



MERCK KGAA, DARMSTADT, GERMANY

EVERCORE ISI MEDTOOLS CONFERENCE

Udit Batra, CEO Life Science

Boston - November 30, 2016



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Agenda

- 01 Business overview**
- 02 Transforming the company**
- 03 Healthcare – Funding for success**
- 04 Life Science – Focusing on profitable growth**
- 05 Performance Materials – Maintaining superior profitability**
- 06 Executive Summary and guidance**



01

BUSINESS OVERVIEW

Group

Portfolio of three high-tech businesses



Leading in specialty pharma markets

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



Leading life science company

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

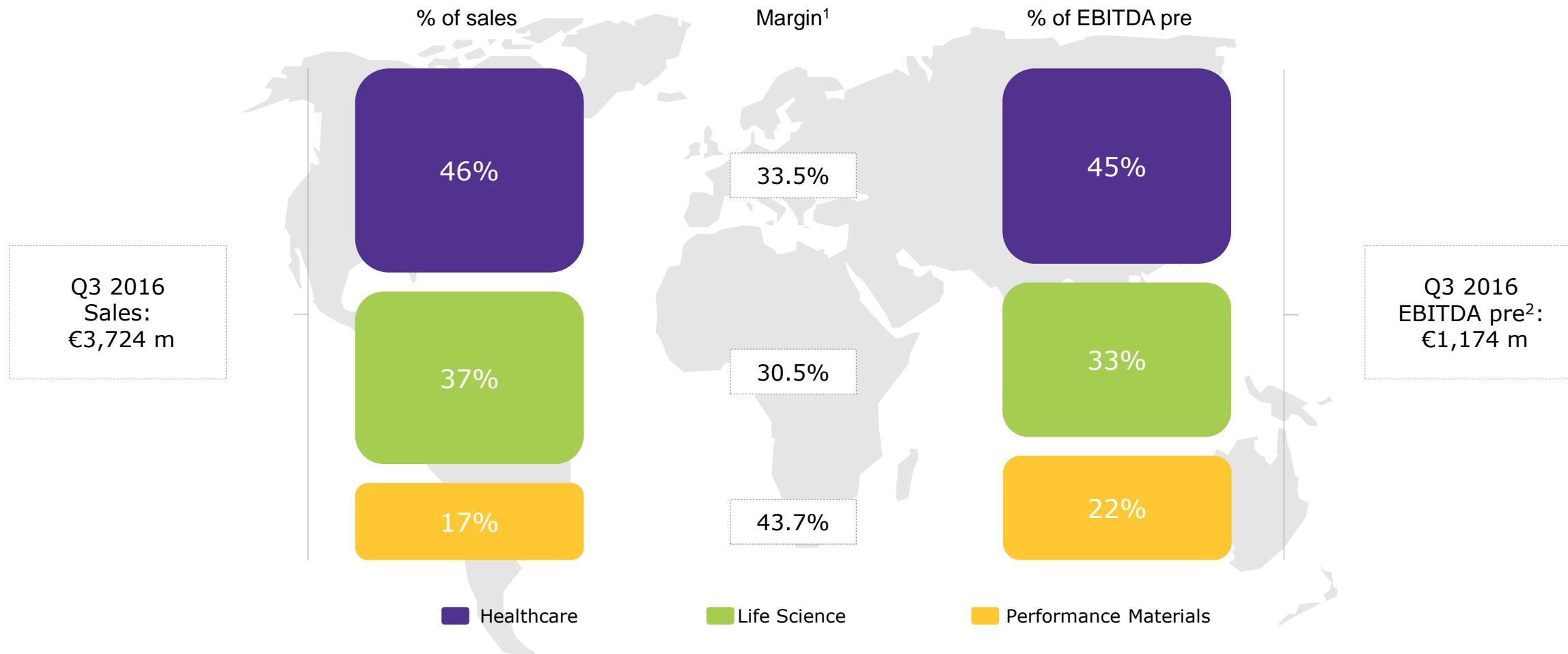


Market leader in specialty materials

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

Group

Strong businesses with attractive margins



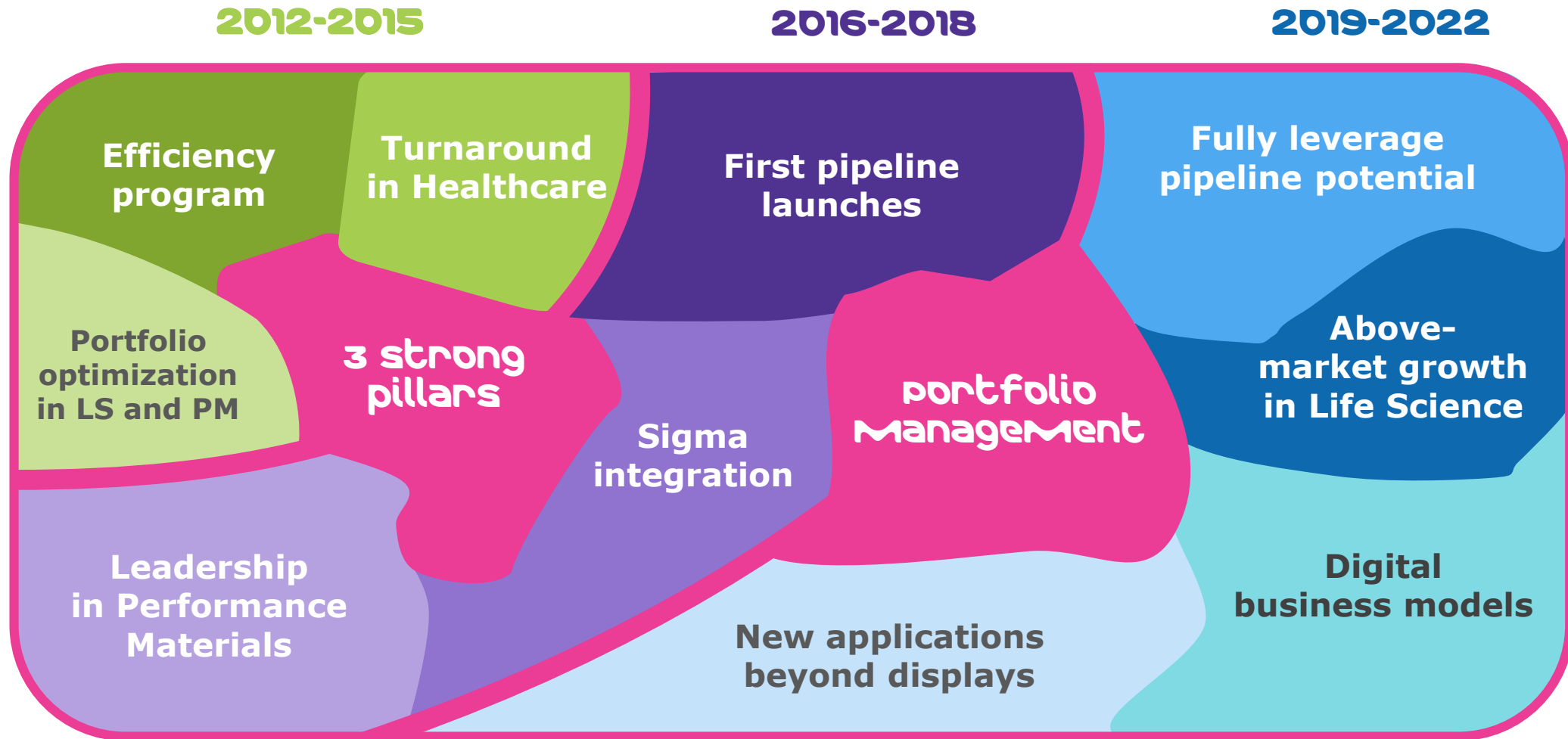
¹EBITDA pre margin in % of net sales; ²Including Corporate/Others (-€97 m)



02

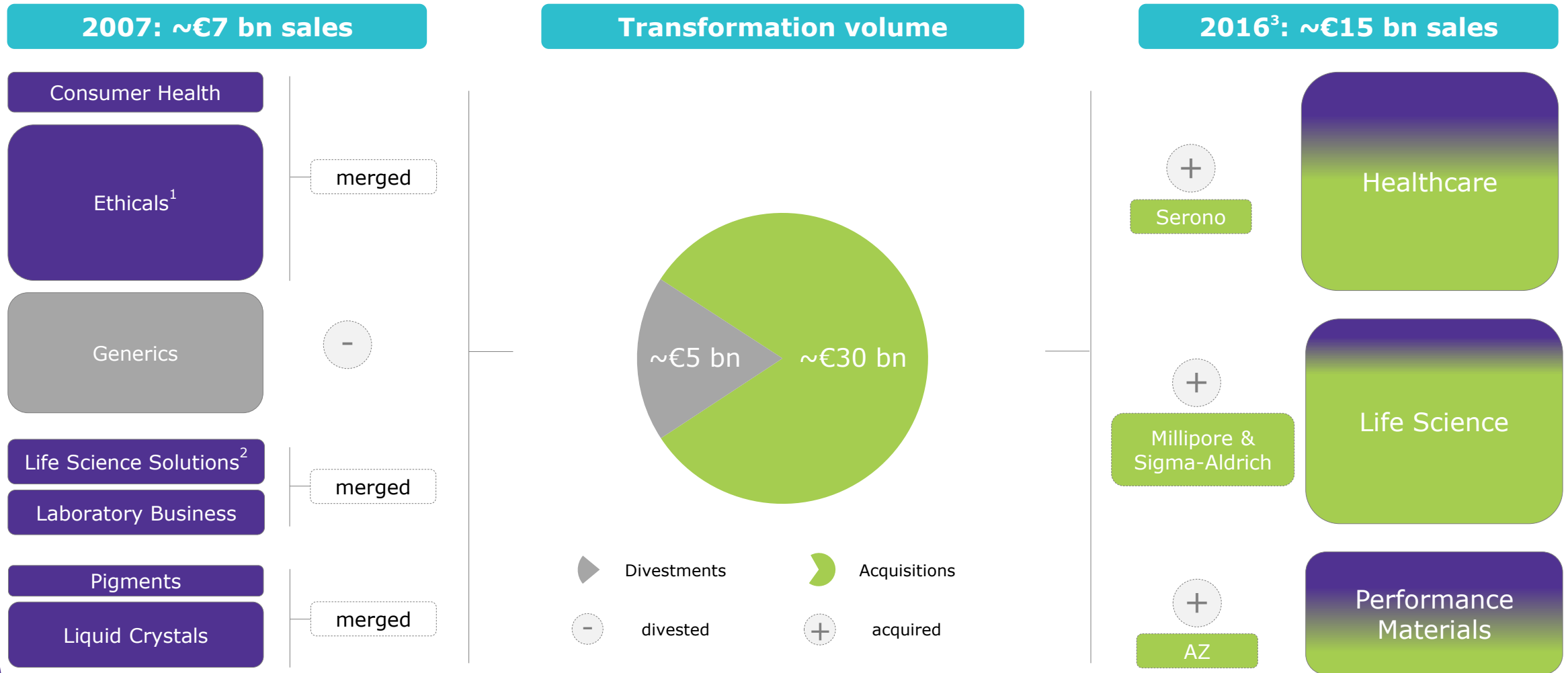
TRANSFORMING THE COMPANY

Group Strategic roadmap 2016-2022



Group

We have added scale and strengthened the attractiveness of our portfolio



Group

We have created three leading businesses

Healthcare

+ Serono

- Leading biotech company
- Global footprint
- Strong presence in growth markets
- Solid underlying business
- Promising pipeline assets

Life science

+ Millipore
+ Sigma

- No. 2 in the world market
- Broad and global product portfolio
- Leading eCommerce platform
- Best-in-class supply chain management

Performance Materials

+ AZ

- World market leader
- Technology and innovation leader

Science

Technology

Innovation

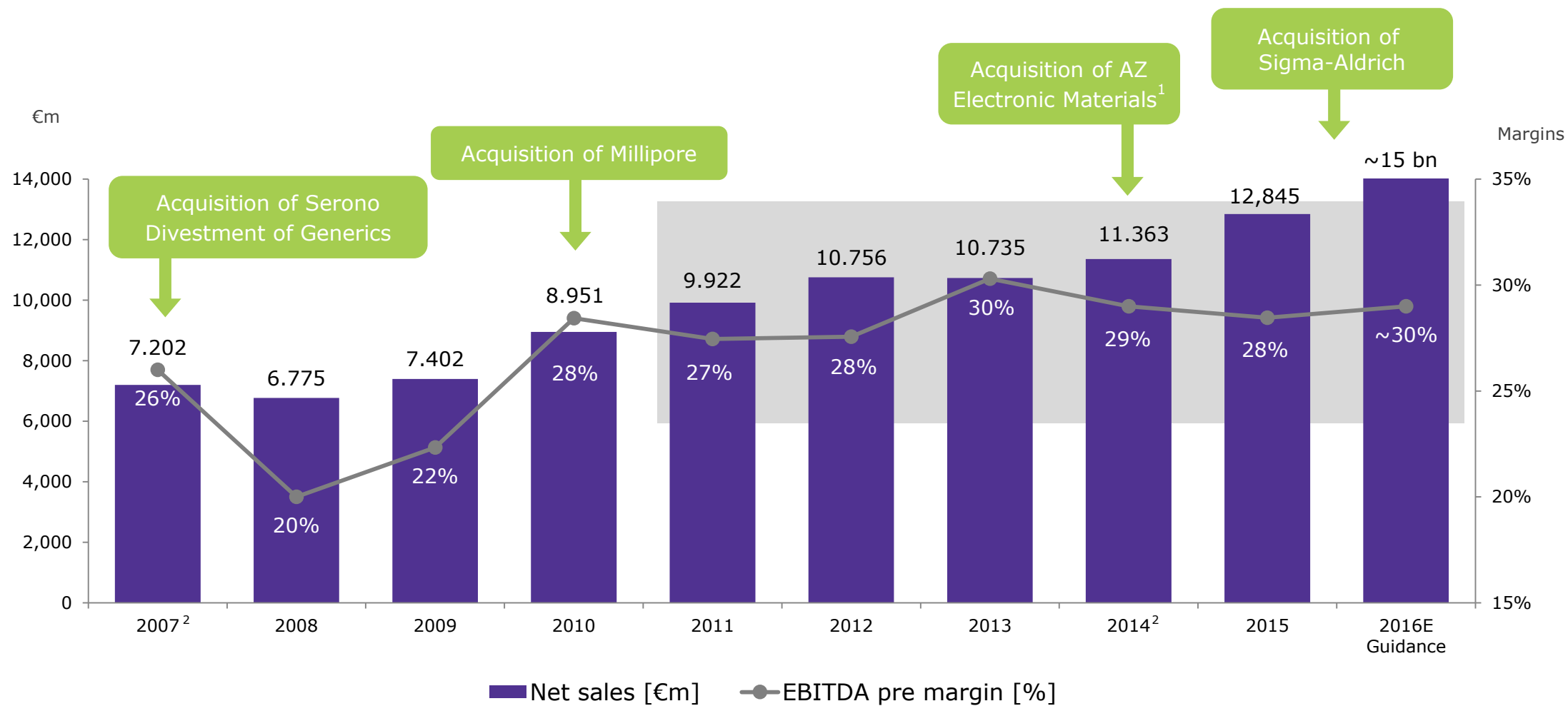
Specialties

Quality

Customer focus

Group

Profitability improved fundamentally

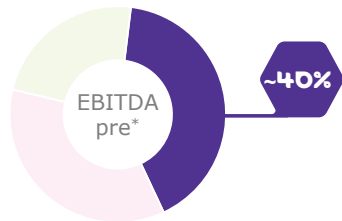


Group

Clear set of priority goals to be realized by 2018



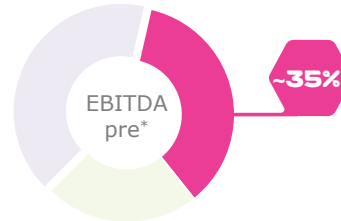
Healthcare



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



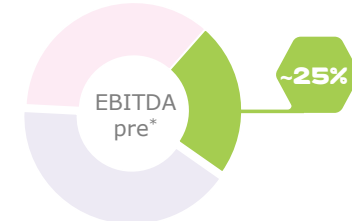
Life science



- 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) for the next 2 years (unless financed by divestments)
- Dividend policy reflects sustainable earnings trend



03

HEALTHCARE – FUNDING FOR SUCCESS

Healthcare

Healthcare is set to deliver on promising pipeline candidates

Deliver
on organic growth

Focus
on pipeline



Stable existing business to fuel slight organic growth



Solid pipeline of oncology, immuno-oncology and immunology molecules



Transformation of R&D operating model ongoing



Competitive R&D funding in our focus areas



Cost discipline and efficient execution

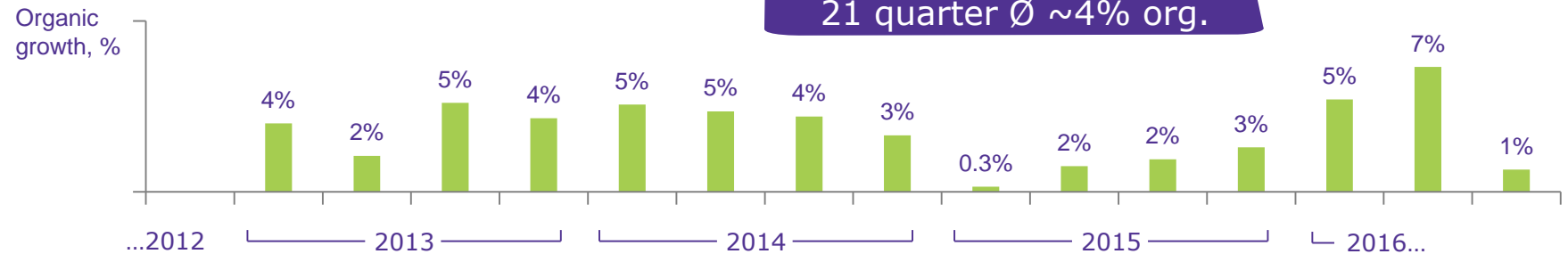


Healthcare

Operational excellence drives healthy growth of existing businesses

**Organic growth
for 21
consecutive
quarters**

Historic organic sales growth development



**Commitment to
at least stable
organic sales
until 2018**

Qualitative organic sales growth guidance per product/franchise until 2018

rebif®: Sales decline in line with interferon market

oncology: Stable sales

fertility: Mid single-digit growth

endocrinology: Low single-digit growth

general medicine: Mid to high single-digit growth

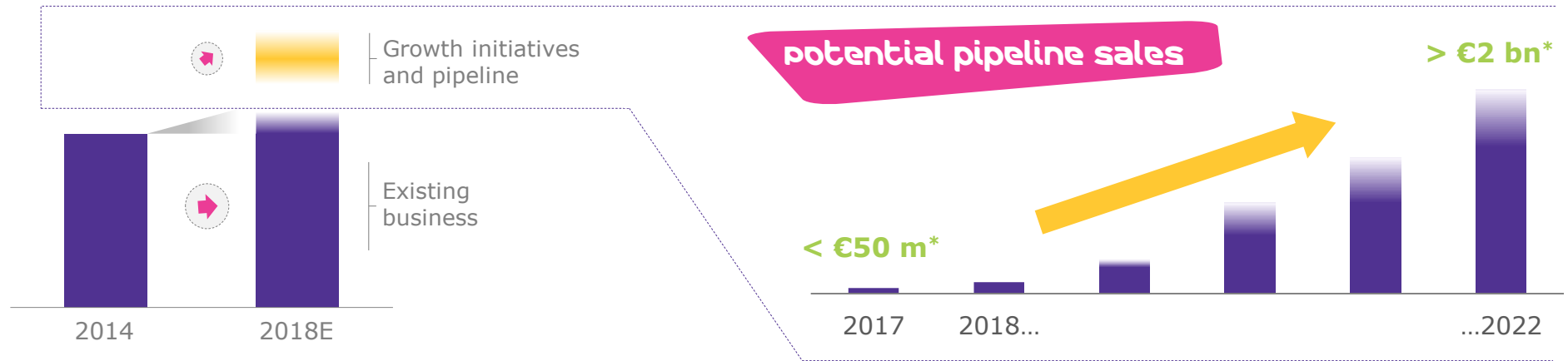
consumer health: Mid single-digit growth

