

Group

2018 business sector guidance



Healthcare

Net sales

- Moderate organic growth: ongoing organic Rebif decline offset by growth in other franchises
- Full-year contributions from 2017 launches

EBITDA pre

- Organic -1% to -2% YoY
- FX -5% to -7% YoY
- ~ €1,770 – 1,830 m (incl. CH)
- ~ €1,580 – 1,650 m (excl. CH)



Life Science

Net sales

- Organic growth again slightly above market; driven by Process Solutions
- Full realization of expected topline synergies

EBITDA pre

- Organic ~ +8% YoY
- FX -4% to -6% YoY
- ~€1,820 - 1,870 m



Performance Materials

Net sales

- Slight to moderate organic decline
- Volume increases in all businesses
- Continuation of Liquid Crystals market share decline

EBITDA pre

- Organic -14% to -16% YoY
- FX -8% to -10% YoY
- ~€725 – 765 m

Group Organic full-year 2018 guidance confirmed

Group „incl. CH”¹

Net sales:

Organic +3% to +5% YoY
FX ~ -4% to -6% YoY
~ €15.0 – 15.5 bn¹

EBITDA pre:

Organic -1% to -3% YoY
FX -5 to -7% YoY
~ €3,950 – 4,150 m¹

EPS pre:

~ €5.30 – 5.65¹

Disposal of Consumer Health

- Net sales ~€ 0.9-1.0 bn²
- EBITDA pre ~€170-200m²

Group „excl. CH”

Net sales:

Organic +3% to +5% YoY
FX ~ -4% to -6% YoY
~ €14.0 – 14.5 bn

EBITDA pre:

Organic -1% to -3% YoY
FX -5 to -7% YoY
~ €3,750 – 4,000 m

EPS pre:

~ €5.00-5.40





04 BACK-UP

Life Science

Leading portfolio positions

2017-2018 Market positions estimate*

RESEARCH

- #1** Lab & Specialty Chemicals
- #2** Reagents & Kits
- #3** Lab Separation & Workflow Tools

PROCESS

- #1** Bio-Processing
- #2** Process Solution Service
- LOW** Actives & Formulation

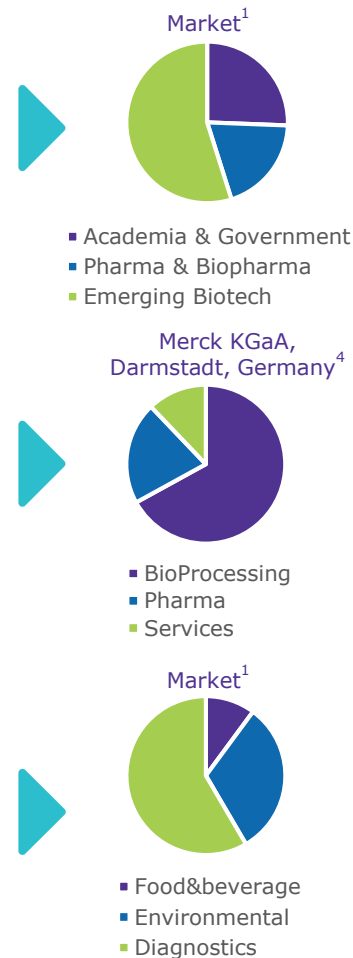
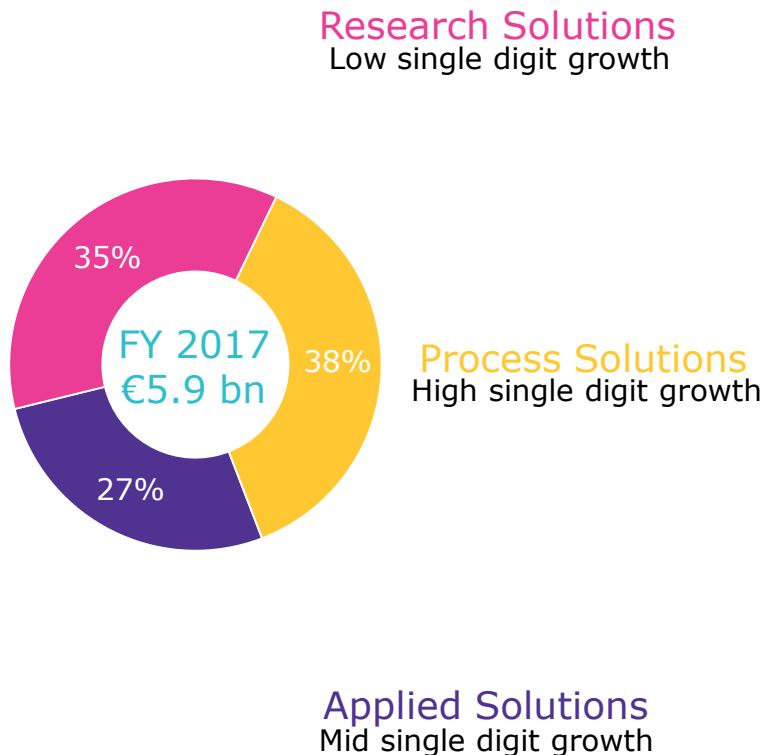
APPLIED