Healthcare

Well on track to deliver the pipeline

Deliver the pipeline

Increase R&D spending



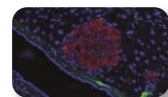
Key investments



Avelumab



BTK – inhibitor



TGF-beta trap



R&D costs in 2017 expected to exceed 2016





Main moving parts:

- Phase III progress of avelumab
- Regular prioritization in view of market dynamics
- Active partnering of selected pipeline assets (e.g. BTK-i)

Healthcare

Pipeline progress since October 2015

	phase I		phase II		phase III / filing
IMMU- nology	anti IL-17 (psoriasis)		BTK-i (RA)	sprifermin (OA)	Cladribine Tablets (RRMS) 
	BTK-i (SLE)		BTK-i (SLE)	BTK-i (3 rd indication)	
			atacept (SLE)		
oncology	BTK-i (hematological tumors)		tepotinib (HCC 2L)	tepotinib (HCC 1L ¹)	
	tepotinib (solid tumors)	DNA-PK-i (solid tumors)	tepotinib (NSCLC 2L)	tepotinib (NSCLC 2L ¹)	
	P70S6K/Akt-i (solid tumors)	BRAF-i (solid tumors)			
IMMUNO- oncology	avelumab (gastric Japan)	avelumab + 4-1BB / OX-40 (solid tumors)			avelumab (solid tumors) 
	avelumab (solid tumors)	avelumab + crizotinib / lorlatinib (solid tumors)			avelumab+chemo (Gastric 3L)
	avelumab + Inlyta (RCC)	avelumab (hematological malignancies)			avelumab+chemo (Gastric 1L maintenance)
	M7824 Anti-PD-L1/TGfB Trap (solid tumors)	avelumab + NHS IL 12 combination			avelumab + Inlyta (RCC 1L)
	NHS-IL 12 (solid tumors)				avelumab (NSCLC 2L)
Bio- similar					MSB11022 Biosimilar (Chronic plaque psoriasis)

 Under preparation²
 New in pipeline³
 Moved into next phase³
 Maintained position
  In registration

As of October 7, 2016; ¹Asia ex Japan; ²Under preparation for this phase; ³Since R&D Update call on October 1, 2015; Acronyms: SLE = systemic lupus erythematosus, OA = osteoarthritis, RRMS = relapse remitting multiple sclerosis, NSCLC = non-small cell lung cancer, HCC = hepatocellular carcinoma, STS = soft-tissue carcinoma, PaCa = pancreatic cancer, MCC = Merkel cell carcinoma, RA = rheumatoid arthritis, SCCHN = squamous cell cancer of the head and neck



04

**LIFE SCIENCE –
FOCUSING ON
PROFITABLE GROWTH**

Serving customers across the life science industry

RESEARCH



- Academic and government institutions
- Biopharma R&D
- Industry R&D

PROCESS



- Pharmaceutical companies
- Small biotech
- Contract manufacturing organizations

APPLIED

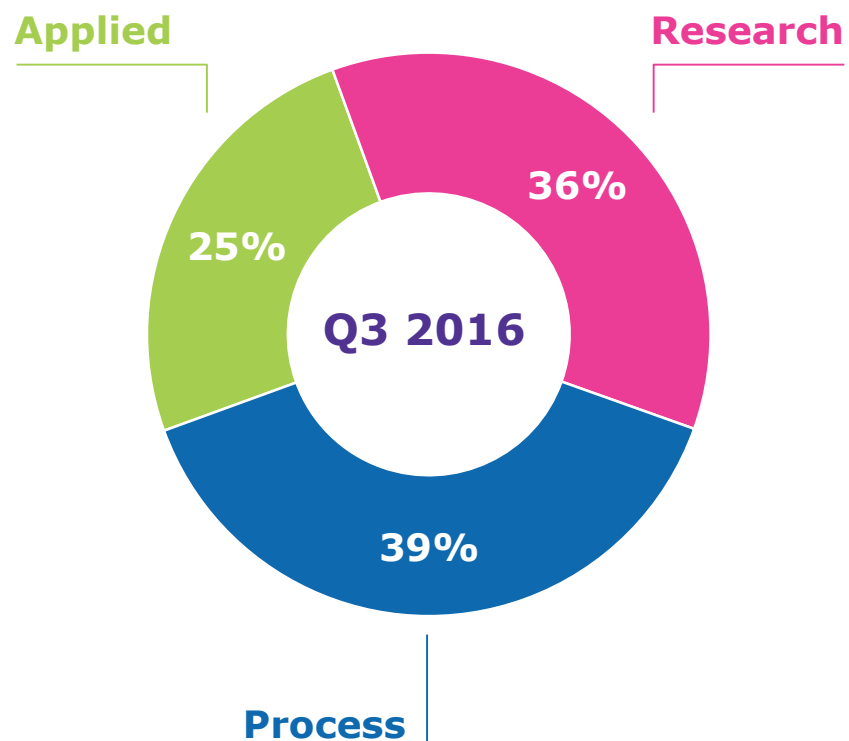


- Diagnostic manufacturers
- Clinical testing labs
- Food & Beverage manufacturers

Life Science

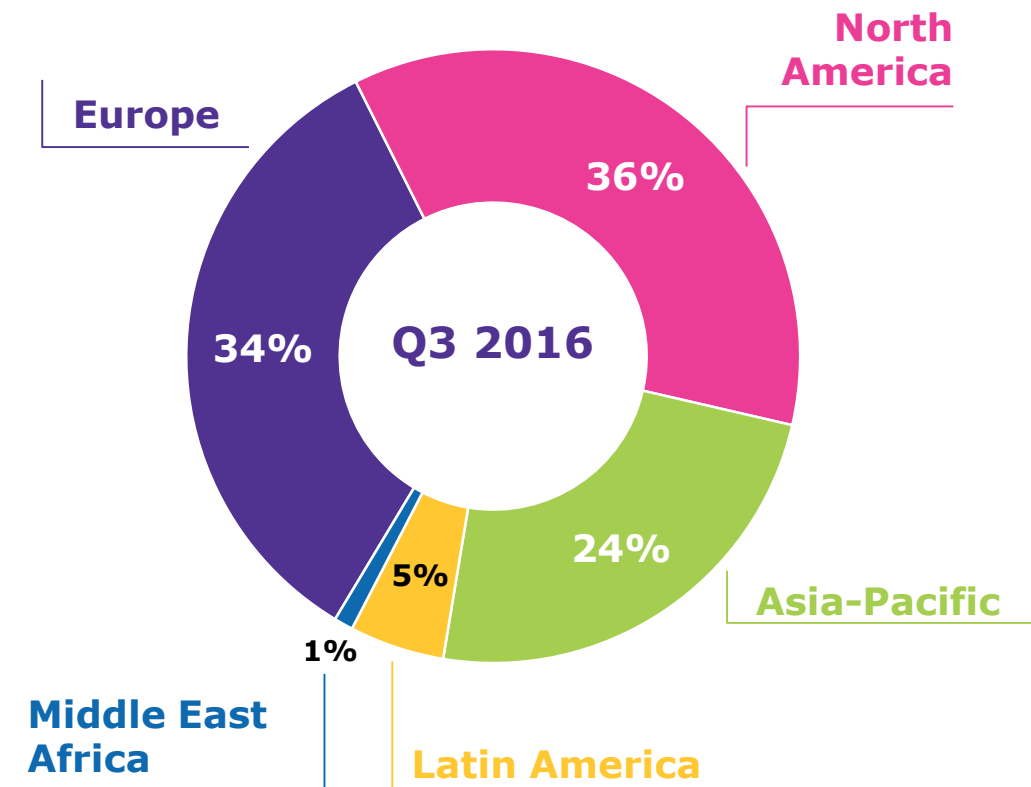
A balanced portfolio and geographic presence

Sales by business unit



FY 2015
pro-forma*
sales:
€5.3 bn

Sales by region



Life Science

Life Science is an attractive market

RESEARCH

~€42 bn

Low single digit



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

PROCESS

~€38 bn

High single digit



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

APPLIED

~€45 bn

Mid single digit



- Volume growth from
 - Population growth
 - Increased testing needs

Success driven by portfolio breadth, customer intimacy & leading capabilities

RESEARCH



Broad, relevant and innovative portfolio

Simple customer interface

Ability to manage complexity across organization (e.g., reliability of supply)

PROCESS



Developed market:
Deep expertise in each unit operation

Emerging market:
Broad portfolio

Demonstrated quality & regulatory leadership

APPLIED



Customized workflows for specific applications

Ability to manage complexity across organization (e.g., reliability of supply)

Demonstrated quality & regulatory leadership

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

Research and Applied Solutions #1 website in research life science industry

Industry leading e-commerce platform and supply chain capability



SEARCH



Hundreds of
thousands of
products at your
fingertips



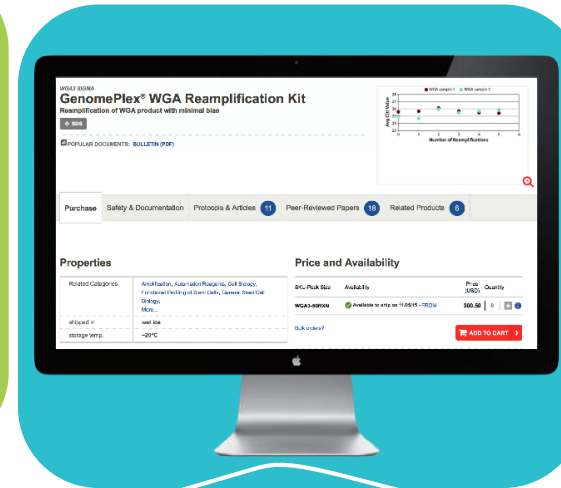
CONTENT



Online leader in
scientific content:
articles, protocols
and peer reviewed
papers



ORDER



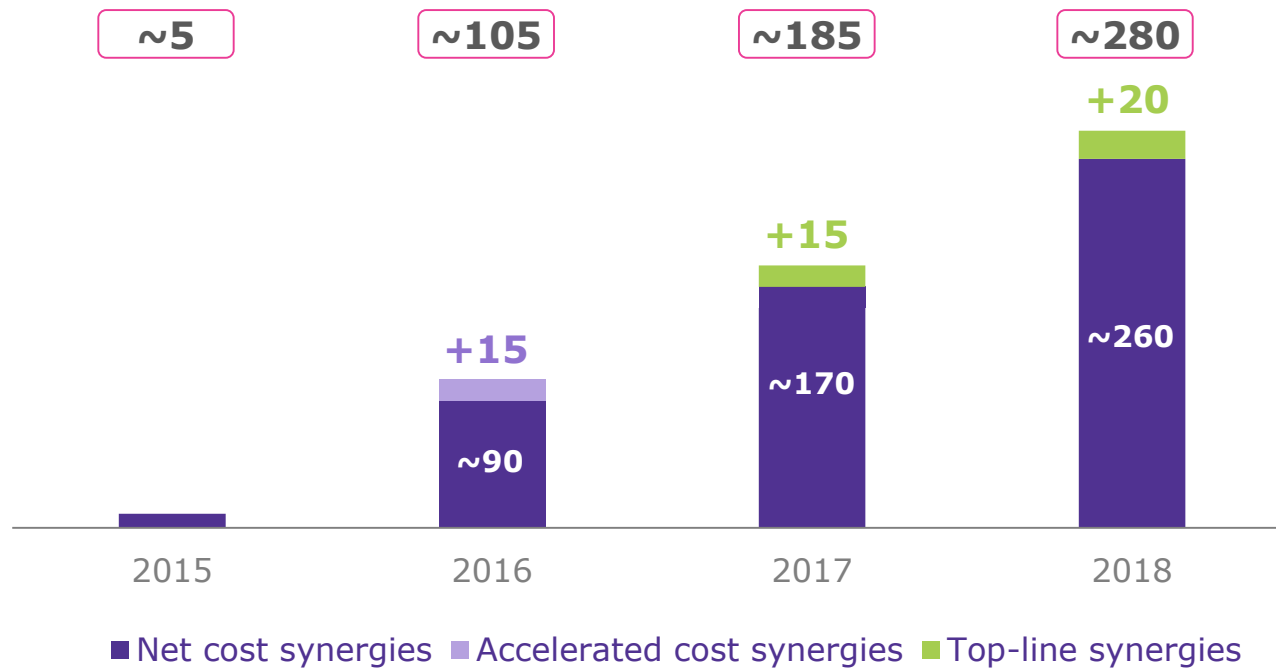
Real-time pricing
and availability



Convenient and simple
customer interface: **no
more than 2 clicks
from shopping cart**

Synergy upgrade driven by fast 2016 execution and top-line synergies

EBITDA pre impact of synergy ramp-up [€m]



Synergy upgrade of ~10% confirms strong integration capabilities

Sources

Cost synergy update (for 2016)

- **faster** implementation of synergy measures in all areas
- **2016** expected total cost synergies of **~€105 M**
- Integration costs remain unchanged at ~€400 m

Top-line synergies (from 2017)

- Strong eCommerce and **IT capabilities** applied to our products
- Extensive **portfolio** and **customer** complementarity in Process and Applied Solutions
- Leverage **regional** Merck KGaA, Darmstadt, Germany, Asia and Sigma North America footprint
- Expecting **~50-100 bps** in additional **sales growth** with average EBITDA pre margin

Life Science delivers synergies and integrates as planned

synergies

On track to deliver 2016 synergy target of €90 m:

- HQ measures complete
- 50% of headcount targets met
- 4 site closures in progress
- Procurement actions moving
- Preparing distribution consolidation



integration

Smooth integration ongoing with early achievements:

- Organization structure implemented
- High engagement from organization
- Common definition and implementation of processes well underway, e.g. pricing, customer excellence

No disruption of growth momentum during integration

We create sustainable value that is based on strong strategic levers



Wide, innovative portfolio

- A combined portfolio of +300,000 products
- Integrated offerings along the life science value chain
- Complete workflow solutions



Balanced geographic footprint

- Increased presence in North America
- Accelerating growth momentum in Asia
- Expanded geographic reach in 60+ countries



Industry-leading capabilities

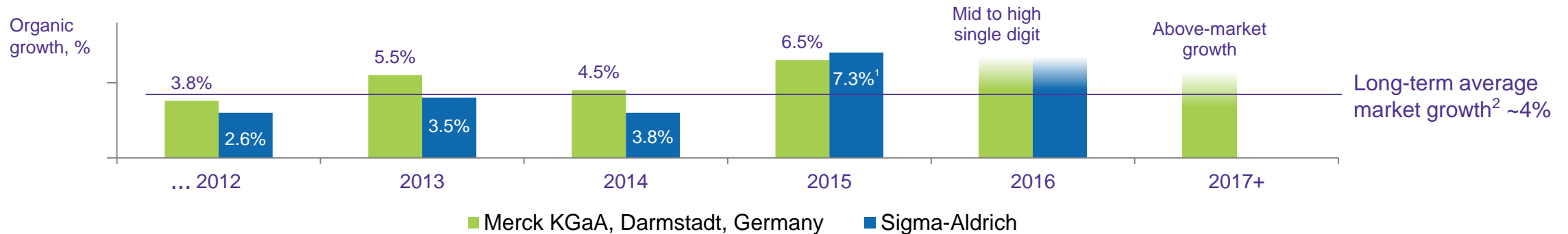
- Outstanding supply chain management (ability to deal with complexity)
- Simple e-commerce platform (customer interface with global coverage)
- Expertise to manage regulatory barriers

Our capabilities are the foundation for future topline growth in Life Science

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

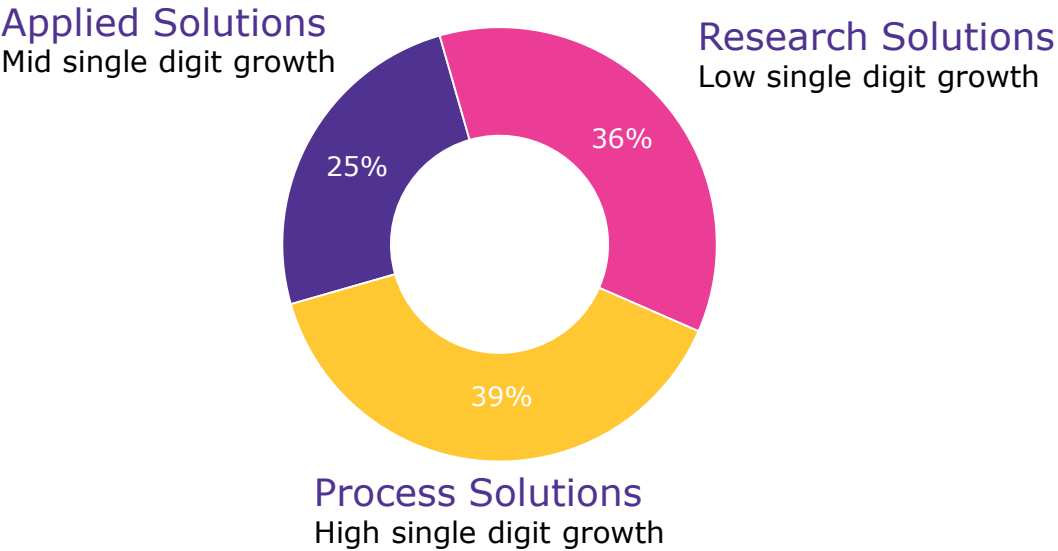
Top-line synergies

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

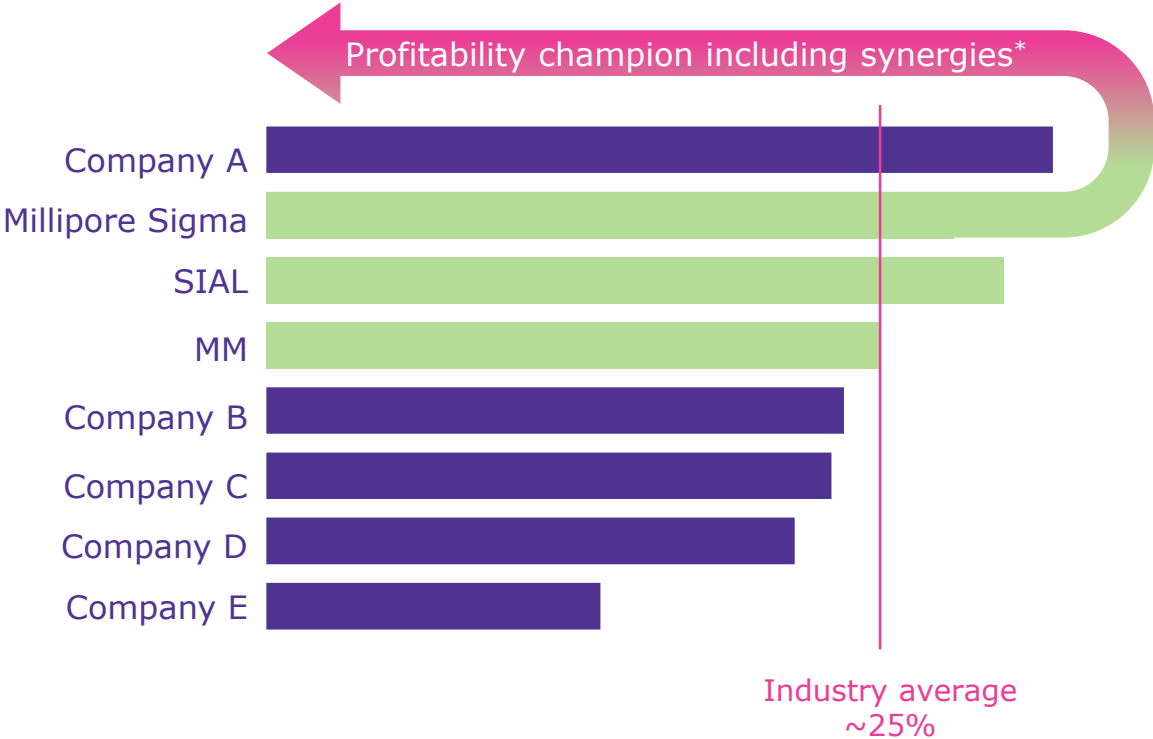
Life Science

We aim to be the profitability champion of the sector

Sales breakdown as of Q3 2016



Above industry margin levels



Life Science is well set for sustainable growth and profitability











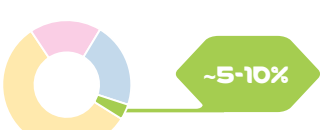



05

**PERFORMANCE
MATERIALS –
MAINTAINING SUPERIOR
PROFITABILITY**

Performance Materials

The four pillars are set for future profitable growth

Business unit	% sales	Products	Mid-term growth trend
 Display Materials		<ul style="list-style-type: none"> Liquid crystals (LC) and photoresists for TVs, smartphones and tablet computers Other display and non-display applications (e.g. LC Windows) 	
 Pigments and Functional Materials		<ul style="list-style-type: none"> Effect pigments and functional materials for coatings, plastics, printing and cosmetics Functional materials for cosmetics & special applications 	
 Integrated Circuit Materials		<ul style="list-style-type: none"> Dielectrics, colloidal silica, lithography materials, yield enhancers, edge-bead removers Polyimide raw materials and printing materials 	
 Advanced Technologies		<ul style="list-style-type: none"> Organic and inorganic light emitting diodes Functional materials for electronics and energy solutions 	

Well-founded medium-term low to mid single-digit growth profile

Four-pillar strategy and innovation power strengthen our earnings profile

Ongoing innovation

Launch of innovative products and new business models continues

Four strong pillars

Combination of four highly profitable businesses raises diversification

Market leadership

Strong market position is based on innovation power and differentiation



1 Superior profitability

2 Strong earnings resilience

3 Low to mid single-digit mid-term growth

Performance Materials

Sound platform to deliver high earnings

1 Four-pillar platform diversifies earnings stream

- Liquid Crystals remain key earnings contributor
- AZ* expertise is being leveraged to develop innovative value-added solutions for customers
- OLED is becoming a visible growth driver
- Pigments continue to grow with high-end products

2 Continuous innovation as key profitability driver

- New products contribute high growth and profitability
- LC* technology mode UB-FFS* launched in 2014 is the most recent example

Diversification of portfolio and ongoing innovation lead to strong profitability

Balanced sales and consistently high earnings



We are the innovation leader



*Abbreviations: AZ = AZ Electronics, LC = Liquid crystals, UB-FFS = Ultra Brightness Fringe Field Switching, IPS = In-Plane-Switching, VA = Vertical Alignment, PS-VA = Vertical Alignment with additional polymer layer fabricated from reactive mesogenes

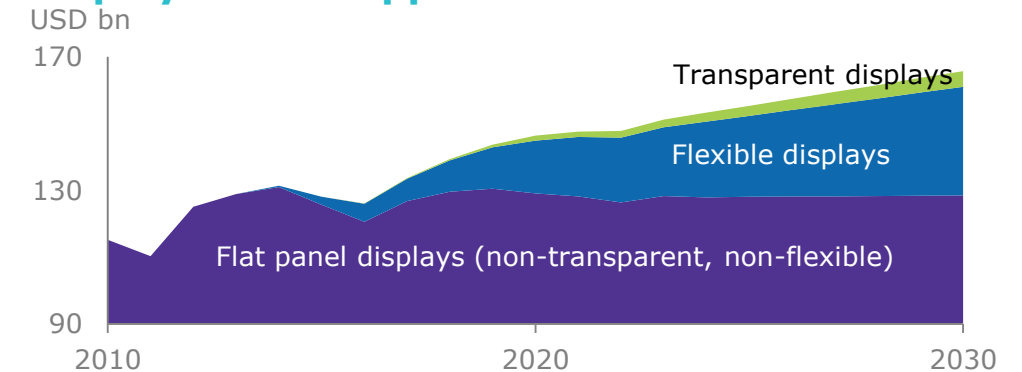
Performance Materials

Long-term growth and profitability drivers are intact

3 Macroeconomics and electronics remain buoyant

- Global consumer electronics market expected to grow above GDP*
- Mobile data, Internet of Things and Big Data are key growth drivers for LC and IC
- Display market continues to grow

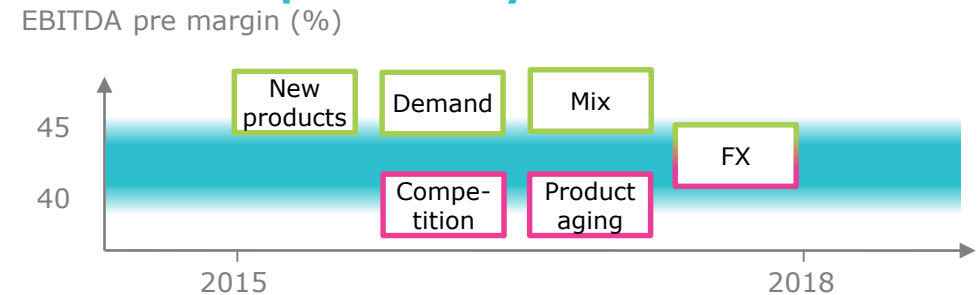
Display market opportunities continue to evolve



4 High value-added products yield superior profitability

- High market share in liquid crystals expected to prevail
- Strong differentiation by innovation inherent mature of business

Sustainable profitability drivers



Unique differentiation and market position will continue to lead to strong profitability and maintain low single-digit growth trajectory



06

EXECUTIVE SUMMARY AND GUIDANCE

Group

We are well on track to deliver on our promises



Group

Net debt reduced by ~€1 bn¹
Strict financial discipline supports rating



Healthcare

Base business growing
2 pipeline compounds in registration



Life Science

Sigma-Aldrich synergies raised
Organic growth above market



Performance Materials

Introduce new technologies
Volatility well managed

**Important
Milestones
reached
to deliver
on our
promises**

**CMD²
December
2015**

**CMD
October
2016**

2018

Group

We have clear financial priorities for the next two years



Focus on **cash flow**
and **deleveraging**

- **Strong cash flow** will be used to drive down gearing to <2x net debt / EBITDA pre in 2018
- **Larger acquisitions (>€500m) ruled out** for the next two years (or financed by divestments)
- **Dividend policy** reflects sustainable earnings trend



Ongoing cost discipline

- **Synergy generation** is utmost priority
- **Cost discipline** continues in all business sectors
- **Further efficiency gains** from ongoing improvement and harmonization of processes and systems



**Efficient capital
allocation**

- **All our businesses** have growth potential
- **Decisions on growth investments** are based on sound business cases and robust clinical data

Near-term financial priorities will secure Company's profitable growth path

Group Upgrade of full-year 2016 guidance

Group guidance for 2016

▶ **Net sales:** ~ €14.9 – 15.1 bn ◀

▶ **EBITDA pre:** ~ €4,450 – 4,600 m ◀

▶ **EPS pre:** ~ €6.15 – 6.40 ◀





Appendix

01 Guidance details

02 Healthcare

03 Life Science

04 Performance Materials

05 Financial details



01

GUIDANCE DETAILS

2016 business sector guidance



Net sales

- Solid organic growth
- Organic Rebif decline
- Strong growth in Fertility
- Other franchises growing

EBITDA pre

~ €2,100 – 2,200 m



Net sales

- Mid to high single-digit organic growth
- Main driver Process Solutions
- High double-digit contribution from Sigma

EBITDA pre

~ €1,640 – 1,670 m



Net sales

- Moderate organic decline
- Improving macro signs amid display industry destocking in LC
- Growing demand in all businesses

EBITDA pre

~ €1,100 – 1,150 m

Additional financial guidance 2016

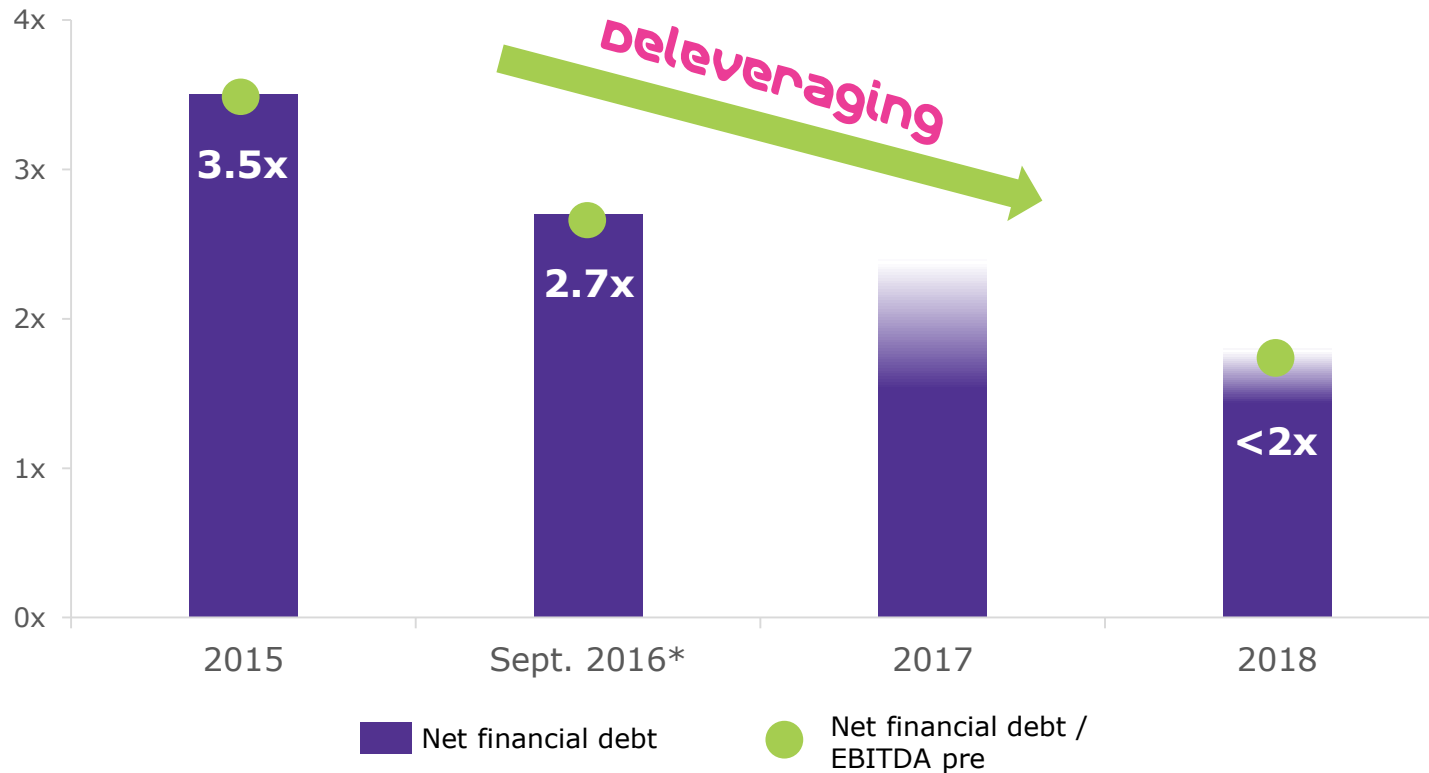
Further financial details

Corporate & Other EBITDA pre	~ -€370 – -400 m
Interest result	~ -€270 – -300 m
Intangibles amortization from Sigma PPA	~ €250 – 300 m p.a.
Underlying tax rate	~ 23% to 25%
Capex on PPE	~ €750 – 800 m
Hedging/USD assumption	2016 & 2017 hedge ratio ~40%-45% at EUR/USD ~ 1.11 to 1.16
2016 Ø EUR/USD assumption	~ 1.09 – 1.12

Strong focus on cash generation to ensure swift deleveraging

Net financial debt and leverage development

[Net financial debt/
EBITDA pre]



Focus on deleveraging

- Commitment to swift deleveraging to ensure a strong investment grade credit rating and financial flexibility
- Strong cash flow will be used to drive down leverage to expected <2x net debt/EBITDA pre in 2018
- Larger acquisitions (>€500 m) ruled out for the next two years (or financed by divestments)

High cost base in strong currencies and hedging losses partially offset FX tailwinds



Healthcare

Sales

- Global presence
- ~40% of sales in Europe

Costs

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

FX Impact



Life Science

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

FX Impact



Performance Materials

Sales

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

Costs

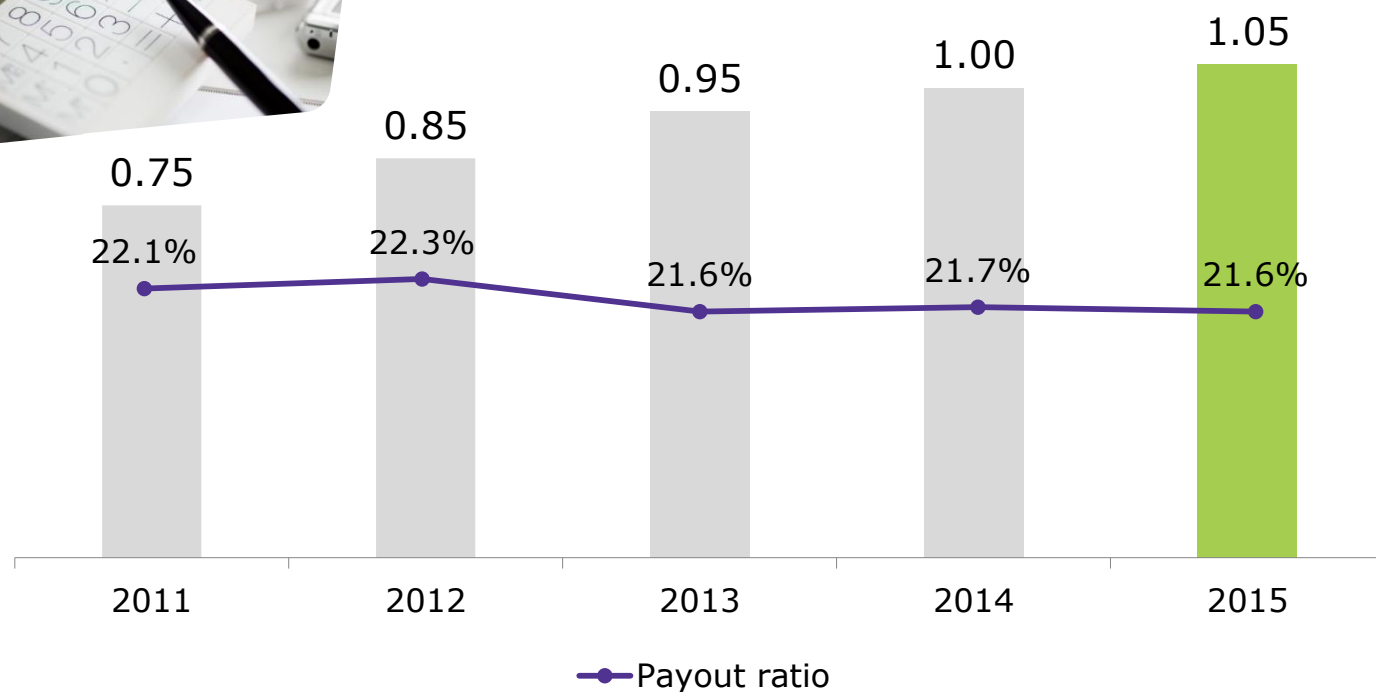
- Main production sites in Germany
- Several R&D and mixing facilities in Asia

FX Impact



Sustainable dividend development

Dividend¹ development 2011-2015



2015 dividend and policy

- Dividend of €1.05 per share for 2015
- Last year's dividend constitutes the minimum level²
- Development of dividends in line with business performance and earnings progression
- Aiming for a corridor of 20%-25% of EPS pre



02 HEALTHCARE

The road to maximizing Healthcare's existing franchises is clear

	Continue to drive mCRC* share by increasing patient testing and expanding head and neck coverage
	Ongoing 3x3 growth strategy implementation to strengthen sales and marketing activities delivering above-market organic sales growth
	Capitalize on strong efficacy and new smart devices to maximize differentiation and defend franchise
	Build on No.1 position and ART* channel access with embryo diagnostics and other innovative technologies
	Harness strengths of existing business and build a new focus area driven by innovative devices and services for patients
	Build on existing track record in emerging markets, drive brand and lifecycle management and expand business including asset repatriation



Clinical pipeline

Phase I

Tepotinib – c-Met kinase inhibitor
Solid tumors

M2698 – p70S6K & Akt inhibitor
Solid tumors

M3814 – DNA-PK inhibitor
Solid tumors

Beigene-283 – BRAF inhibitor
Solid tumors

M7583 – BTK inhibitor
Hematological malignancies

Avelumab – Anti-PD-L1 mAb
Solid tumors

Avelumab – Anti-PD-L1 mAb
Hematological malignancies

M9241 (NHS-IL12)¹
Cancer immunotherapy
Solid tumors

M7824 – Bifunctional immunotherapy
Solid tumors

M1095 (ALX-0761)
Anti-IL-17 A/F nanobody
Psoriasis

M2951 – BTK inhibitor
Systemic lupus erythematosus

Phase II

Tepotinib
c-Met kinase inhibitor
Non-small cell lung cancer
Tepotinib
c-Met kinase inhibitor
Hepatocellular cancer

Sprifermin
Fibroblast growth factor 18
Osteoarthritis
Atacicept
Anti-Blys/anti-APRIL fusion protein
Systemic lupus erythematosus
M2951
BTK inhibitor
Rheumatoid arthritis