- #1** Lab Water
- #2** Biomonitoring
- #2** Advanced Analytical
- LOW** Biosystems & Regulated Materials

Life Science

Business is on track to deliver above-market organic growth

Life Science



Long-term growth drivers

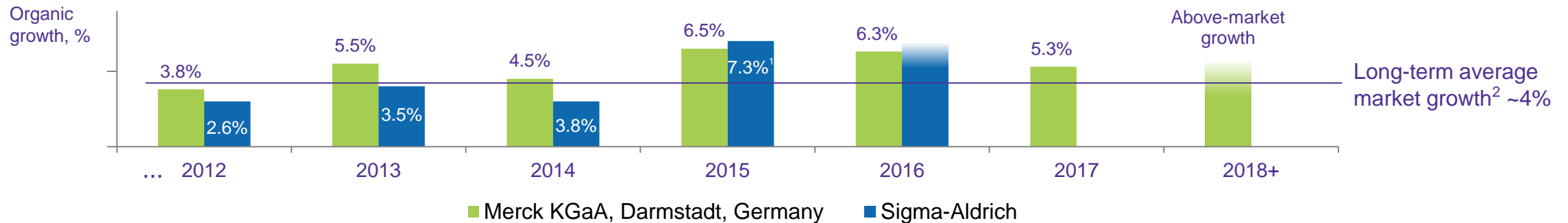
- **Research activity:** >3,000 projects in research pipelines², rising number of experiments and newly emerging therapies/technologies backs healthy growth in biotech and CROs³
 - **Public and private funding:** availability, access and predictability drive demand from academia and emerging biotech customers
 - **Regulation:** rising requirements foster long-term customer partnerships
-
- **Biologics:** mAbs production⁵ growing by ~12% p.a. for 2016-2021 driven by new molecules and biosimilars
 - **Diversification:** contribution by top 10 molecules will decline to ~30% until 2021 from 80% today⁶
 - **Noval modalities:** innovation in complex-to-deliver therapies, e.g. gene and cell therapy, will drive demand for single-use, end-to-end and new technology solutions
-
- **Regulation:** testing volumes overall are rising globally rise in quality standards and increased demand for testing across customer segments
 - **Population and economic growth:** demand for access to more sophisticated products and services rises, e.g. in emerging markets
 - **Speed:** need for fast testing results raises requirements for Applied customers, esp. in clinical testing and food & beverage testing

¹Source: Merck KGaA, Darmstadt, Germany Factbook; ²Source: PhRMA; ³CRO = Contract Research Organization; ⁴Indicative only; ⁵mAbs = monoclonal antibodies; ⁶Source: EvaluatePharma April 2017

Life Science

Above-market growth to be enhanced by top-line synergies

Merck KGaA, Darmstadt, Germany and Sigma-Aldrich organic growth rates versus market growth



Sources of market outperformance

1

Portfolio composition

- Exposure to biopharma
- Highest share of consumables
- Broad product offering

2

Top-line synergies

- Best in class eCommerce
- Excellent service capabilities
- Global reach

Group

FX sensitivity per business sector



Sales

- Global presence
- ~35% of sales in Europe

Costs

- High Swiss franc cost base due to manufacturing sites
- R&D hub and notable sales force in U.S.

Net Sales currency exposure¹



FX impact on EBITDA pre²



Sales

- Balanced regional sales split between EU, NA and RoW

Costs

- Extensive manufacturing and research footprint in the U.S.
- Global customer proximity requires broad-based sales force