Phase III

Avelumab – Anti-PD-L1 mAb
Non-small cell lung cancer 1L²
Avelumab – Anti-PD-L1 mAb
Non-small cell lung cancer 2L³
Avelumab – Anti-PD-L1 mAb
Gastric cancer 1L²
Avelumab – Anti-PD-L1 mAb
Gastric cancer 3L⁴
Avelumab – Anti-PD-L1 mAb
Bladder cancer 1L²
Avelumab – Anti-PD-L1 mAb
Ovarian cancer platinum resistant/refractory
Avelumab – Anti-PD-L1 mAb
Ovarian cancer 1L²
Avelumab – Anti-PD-L1 mAb
Renal cell cancer 1L²

MSB11022
Proposed biosimilar of Adalimumab
Chronic plaque psoriasis

Registration

Cladribine Tablets –
Lymphocyte targeting agent
Relapsing-remitting multiple sclerosis

Avelumab⁵ – Anti-PD-L1 mAb
Merkel cell carcinoma

- Neurodegenerative Diseases
- Oncology
- Immunology
- Immuno-Oncology
- Biosimilars

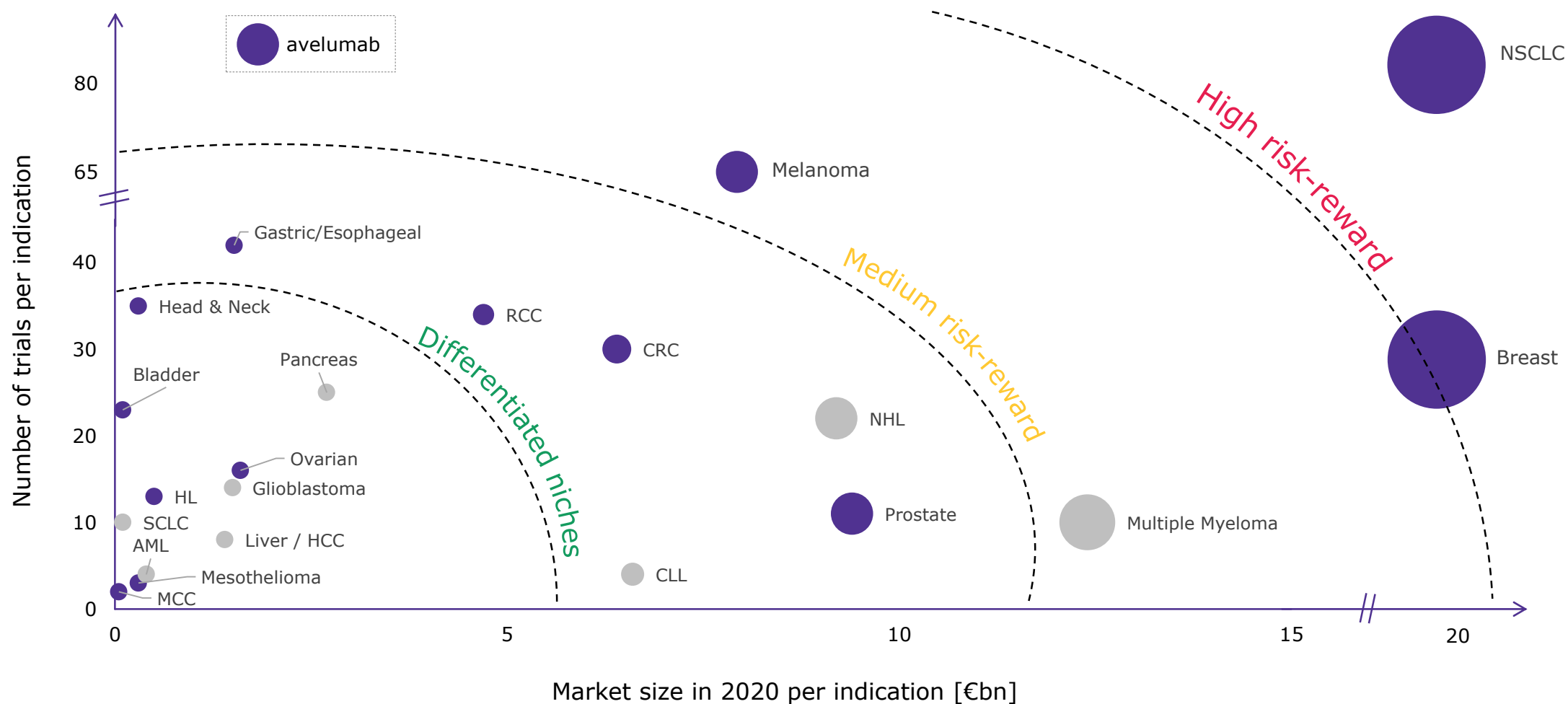
Pipeline as of November 7th, 2016

Pipeline products are under clinical investigation and have not been proven to be safe and effective.
There is no guarantee any product will be approved in the sought-after indication.

¹ Sponsored by the National Cancer Institute (USA); ² 1st line treatment; ³ 2nd line treatment; ⁴ 3rd line treatment;

⁵ European Medicines Agency accepted Marketing Authorization Application from Merck KGaA, Darmstadt, Germany in October 2016

Avelumab plays predominantly in attractive and differentiated niches



Sources: Trialtrave and Cortellis as of September 2015, Boston Consulting Group, Evaluate Pharma forecast 2020

Acronyms: SCLC = Small Cell Lung Cancer; HL = Hodgkins Lymphoma; NHL = Non Hodgkins Lymphoma; AML = Acute Myeloid Leukaemia

Avelumab – Differentiation strategy varies according to chosen target indication and market

1

**Unsaturated
and / or niche
indications**

- Ambition to lead in niche indications (e.g. Merkel cell) or markets (e.g. Asia for gastric)
- Quick to market strategy (e.g. BTB designation for MCC)
- Small, but less crowded markets and sales potential with notable impact for us
- Strategic strength of Healthcare in niche markets

2

**Saturated
and / or major
indications**

- Learn from experience of incumbents/early movers in major indications (e.g. NSCLC, Bladder)
- Potential for combinations given breadth of combined development pipelines
- Differentiate in trial design and explore application of further biomarkers



The alliance initiated 8 Phase III studies

1 Ovarian Plat res/ref

- Estimated patient enrolment: 550
- Comparator: Pegylated liposomal doxorubicin
- Estimated primary completion: H1 2018*

2 Bladder 1L maint.

- Estimated patient enrolment: 668
- Comparator: Best supportive care
- Estimated primary completion: H2 2019*

3 Gastric 1L maint.

- Estimated patient enrolment: 668
- Comparator: Best supportive care
- Estimated primary completion: H2 2018*

4 Gastric 3L

- Estimated patient enrolment: 330
- Comparator: Physician's choice of chemotherapy/BSC
- Estimated primary completion: H2 2017*

5 NSCLC 1L

- Estimated patient enrolment: 420
- Comparator: Physician's choice of platinum containing chemotherapy
- Estimated primary completion: H2 2017*

6 NSCLC 2L

- Estimated patient enrolment: 650
- Comparator: docetaxel/chemotherapy
- Estimated primary completion: H1 2018*

7 Ovarian 1L

- Estimated patient enrolment: 951
- Comparator: platinum-based chemotherapy
- Estimated primary completion: H2 2019*

8 Renal cell 1L

- Estimated patient enrolment: 583
- Comparator: sunitinib
- Estimated primary completion: H1 2018*

Clinical results support avelumab as potential therapeutic option for metastatic merkel cell carcinoma

Encouraging response rates¹

- ORR: 31.8%
 - 9.1% complete response
 - 22.7% partial response
 - Rapid (78.6% responding within 7 weeks of treatment)
 - Durable (82.1% still responding at time of analysis)
- 6-mo OS: 69% (median OS: 11.3 months)
- 6-mo PFS rate: 40%
- Manageable safety profile; no unexpected safety signals

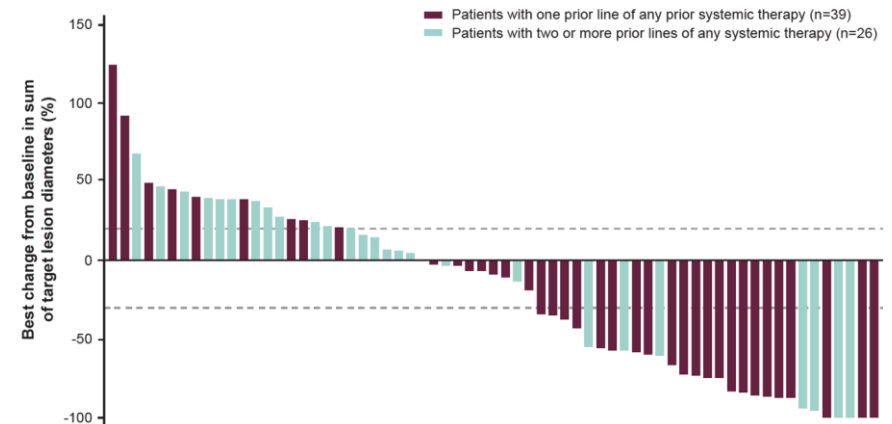


Note: timelines are event-driven and may change

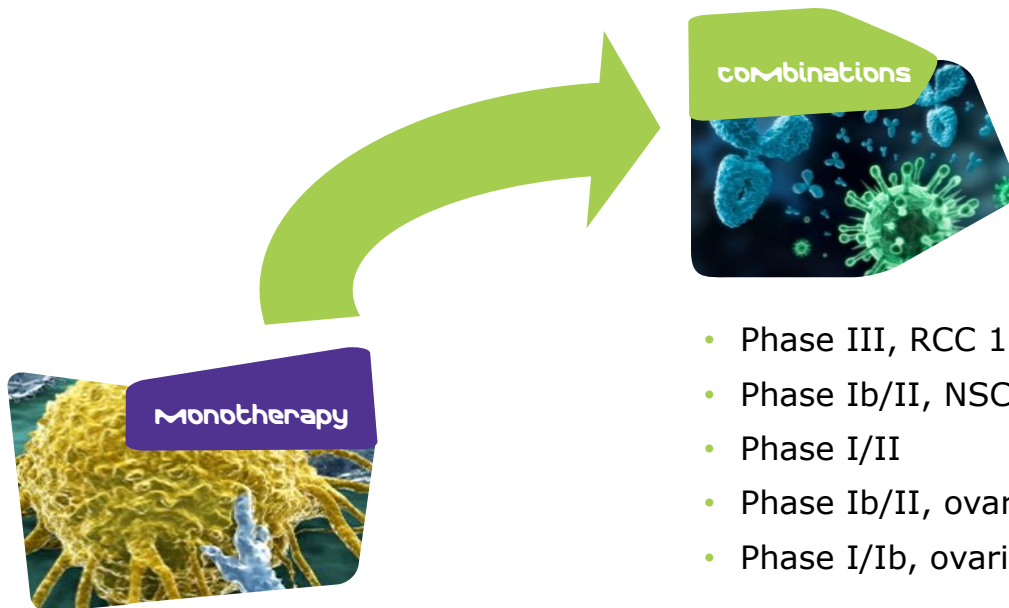
¹Avelumab (MSB0010718C; anti-PD-L1) in patients with metastatic Merkel cell carcinoma previously treated with chemotherapy: results of the phase 2 JAVELIN Merkel 200 trial / Oral Presentation at the 52nd ASCO Annual Meeting, June 3-7, 2016; Chicago, Illinois. Abstract No. 9508; Howard Kaufman et al.

Potential for differentiation

- Largest international multicenter, open-label study of anti-PD-L1/PD-1 reported in this patient population (88 patients) – Responses observed in large number of patients
- Improved response rates observed when used earlier, i.e. fewer lines of prior chemotherapy appeared to be associated with better response to avelumab in MCC 2L and beyond
 - ORR of 40.4% for patients with one prior systematic treatment
 - ORR of 19.4% for patients with two and more prior treatments



Going forward, avelumab combinations will drive differentiation strategy



- Phase II 2L MCC (BTD, ODD and FTD)
- Phase III 1L and 2L Plat res/ref ovarian
- Phase III 1L MN and 3L gastric
- Phase III 1L and 2L NSCLC
- Phase III 1L MN bladder
- Phase I Hodgkins Lymphoma
- Multiple other tumor types

- Phase III, RCC 1L (avelumab + Inlyta)
- Phase Ib/II, NSCLC 1L ALK+ (avelumab + Xalkori/lorlatinib)
- Phase I/II (avelumab + 4-1BB/OX 40)
- Phase Ib/II, ovarian (avelumab + Entinostat; Syndax collaboration)
- Phase I/Ib, ovarian (avelumab + VS-6063; Verastem collaboration)
- Further combination trials under consideration

Cladribine tablets – MAA submission accepted by EMA in July 2016

Background

- Targets lymphocytes (both B and T cells), integral to MS pathogenesis
- Two Phase III and one Phase IIIb extension studies conducted in RRMS and early MS^{1,2,3}; Phase II study in patients failing IFN beta therapy⁵
- Substantial new efficacy & safety characterization including data from long-term follow up (>10,000 patient-years)
- Most recent analyses provide relevant information on benefit/risk profile of cladribine tablets in RRMS:
 - ARR reduction (58%)
 - Risk of disability progression (33% reduction)
 - Relative reduction in mean number of lesion (86% reduction in T1 gadolinium-enhanced lesions)
 - 47% of patients experience NEDA over 2 years⁴

Potential for differentiation

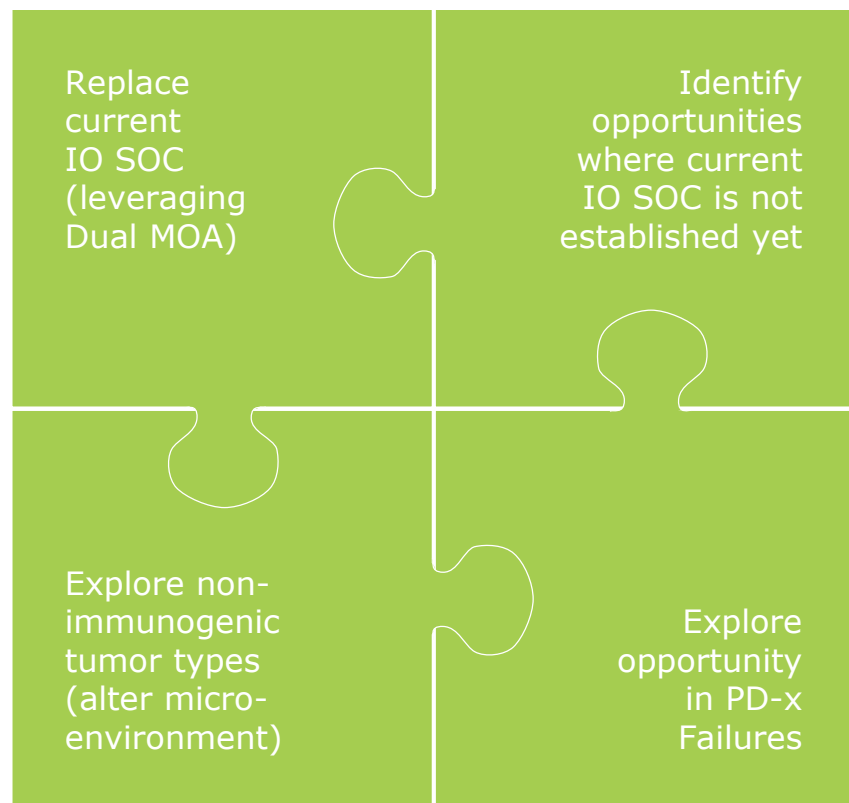
- Merck KGaA, Darmstadt, Germany aims to address significant unmet needs for agents delivering high efficacy with favorable safety profile in a convenient dosing regimen
- Administered orally (tablet formulation)
- Extremely short treatment courses (8–10 days per year) leading to long-term efficacy¹

Note: timelines are event-driven and may change

EMA = European Medicines Agency; ARR = Annualized Relapse Rate; MAA = Marketing Authorization Application; MS = multiple sclerosis; NEDA = no evidence of disease activity; RRMS = relapsing-remitting multiple sclerosis. ¹ Giovannoni G et al. New Engl J Med 2010;362:416–26; ² Giovannoni G et al. 65th annual meeting of the American Academy of Neurology 2013. P07.119. ³ Leist TP et al. Lancet Neurol 2014;13:257–67. ⁴ Giovannoni G et al. Lancet Neurol. 2011;10:329–37. ⁵ Montalban X et al. 65th annual meeting of the American Academy of Neurology 2013. P07.099.

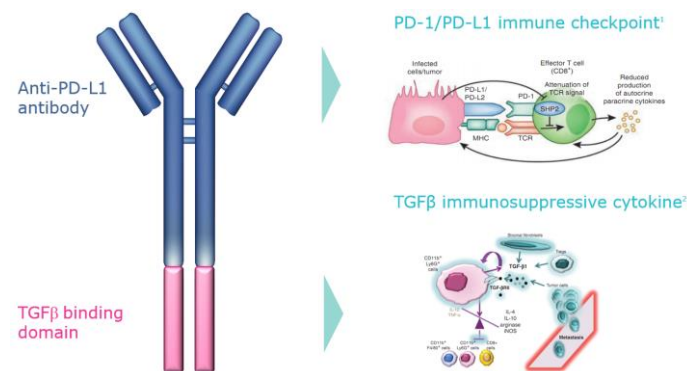
PD-L1–TGF-beta indicates potential to move beyond checkpoint inhibitors

Four focus areas for exploration



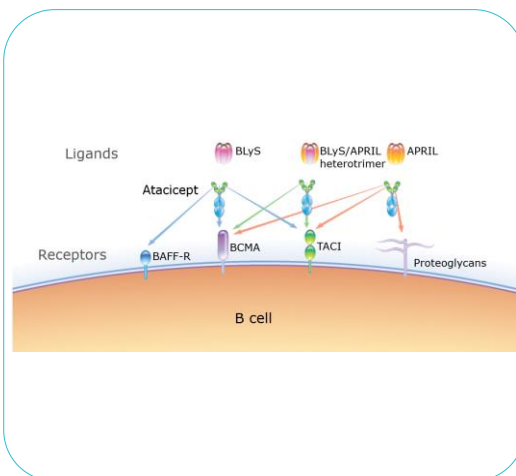
Status and next steps

- Novel, first-in-class bifunctional immunotherapy
- Bifunctional mode should result in broader application vs. respective mono-functional agents
- Great potential when combined with Standard of Care, immunotherapy and internal pipeline drug candidates
- Dose level finding of Phase I completed
- Recruiting into Ib expansion cohorts started in Q3 2016



Update on selected assets (1/2)

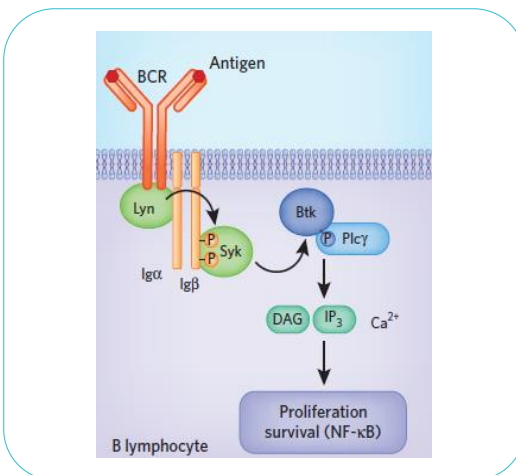
Atacicept



- Binds to receptors of two cytokines regulating maturation, function, and survival of B cells (B-lymphocyte stimulator (BLyS) & a proliferation-inducing ligand (APRIL))
- ADDRESS II (Ph IIb) in SLE patients aiming to show reduction in disease activity – 279 patients enrolled
- 24-week, randomized, double-blind, placebo-controlled Subcutaneous injection, once-a-week dosing
- Primary outcome: Percentage of patients with SLE responder index (SRI) response at week 24 compared to screening

Phase III decision expected in H1 2017

BTK

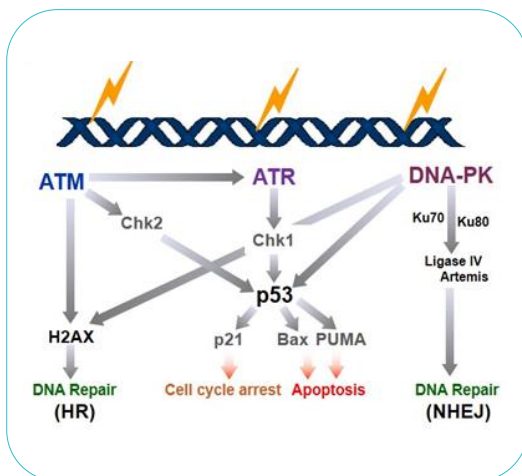


- Suppress autoantibody-producing cells
- Preclinical research suggests therapeutic use in certain autoimmune diseases
- High and differentiated efficacy in preclinical models; promising kinase selectivity profile
- Aim to achieve best in class through minimization of off-target effects
- 2nd dose level of Phase I completed
- Partnering opportunities under consideration

Two additional phase II trials expected to be started in 2016

Update on selected assets (2/2)

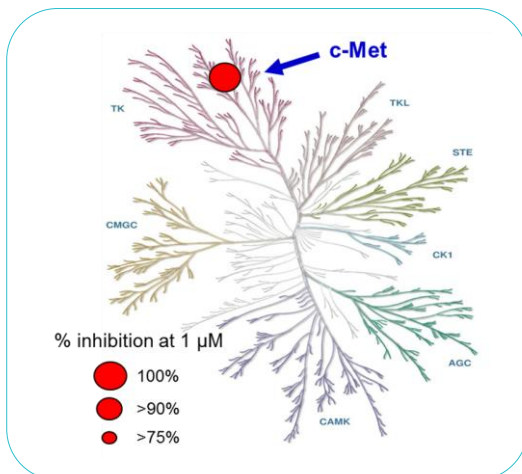
DNA-PK inhibitor



- M3814 is a selective and potent inhibitor of DNA-PK, a kinase mediating DNA double strand break repair¹
- Preclinical PoC showing complete responses and/or increased PFS in combination with radiotherapy in several xenograft models (SCCHN, NSCLC, CRC, PaCa) and strong pre-clinical combination data with SoC chemotherapies
- Two Phase Ia trials ongoing: FIM (monotherapy): 5th dose level completed, MTD not yet reached; RT combination: recruitment ongoing

Analysis of Phase I data for RT combination expected in H2 2017

Tepotinib



- Highly selective small molecule c-Met inhibitor
- Active in ligand-dependent and ligand-independent tumor models
- Biomarker-driven approach for patient selection
- Preliminary data show encouraging signs of anti-tumor activity in c-Met positive patients in NSCLC and HCC^{2,3}
- Phase II trials in progress in NSCLC and HCC

Analysis of Phase II data for HCC and NSCLC expected in H1 2018

Note: timelines are event-driven and may change

¹Graphics only illustrative; Acronyms: SCCHN = Squamous Cell Carcinoma of the Head and Neck, NSCLC = Non-small Cell Lung Cancer, CRC = Colorectal Cancer, PaCa = Pancreatic Cancer, HCC = Hepatocellular Cancer, PFS = Progression-free Survival, SoC = Standard of Care, FIM = First-in-Man, RT = radiotherapy, CT = chemotherapy, MTD = maximum tolerated dose; ²Qin, ECC 2015, ³ Kim et al, IASCL-WCLC 2015

Newsflow: Upcoming pipeline catalysts

Avelumab (MCC)	Expected EMA decision	2017
Atacicept	Phase III decision	H1 2017
BTK inhibitor (RA)	Phase II data readout	Q2 2017
M7824 (PD-L1 – TGF-beta)	Phase I interim data	mid 2017
Cladribine tablets	Expected EMA decision	Q3 2017
Sprifermin	Phase II data readout	Q3 2017

Healthcare is well set for future growth

Stable existing business

Business and market specific initiatives in place to maximize existing business franchises

Strong R&D pipeline

Diversified but focused pipeline with high quality assets in the areas Immuno-Oncology, Oncology and Immunology healthily spread across all clinical phases

Successful collaborations

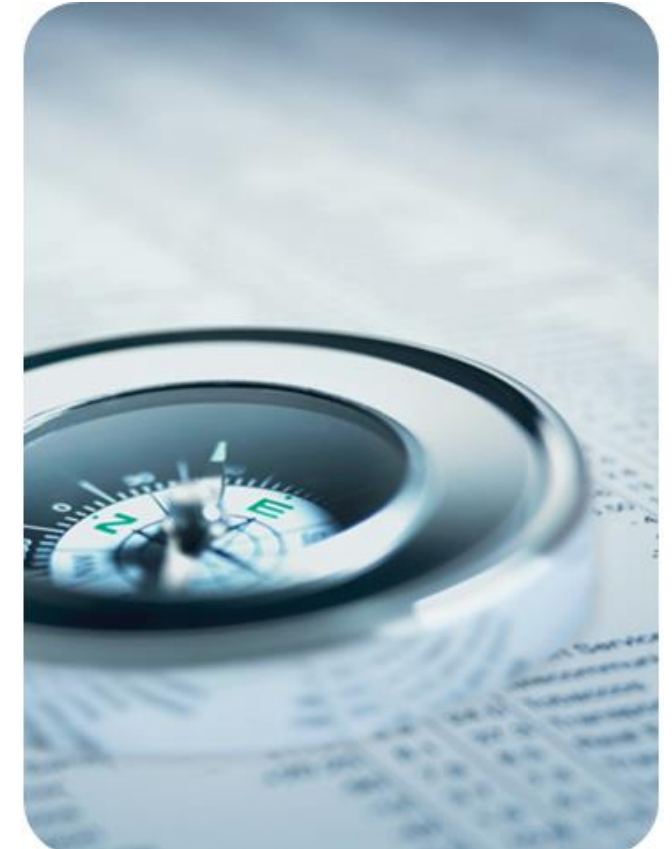
Proven success in partnering through joint investments and collaborations – maximizing potential of assets in competitive space

Promising late stage progress

Three expected submissions in 2016 may potentially result in two product launches in 2017

Disciplined execution

Systematic pipeline review and timely decision making allow efficient resource and budget allocation





03 LIFE SCIENCE

Sigma Aldrich acquisition – A compelling transaction rationale

Strategic and operational fit

- Increasing scale – expanding position in attractive life science industry
- Enhancing value for our customers
 - Broadens product range and ease of doing business for Laboratories & Academia
 - Complements Process Solutions product offering
- Closing the gap in U.S. – adequate presence in all geographies
- Leveraging existing platforms for global innovation rollout

Financial fit

- Further diversification of revenue stream
- Substantial synergy potential
- Immediately accretive to EPS pre* and EBITDA margin
- Solid investment grade rating will be maintained

Sigma-Aldrich – A leading life science consumables supplier

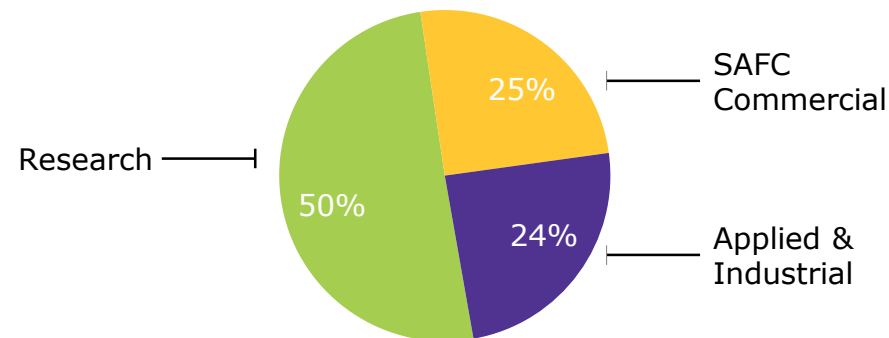
Business

- Total revenues of \$2.8 billion in 2014
- ~9,000 employees including ~3,000 scientists and engineers
- Headquartered in St. Louis, MO
- Chemical and biochemical products, kits and services provider to laboratories and pharma production
- No. 1 eCommerce platform in the industry; ~1,600 sales people

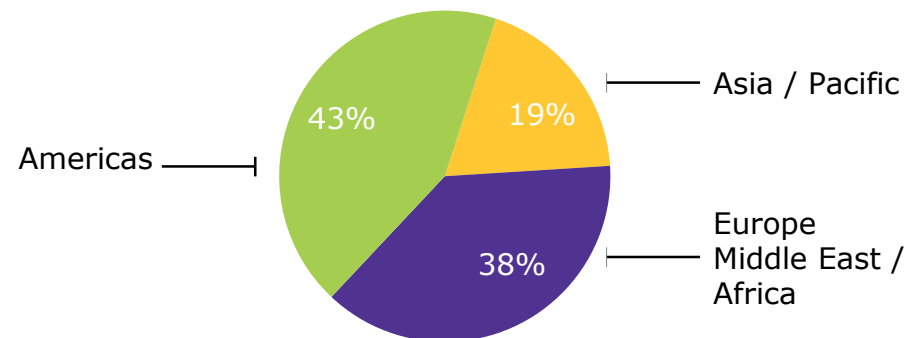
Footprint

- Balanced regional exposure; strength in North America
- Operations in ~40 countries; products available in ~160 countries

Sales by division FY 2014*

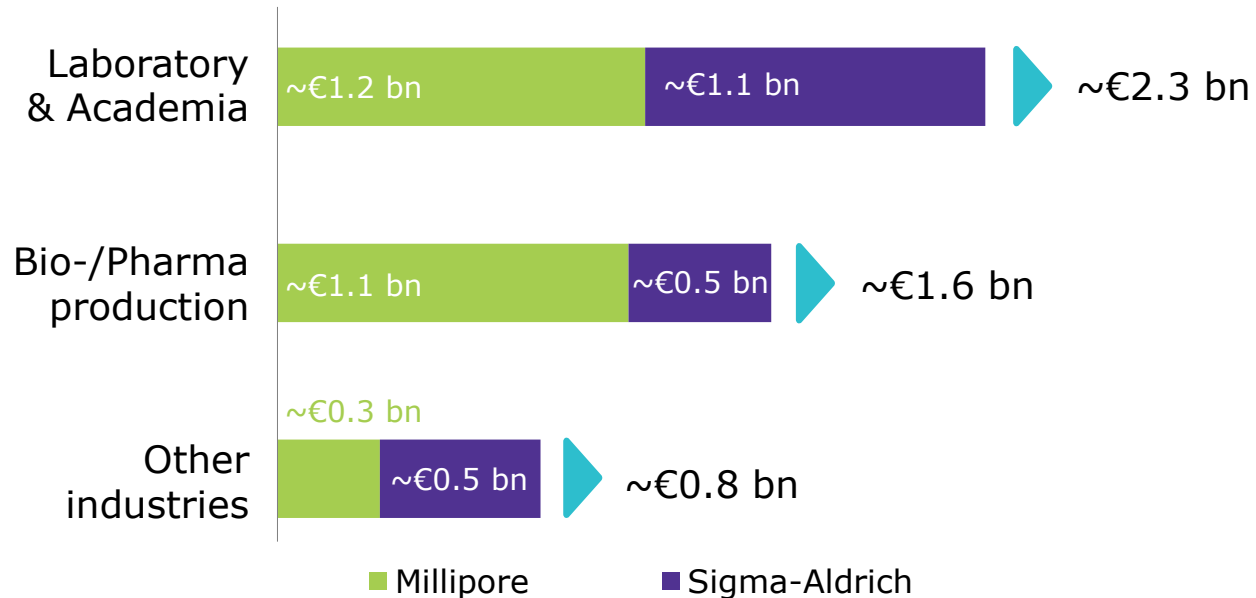


Sales by region FY 2014*



Merck KGaA, Darmstadt, Germany and Sigma-Aldrich – Presenting a leading life science industry player

Combined sales¹



Combined activities

- Laboratory & Academia
 - Broad offering in chromatography, specialty chemicals, antibodies, molecular biology tools
 - Strong penetration in global academic segment
- Bio-/Pharma production
 - Deep technical production expertise
 - Broad service offering with strong customer relationships
- Other industries
 - Strong product offering to meet rising regulatory requirements
 - Businesses in e.g. food & beverage, environmental testing and diagnostics

Strong industry player with ~€4.7 bn sales¹ and ~€1.5 bn EBITDA pre²

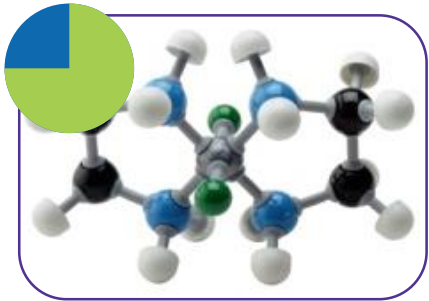
¹Pro-forma calculation based on published sales for FY 2013 for Millipore and Sigma-Aldrich (FX conversion: EUR/USD 1.30);

²Pro-forma calculation based on 100% expected synergies and published figures for FY 2013 for Millipore and Sigma-Aldrich (FX conversion: EUR/USD 1.30)

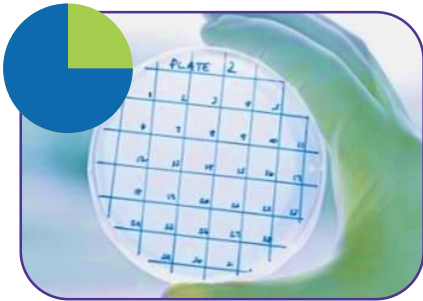
Broad and complementary product fit in attractive segments

Laboratory & Academia*

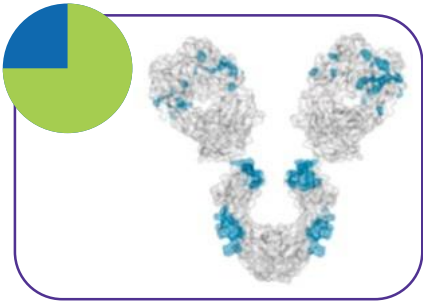
Analytical standards



Microbiology



Antibodies



Biochemicals



Millipore

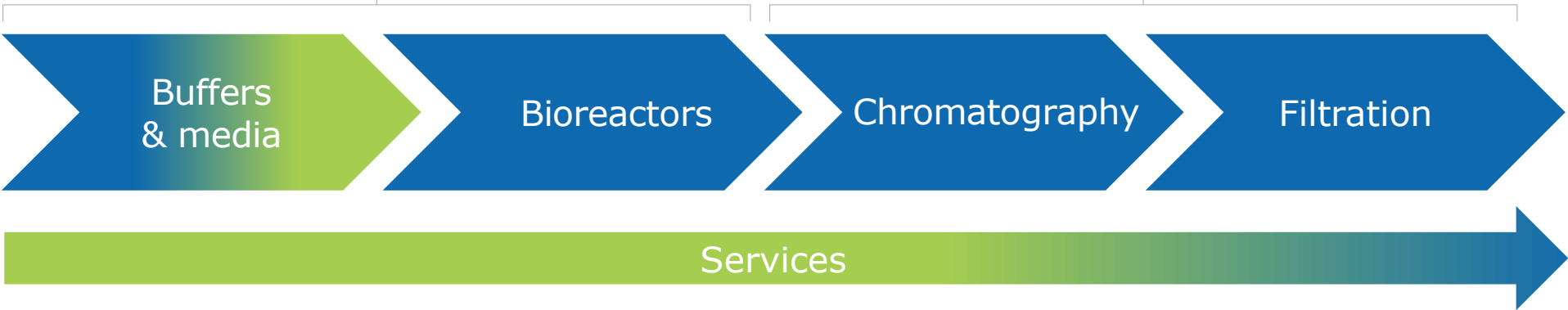


Sigma-Aldrich

BioPharma production

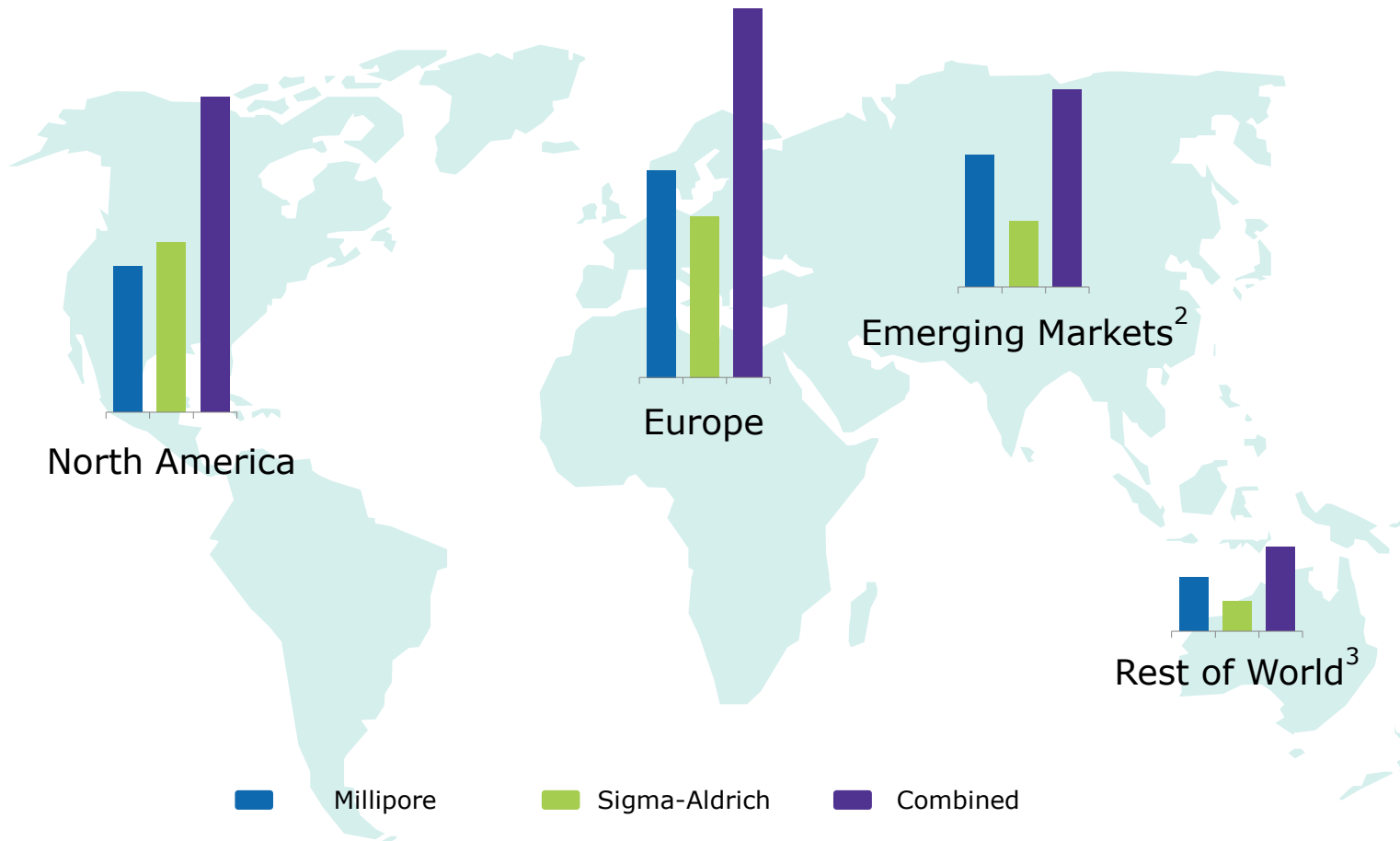
Upstream process

Downstream process



Expanding global reach and scale

Global sales¹ footprint of both businesses



Increased presence in North America

- Benefiting from a leading position in U.S. Laboratory sector
- Increased access to U.S. academia