Net Sales currency exposure¹



FX impact on EBITDA pre²



Sales

- ~80% of sales in Asia-Pacific
- Industry is USD-driven

Costs

- Main production sites in Germany
- Several R&D and mixing facilities in Asia

Net Sales currency exposure¹



FX impact on EBITDA pre²



Group

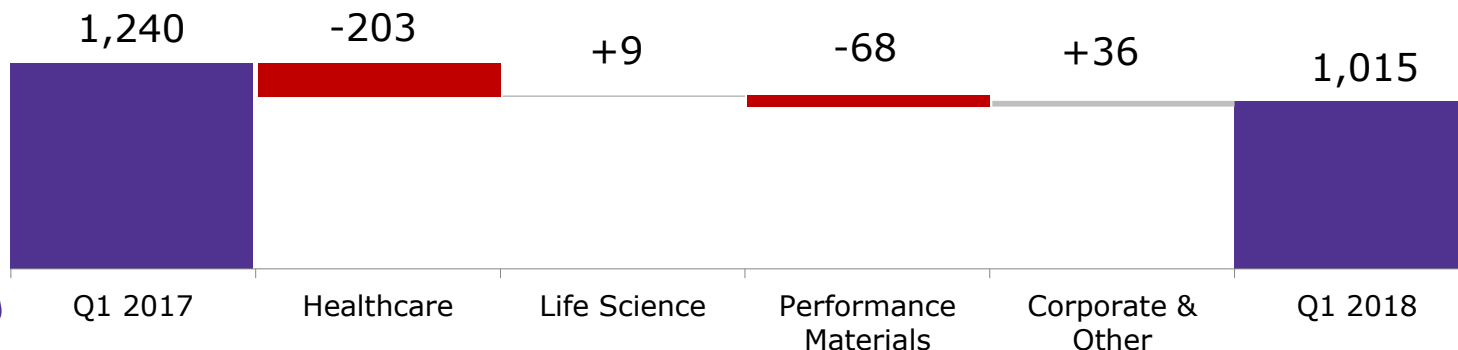
Organic growth driven by Healthcare and Life Science but more than offset by FX

Q1 2018 YoY net sales

	Organic	Currency	Portfolio	Total
Healthcare	1.8%	-7.2%	0.0%	-5.5%
Life Science	8.8%	-8.4%	0.0%	0.4%
Performance Materials	-4.0%	-8.5%	0.0%	-12.5%
Group	3.5%	-7.9%	0.0%	-4.4%

- Healthcare reflects strong growth in Fertility and CH, Mavenclad and Bavencio contributing positively, outweighing Rebif decline
- Above-market performance in Life Science driven by all business units
- Strong growth of Semiconductor Solutions and positive OLED mitigate LC decline
- Strong FX headwinds (-€305 m) in Q1 2018

Q1 YoY EBITDA pre contributors [€ m]



- HC reflects FX headwinds, one-time effects and negative business mix
- Life Science driven by organic growth and ongoing synergy realization, mitigated by FX
- PM with strong Semiconductor Solutions and OLED performance, more than offset by LC decline
- Corporate EBITDA pre contains hedging gains

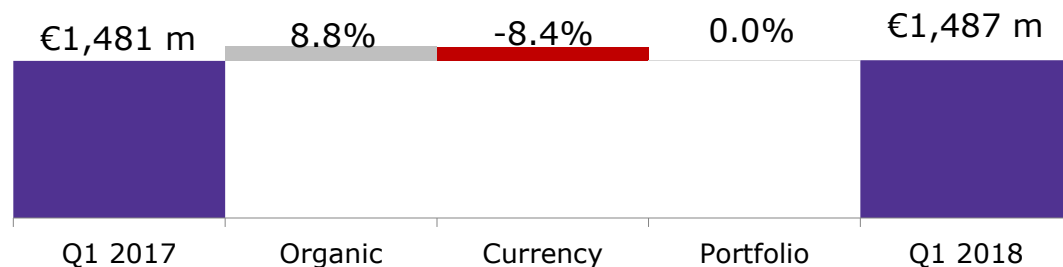
Life Science

Q1 2018: Continued strong organic growth offset by FX

Life Science P&L

[€m]	Q1 2017	Q1 2018
Net sales	1,481	1,487
Marketing and selling	-449	-408
Administration	-70	-70
Research and development	-62	-59
EBIT	236	273
EBITDA	430	442
EBITDA pre	445	455
Margin (in % of net sales)	30.1%	30.6%

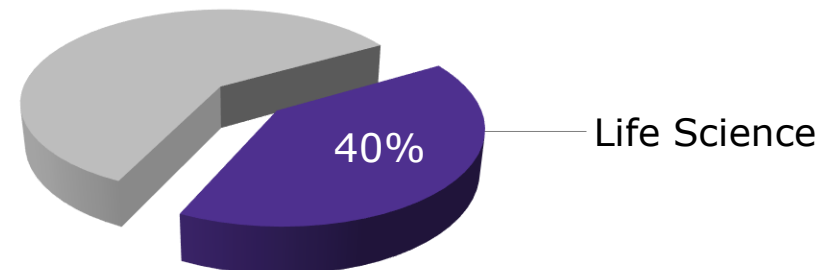
Net sales bridge



Comments

- Process Solutions with double-digit growth driven by all businesses, especially high demand for single use, cell-culture media and services
- Applied Solutions shows high single-digit organic growth, fueled by all major businesses across all major regions
- Research Solutions posts solid organic growth from high demand across all businesses, mainly laboratory and specialty chemicals
- Marketing & selling organically flat with additional benefit from FX
- Slight increase in profitability as solid organic growth including synergy realization are mostly offset by FX

Q1 2018 share of group net sales



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