Exposure to fast-growing Asia

- Accelerating growth momentum
- Opportunity to leverage eCommerce platform

Leveraging operational excellence to deliver superior value to customers

Product innovation

- Delivering innovative workflow solutions to increase customers' efficiency
- Broad technology and platforms
- Recurring winners of renowned innovation awards



Mobius FlexReady



Duolink



Amnis

Process innovation

- Efficient supply chain for >300,000 products
- Best in class customer experience; e.g. 24 hour delivery in major markets
- Top-notch customer interface supported by eCommerce platform



eCommerce platform

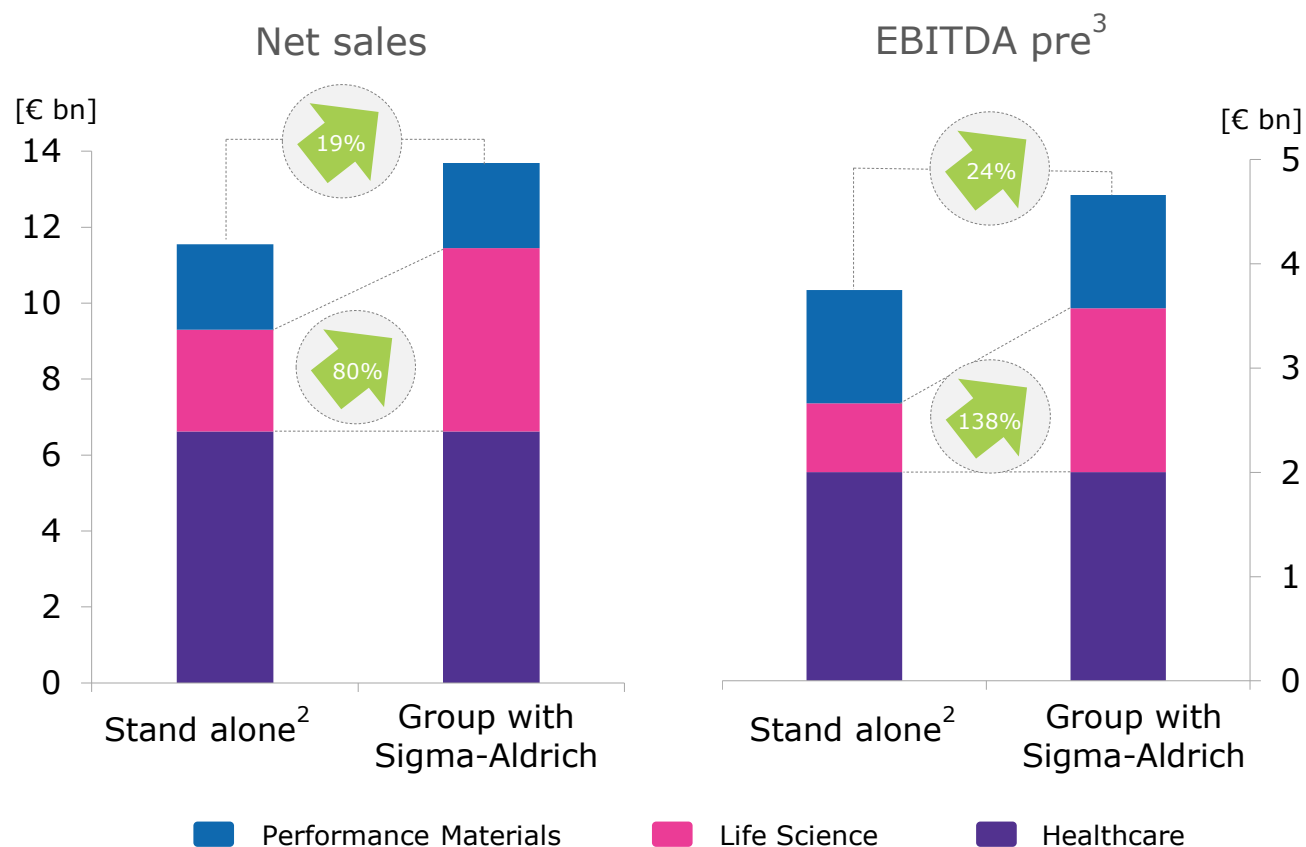


Supply chain

Efficient work flow solutions and unique customer experience

Sigma-Aldrich acquisition enhances our financial profile

Merck KGaA, Darmstadt, Germany – pro-forma 2014¹



Pro-forma financial impacts

- Group sales¹ increase by ~19%
- Group EBITDA pre³ rises by ~24% with margin⁴ expansion from ~30% to ~33%
- Synergies: ~€260m p.a. fully implemented in 3rd full year after closing
- Expected PPA impact: Mid triple-digit €m p.a.
- Immediately EPS pre accretive

¹Pro-forma calculation based on published sales for FY 2014 for Merck KGaA, Darmstadt, Germany (including pro-forma AZ Electronic Materials) and Sigma-Aldrich;

²Pro-forma calculation based on published sales for FY 2014 for Merck KGaA, Darmstadt, Germany (including pro-forma AZ Electronic Materials); ³Pro-forma calculation based on 100% expected synergies; excluding Corporate & Other; ⁴Including Corporate & Other

Support from meaningful synergies

Our experience



- Significant restructuring and integration experience
- Deep knowledge and understanding of the life science industry

Source of synergies



- Consolidate manufacturing footprint
- Increase conversion to eCommerce channels
- Optimize sales & marketing
- Streamline admin functions and infrastructure
- Save U.S. public company costs
- Optimize R&D portfolio

Planned deliveries



- Synergies: ~€260 m, i.e. ~12% of Sigma-Aldrich sales
- Fully implemented in third full year after closing
- Expected integration costs: ~€400 m; spread over 2015-2018

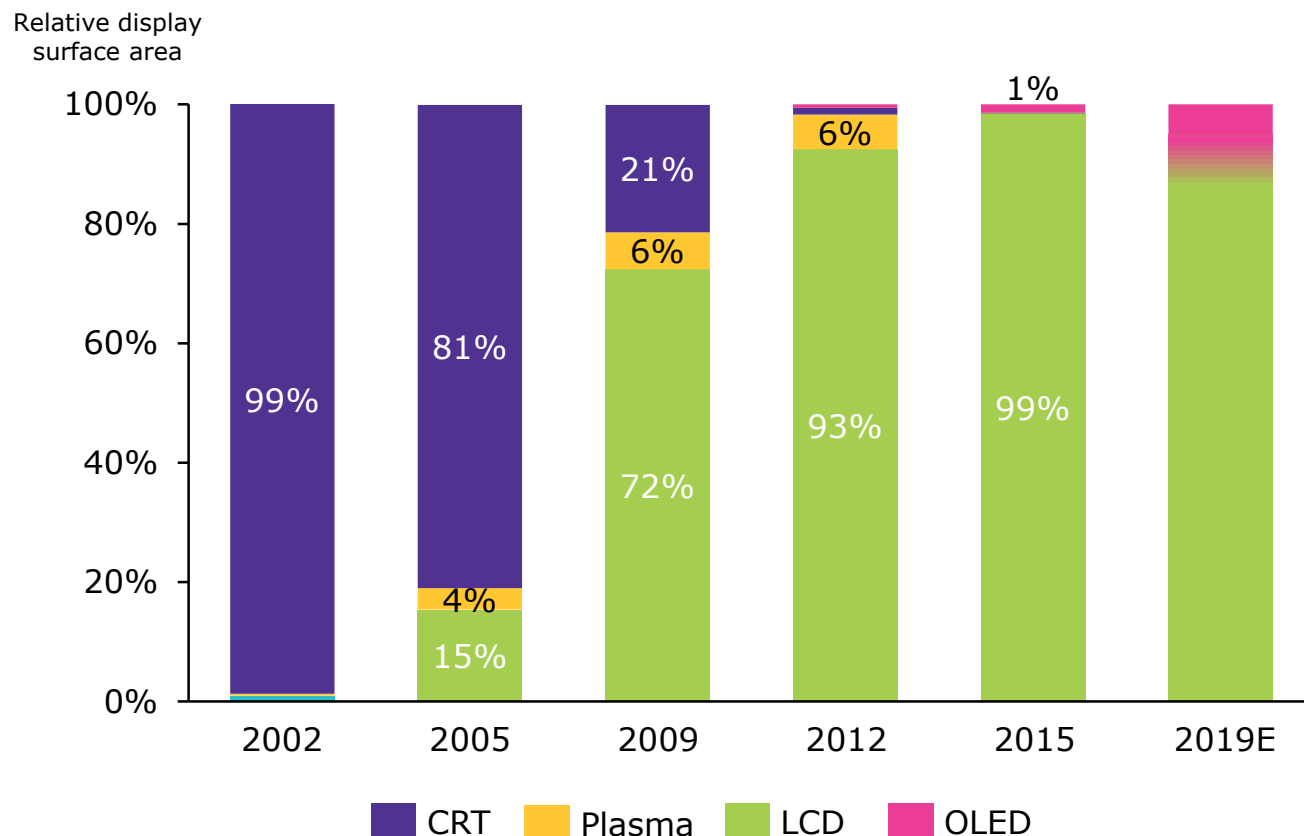


04

PERFORMANCE MATERIALS

Liquid crystals are clearly the dominant display technology

Market share by display technology



Rationale for LCD leadership

For consumers:

- Price
- Thinner frames
- Higher resolution in all sizes
- Proven track record of extreme reliability

For manufacturers:

- Price and scalability
- Production costs and capacities

LCD progress creates higher technological and commercial entry barriers

OLED share will increase in mobile applications

Our leading OLED business is well set to exploit display market opportunities

Market position

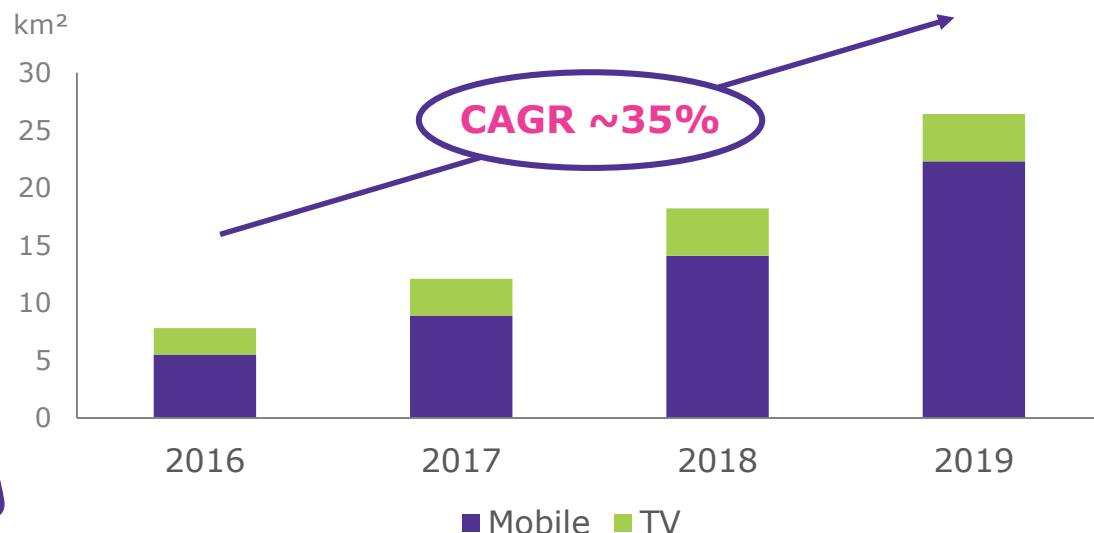
- Among top 3 OLED material provider
- Unrivalled experience and expertise in displays
- Long & intimate relationships with all display producers
- Recent capacity expansion to serve growing demand

our ambition

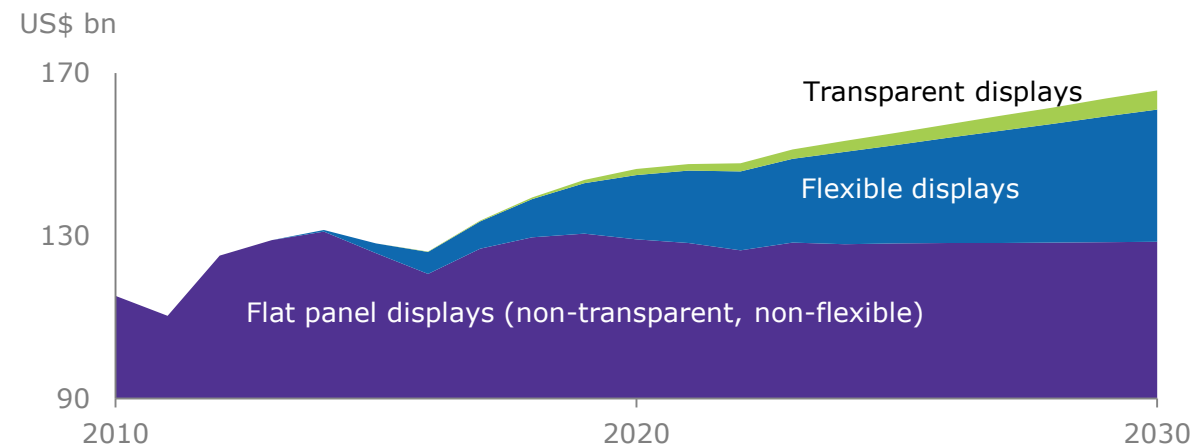
solution provider

- Supplier of all OLED stack layers
- Excellence in vapor & printable materials
- In-house testing of materials
- Tailor-made solutions for customers

Announced OLED capacity expansion¹



Display market development¹



Liquid crystals OFFER a variety of opportunities



1

3

4

5

2

6

1. Adaptive lighting for automotive
2. Adaptive lighting for architecture
3. Smart antenna
4. Liquid crystal windows for architecture
5. Holography
6. Free form LCD

We have a strong position and will benefit further from complex technological advances and underlying market trends

Market drivers and technological trends

Miniaturization: Devices are becoming smaller with better performance

- Need for enabling materials to reduce size (Moore's law)

Mobility: Everyone is continuously connected without direct power supply

- More chips needed for local energy production
- Energy storage → smaller batteries with higher density

Internet of Things: Everything is continuously connected

- More gadgets and devices that include chips
- Increasing amount of communication and sensor chips

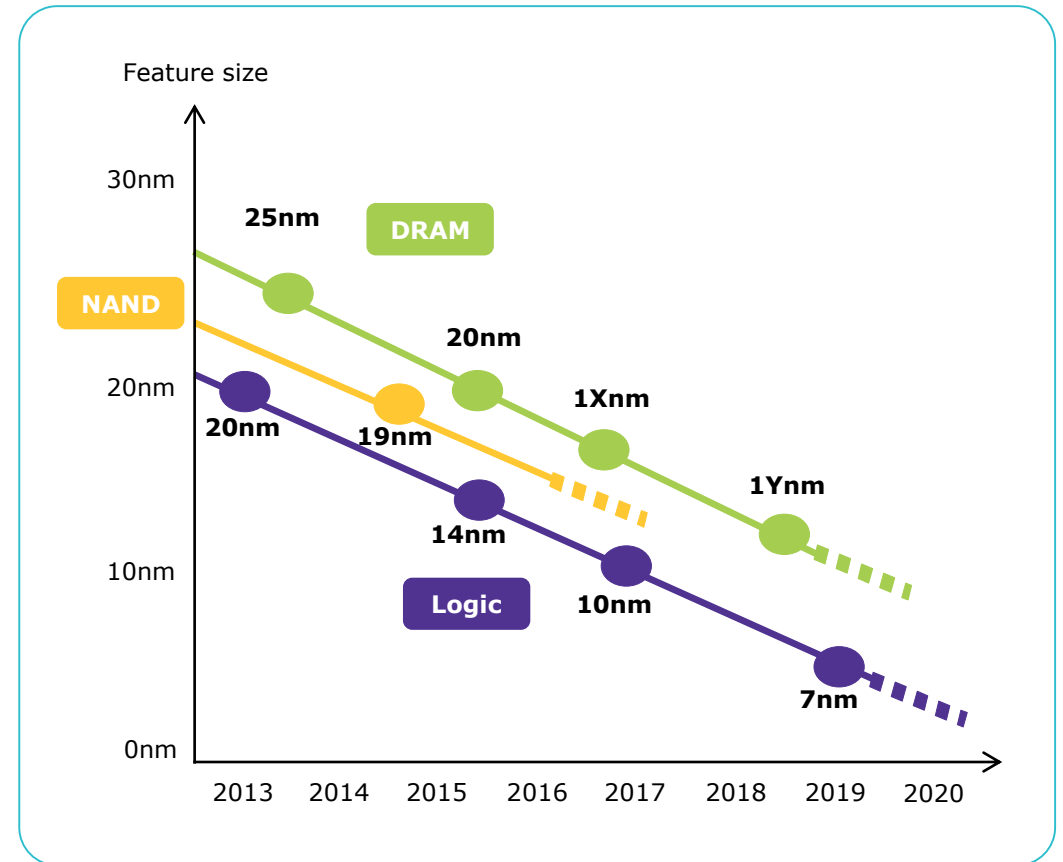
Big Data: Increasing need for intelligent data storage

- Switch from hard disk drives (HDD) to solid state drives (SSD)

Selected competitors

- Tokyo Ohka Kogyo
- Dow Electronic Materials
- Nissan Chemicals
- JSR

Feature sizes develop as predicted by Moore's law



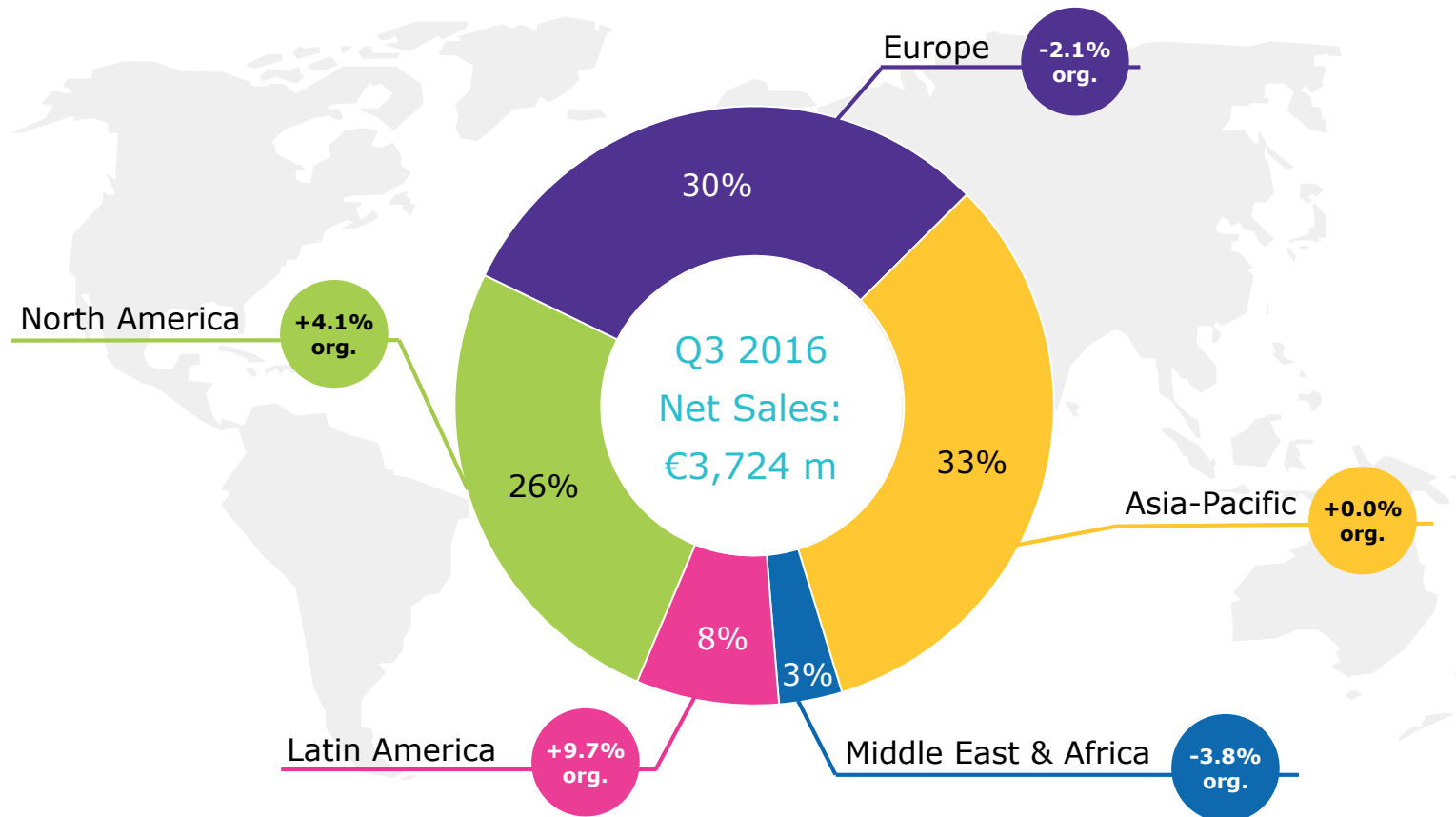


05

FINANCIAL OVERVIEW

Organic growth in all regions

Regional breakdown of net sales [€ m]



Regional organic development

- Europe slightly lower as competitive pressure on Rebif outweighs strong demand for bioprocessing products
- North America continues to benefit from competitive situation for Fertility as well as Xalkori commission income
- Flat growth in Asia-Pacific reflects solid growth driven by Fertility, GM¹ and Life Science, offset by display destocking
- Very strong growth in LatAm driven by all businesses; significant contribution from PDP² in Brazil for Rebif

¹General Medicine and CardioMetabolic Care; ²Productive Development Partnership
Totals may not add up due to rounding

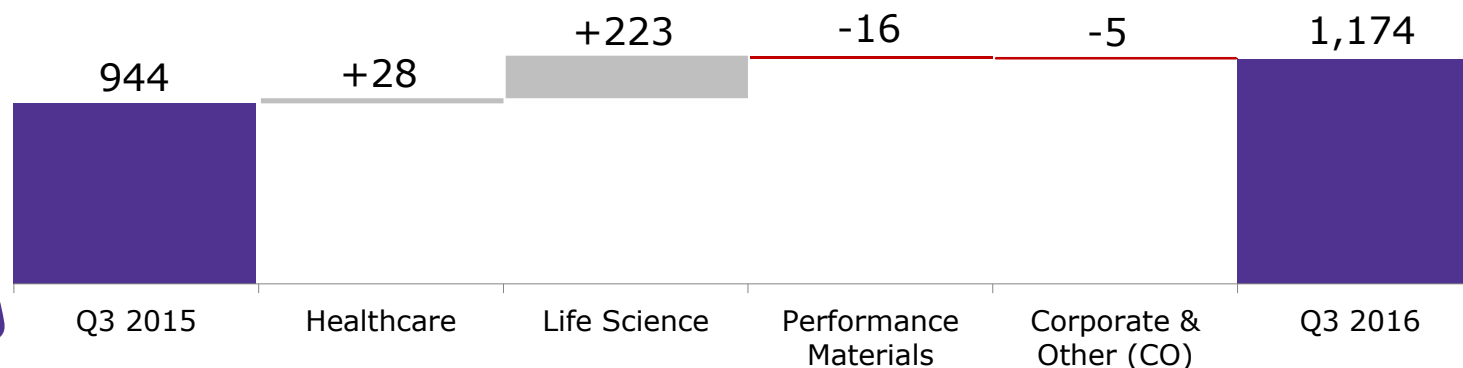
Swift Sigma integration and organic growth drive EBITDA pre

Q3 2016 YoY net sales

	Organic	Currency	Portfolio	Total
Healthcare	1.3%	-1.4%	-1.0%	-1.1%
Life Science	5.7%	-0.0%	77.4%	83.1%
Performance Materials	-5.8%	1.0%	3.5%	-1.3%
Group	0.9%	-0.6%	19.0%	19.3%

- Strong Fertility business and Xalkori commission income more than offset Rebif decline in Healthcare
- Life Science solid organic growth reflects strong Process Solutions
- Last significant effects of display industry destocking impacts Performance Materials
- Portfolio reflects Sigma and Kuvan

Q3 YoY EBITDA pre contributors [€ m]



- Healthcare reflects Rebif decline more than offset by end of Rebif commission expenses, ~€40 m release of R&D provisions and higher royalty income
- LS driven by Sigma portfolio effect, solid organic growth and synergies
- Performance Materials lower against record prior year due to LC sales decline

Q3 2016: Overview

Key figures

[€m]	Q3 2015	Q3 2016	Δ
Net sales	3,120	3,724	19.3%
EBITDA pre	944	1,174	24.3%
Margin (in % of net sales)	30.3%	31.5%	
EPS pre	1.32	1.70	28.8%
Operating cash flow	872	1,067	22.4%

[€m]	Dec. 31, 2015	Sep. 30, 2016	Δ
Net financial debt	12,654	11,649	-7.9%
Working capital	3,448	3,684	6.8%
Employees	49,613	50,967	2.7%

Comments

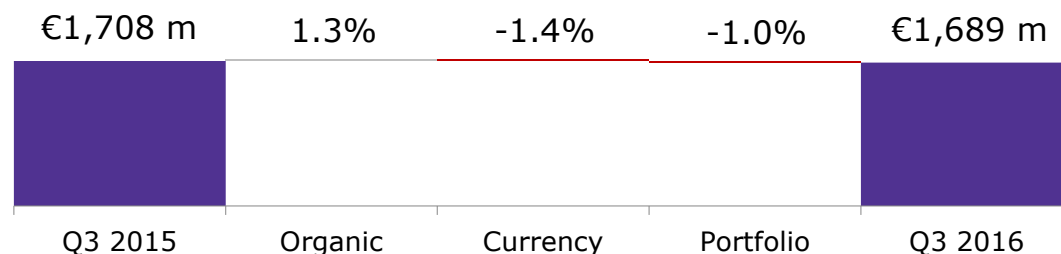
- EBITDA pre increase driven by Sigma, end of Rebif commission expenses, R&D provision release and higher royalties
- EPS pre up due to EBITDA pre increase and improved financial result
- Strong operating cash flow from EBITDA pre progression and improved working capital in Q3
- Net financial debt reduction reflects strong focus on deleveraging
- Working capital increase in line with higher level of business activity

Healthcare: Higher profitability amid positive organic growth

Healthcare P&L

[€m]	Q3 2015	Q3 2016
Net sales	1,708	1,689
Marketing and selling	-683	-623
Administration	-60	-65
Research and development	-322	-322
EBIT	349	375
EBITDA	538	560
EBITDA pre	537	565
Margin (in % of net sales)	31.5%	33.5%

Net sales bridge

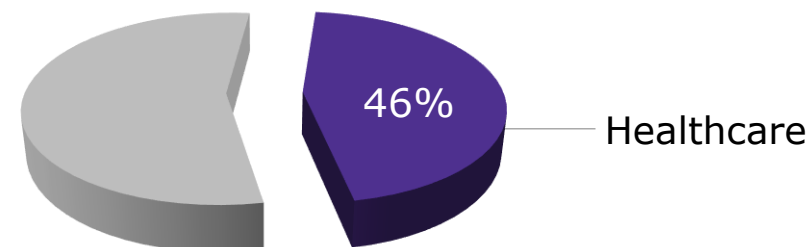


¹Productive Development Partnership; ²Middle East & Africa
Totals may not add up due to rounding

Comments

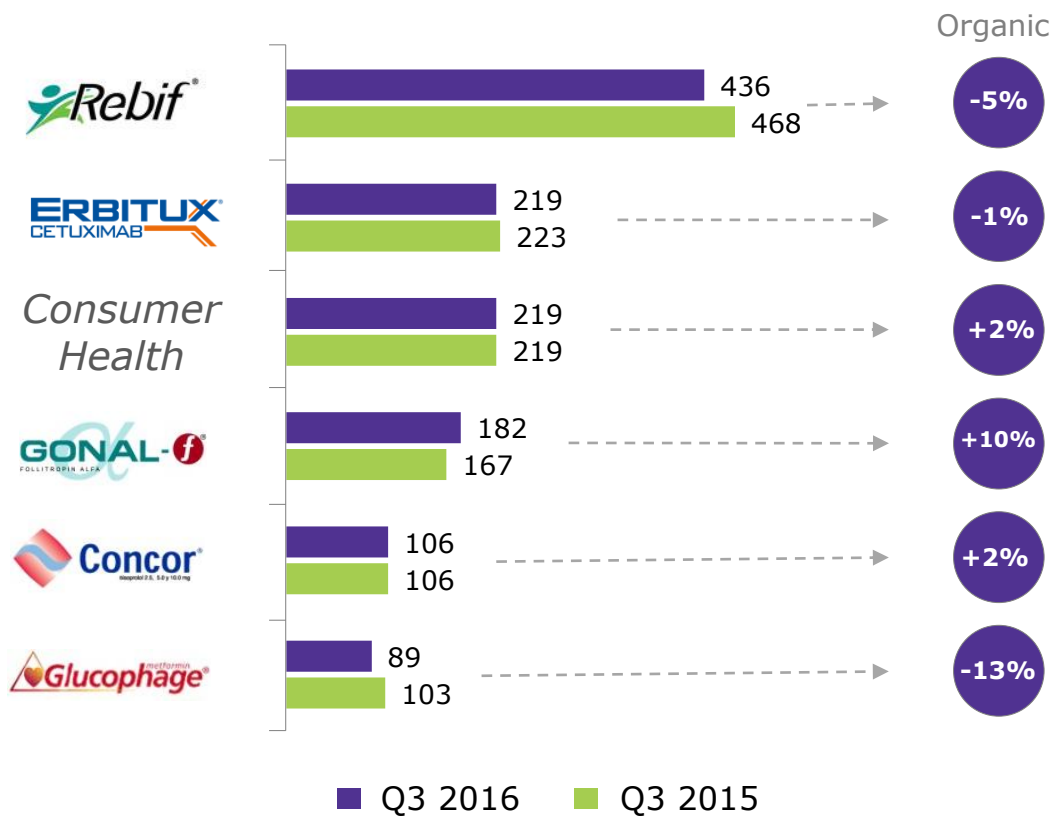
- Organic decline of Rebif from volume erosion in Europe and U.S. outweighs U.S. pricing and sound development of PDP¹ in Brazil
- Erbitux organically flat as EU pricing and competition offsets volume growth in China, Middle East and Latin America
- Fertility portfolio remains strong, especially in U.S. and China
- Softer Glucophage impacted by phasing and macro trends in MEA²
- Marketing & selling reflects end of commission expenses for Rebif (U.S.) partially offset by reinvestments in salesforce & launch preparations
- R&D spend contains ~€ 40 m release of pipeline termination provisions
- Higher EBITDA pre due to end of Rebif commissions, R&D provision release & higher royalties

Q3 2016 share of group net sales

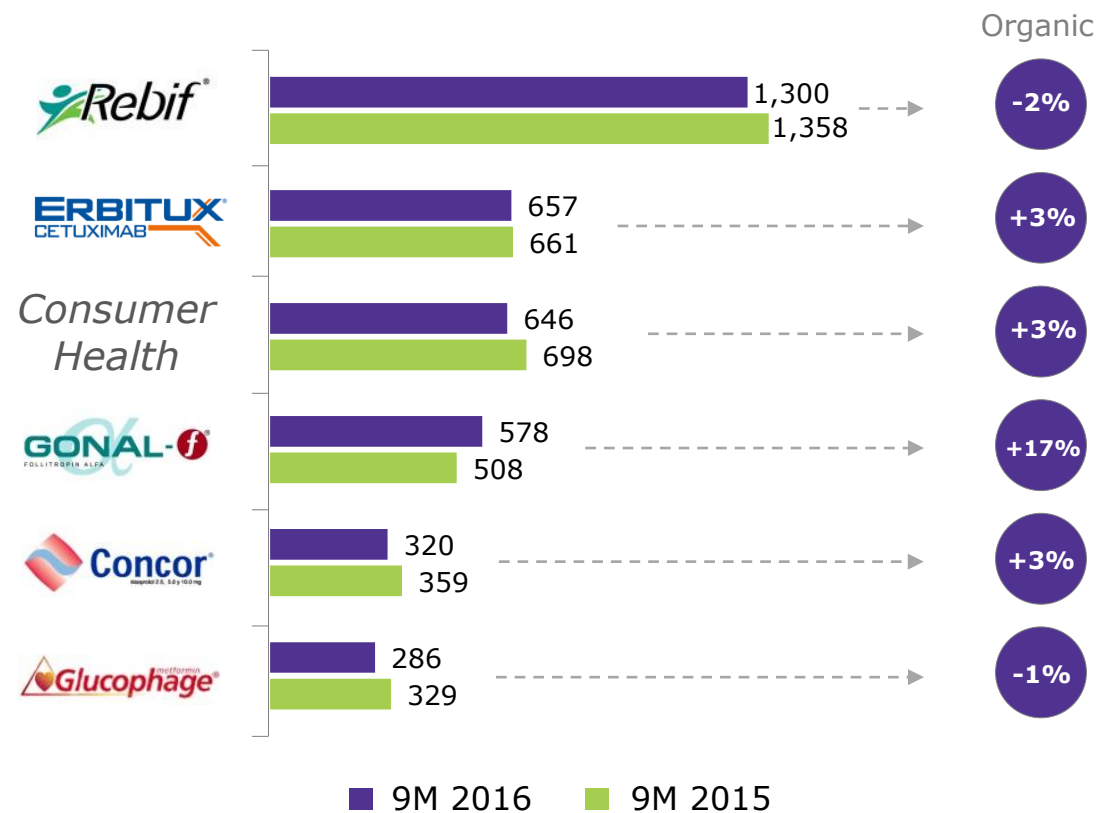


Healthcare organic growth by franchise/product

Q3 2016 organic sales growth [%]
by key product [€ m]



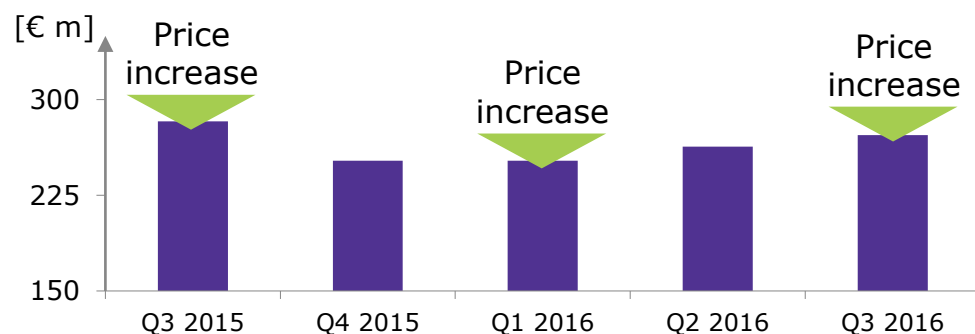
9M 2016 organic sales growth [%]
by key product [€ m]



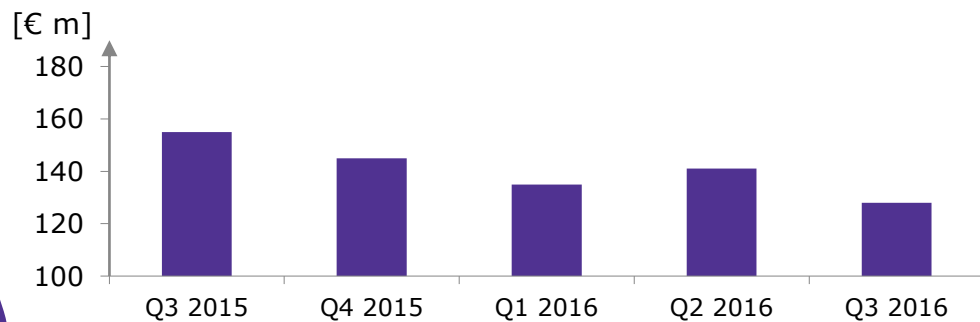
Rebif: Relief in the U.S. – competitive ramp-up in Europe ongoing

Rebif sales evolution

North America



Europe



Q3 drivers

-4.0% org.

- Price
- Volume
- FX

Q3 drivers

-17.4% org.

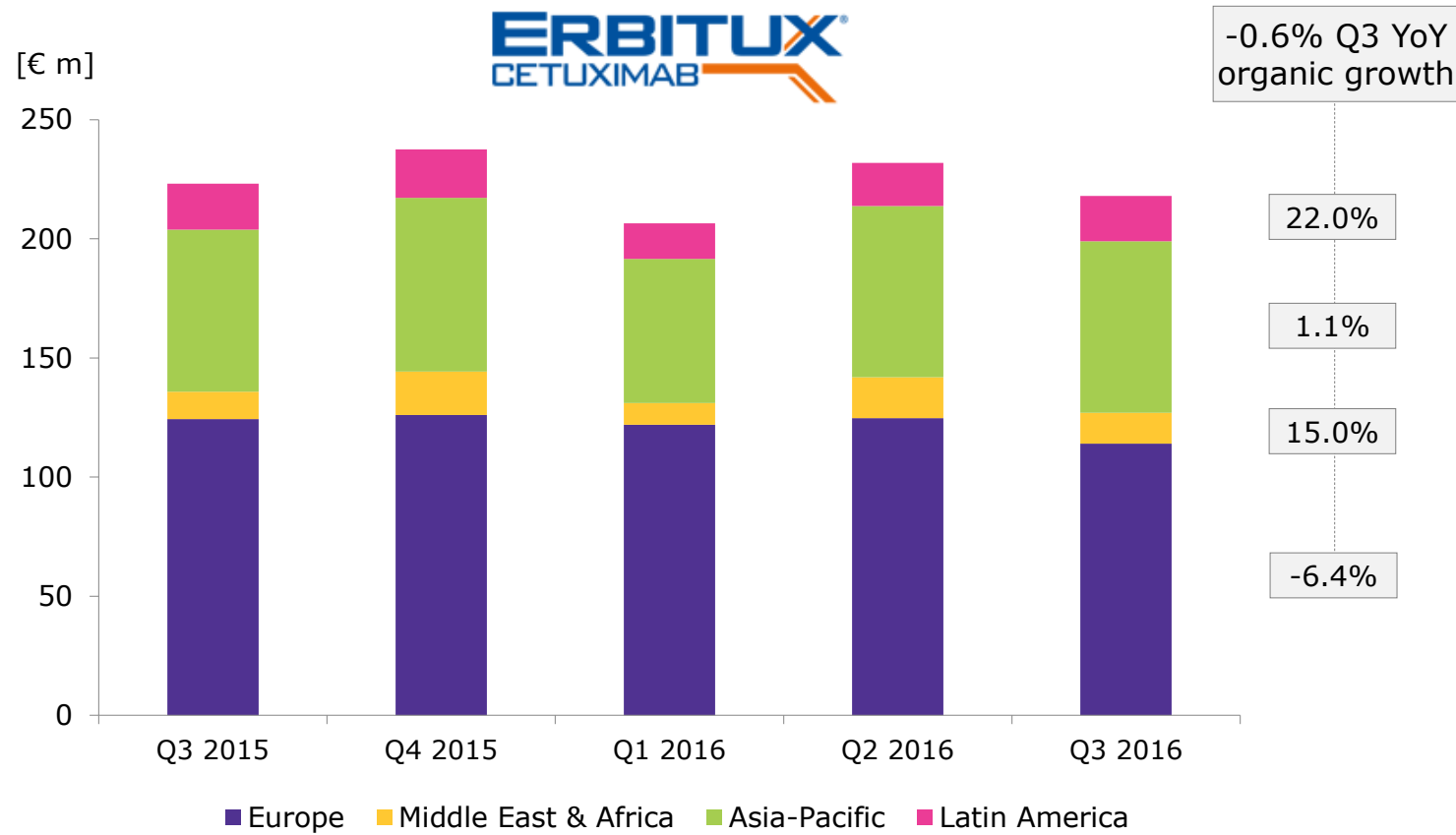
- Price
- Volume

Rebif performance

- Rebif sales of €436 m in Q3 2016 reflect organic decline of 5.5% amid negative FX effects mainly from LatAm
- Market share within interferons stable due to high retention rates and long-term safety track record
- U.S. pricing & market share stabilization partially offset decline of interferon class
- Ongoing volume decline in Europe due to phased market entry of orals; Q3 2015 contained tender in Russia
- LatAm shows very strong growth due to PDP* in Brazil

Erbitux: A challenging market environment

Erbitux sales by region



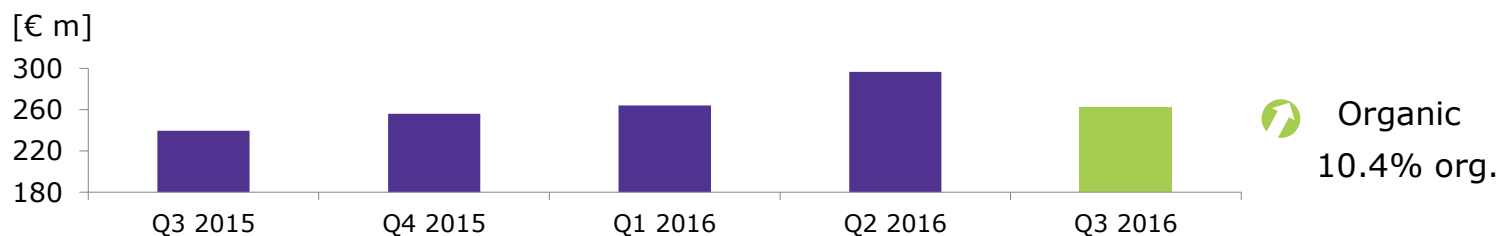
Erbitux performance

- Sales decrease to €219 m as solid volume development in growth markets is more than offset by price cuts
- Europe organically lower in ongoing tough environment (price & competition)
- Asia-Pacific contains strong volume growth in China partially offset by softness in Japan
- Organic growth in LatAm and MEA reflects growing demand especially in Brazil

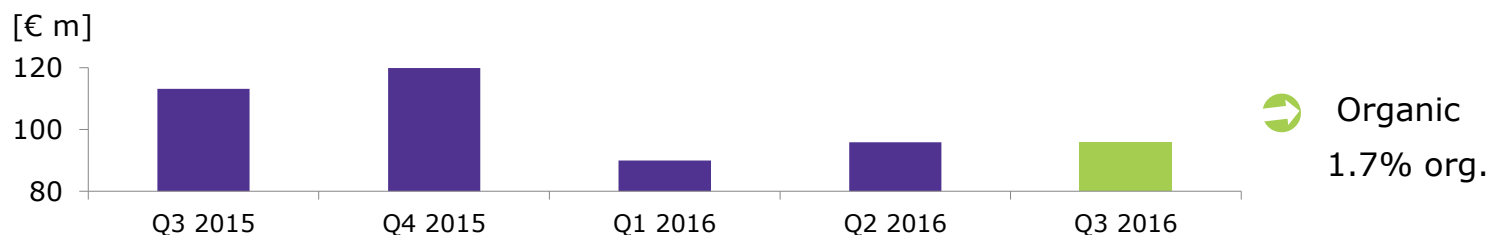
Solid organic growth in Fertility, General Medicine and Endocrinology

Sales evolution

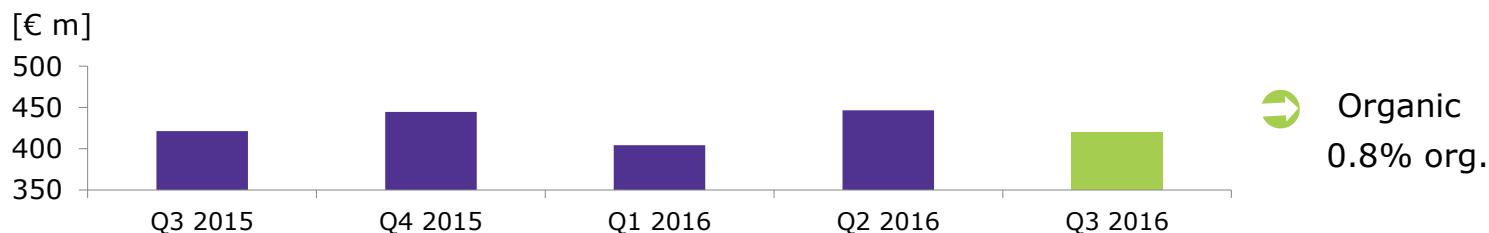
Fertility



Endocrinology



General Medicine*



Q3 drivers

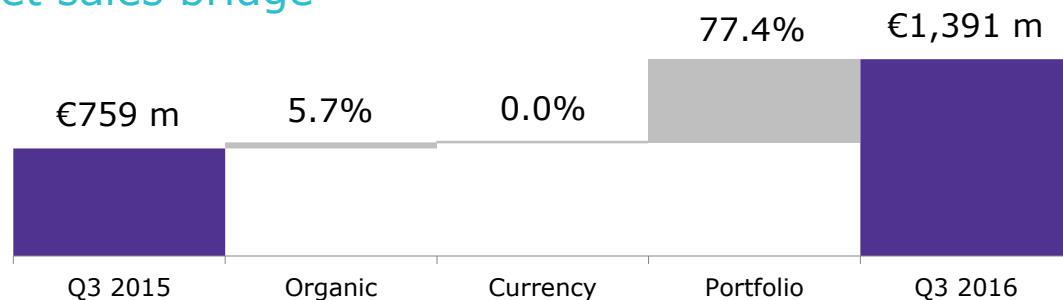
- Fertility shows strong growth across all products, especially in China
- Gonal-f still benefiting from competitive situation in the U.S. outweighing slight uptake of biosimilars in Europe
- Sales drop in Endocrinology reflects Kuvan divestment; remaining portfolio growing organically
- General Medicine sales burdened by FX headwinds from LatAM and China, underlying trends remain intact
- Euthyrox posts good growth in Europe and across APAC and LatAm
- Glucophage decline linked to phasing & difficult macroeconomic environment in parts of MEA

Life Science: Solid organic growth built on strong base

Life Science P&L

[€m]	Q3 2015	Q3 2016
Net sales	759	1,391
Marketing and selling	-238	-414
Administration	-30	-56
Research and development	-45	-63
EBIT	97	216
EBITDA	180	399
EBITDA pre	201	424
Margin (in % of net sales)	26.5%	30.5%

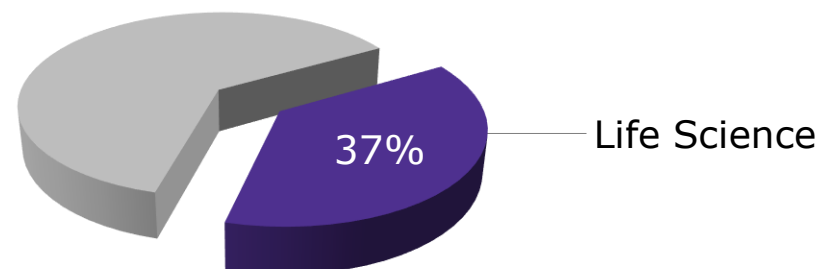
Net sales bridge



Comments

- Process Solutions shows double-digit growth especially driven by strong demand for filtration & single-use products in all key markets
- Moderate organic growth of Applied Solutions, as demand for pharma biomonitoring & for analytical testing outweighs lower instrument sales
- Research Solutions organically flat, as growth in Emerging Markets is offset by slower demand in Europe and large one-time orders last year
- Absolute costs higher due to Sigma, but improve in relation to sales
- Strong profitability reflects Sigma, business mix and faster synergy ramp-up

Q3 2016 share of group net sales

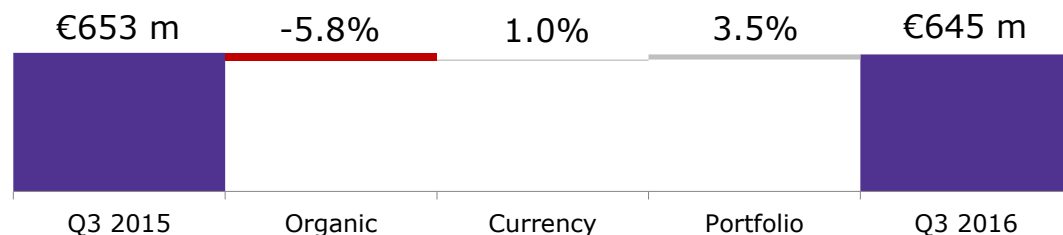


Performance Materials: Sound performance despite display destocking

Performance Materials P&L

[€m]	Q3 2015	Q3 2016
Net sales	653	645
Marketing and selling	-54	-59
Administration	-16	-14
Research and development	-50	-55
EBIT	233	213
EBITDA	292	274
EBITDA pre	298	282
Margin (in % of net sales)	45.5%	43.7%

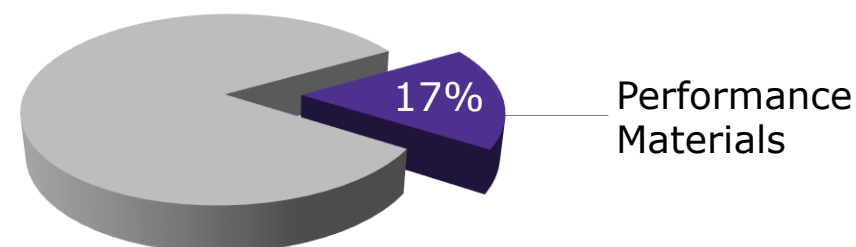
Net sales bridge



Comments

- LC shows expected impact from display destocking and ongoing decline of mature technologies (TN-TFT)
- Industry supply chain inventories back to normal levels in Q4
- Strong growth of Integrated Circuit Materials in all major material classes driven by increasing chip complexity and wafer volumes
- Solid growth of Pigments & Functionals due to demand for automotive coating pigments and active cosmetic ingredients
- Resiliently strong profitability reflects leading market position in four high-margin businesses

Q3 2016 share of group net sales



Reported figures reflect solid business performance and Kuvan divestment

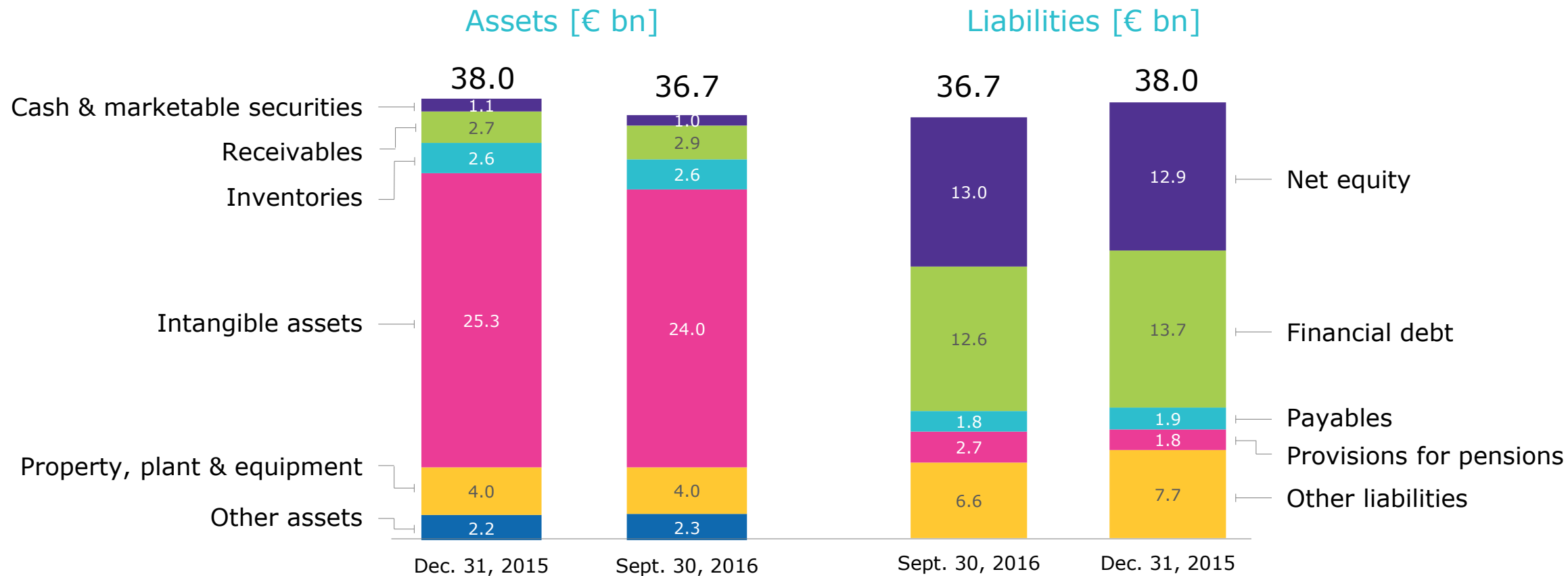
Reported results

[€m]	9M 2015	9M 2016	Δ
EBIT	1,545	2,075	34.3%
Financial result	-223	-256	15.1%
Profit before tax	1,322	1,819	37.5%
Income tax	-326	-451	38.5%
<i>Effective tax rate (%)</i>	24.6%	24.8%	
Net income	989	1,360	37.5%
EPS (€)	2.27	3.13	37.9%

Comments

- EBIT reflects increased EBITDA pre and Kuvan disposal gain amid integration costs and D&A from Sigma
- Financial result contains Sigma financing interest expenses
- Effective tax rate within guidance range of ~23% to 25%

Balance sheet – strong Q3 cash flow accelerates deleveraging process

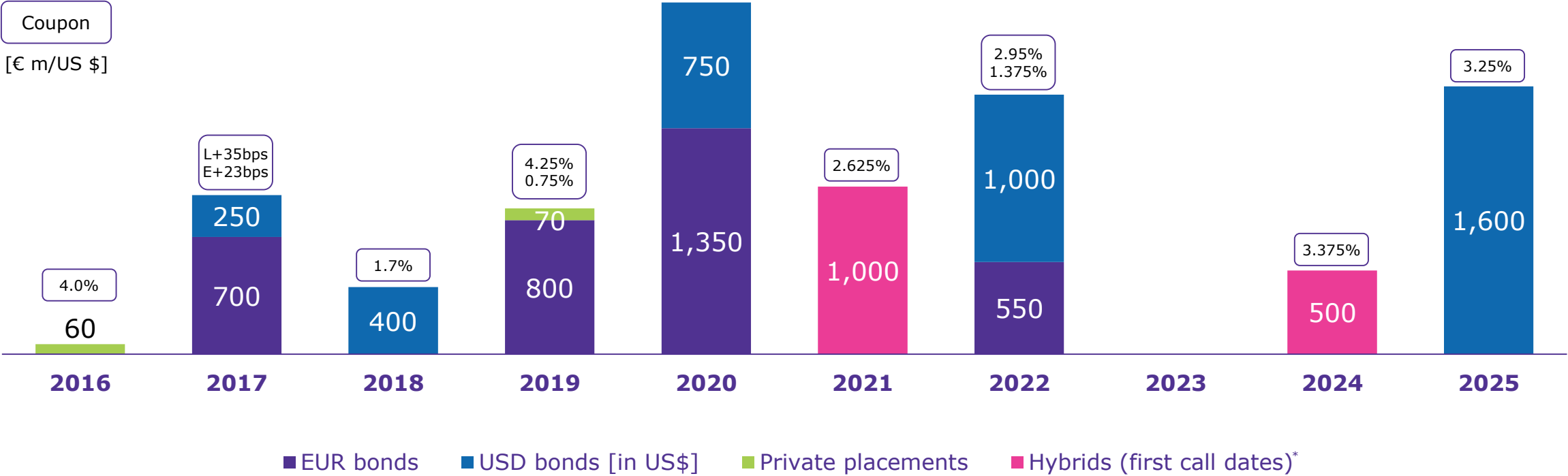


- Ongoing amortization of Sigma-related intangible assets
- Significant reduction of financial debt

- Decline in interest rates drives increase in pension provisions

Well-balanced maturity profile reflects capital market transactions related to Sigma-Aldrich

Maturity profile as of September 30, 2016



Financing structure enables flexible and swift deleveraging

High EBITDA pre drives strong operating cash flow

Q3 2016 – cash flow statement

[€m]	Q3 2015	Q3 2016	Δ
Profit after tax	366	460	94
D&A	337	434	97
Changes in provisions	11	4	-7
Changes in other assets/liabilities	153	36	-117
Other operating activities	12	1	-11
Changes in working capital	-7	131	138
Operating cash flow	872	1,067	195
Investing cash flow	418	-223	-641
thereof Capex on PPE	-130	-171	-41
Financing cash flow	2,217	-702	-2,919

Cash flow drivers

- D&A increases due to Sigma
- Other assets/liabilities include higher tax payments due to higher profits
- Changes in working capital driven by improved inventory and receivable management
- LY investing cash flow contained sale of financial assets for Sigma purchase
- Capex higher due to HQ & Sigma; FY guidance unchanged
- Financing cash flow reflects repayment of debt; LY included ~€2 bn eurobond issuance

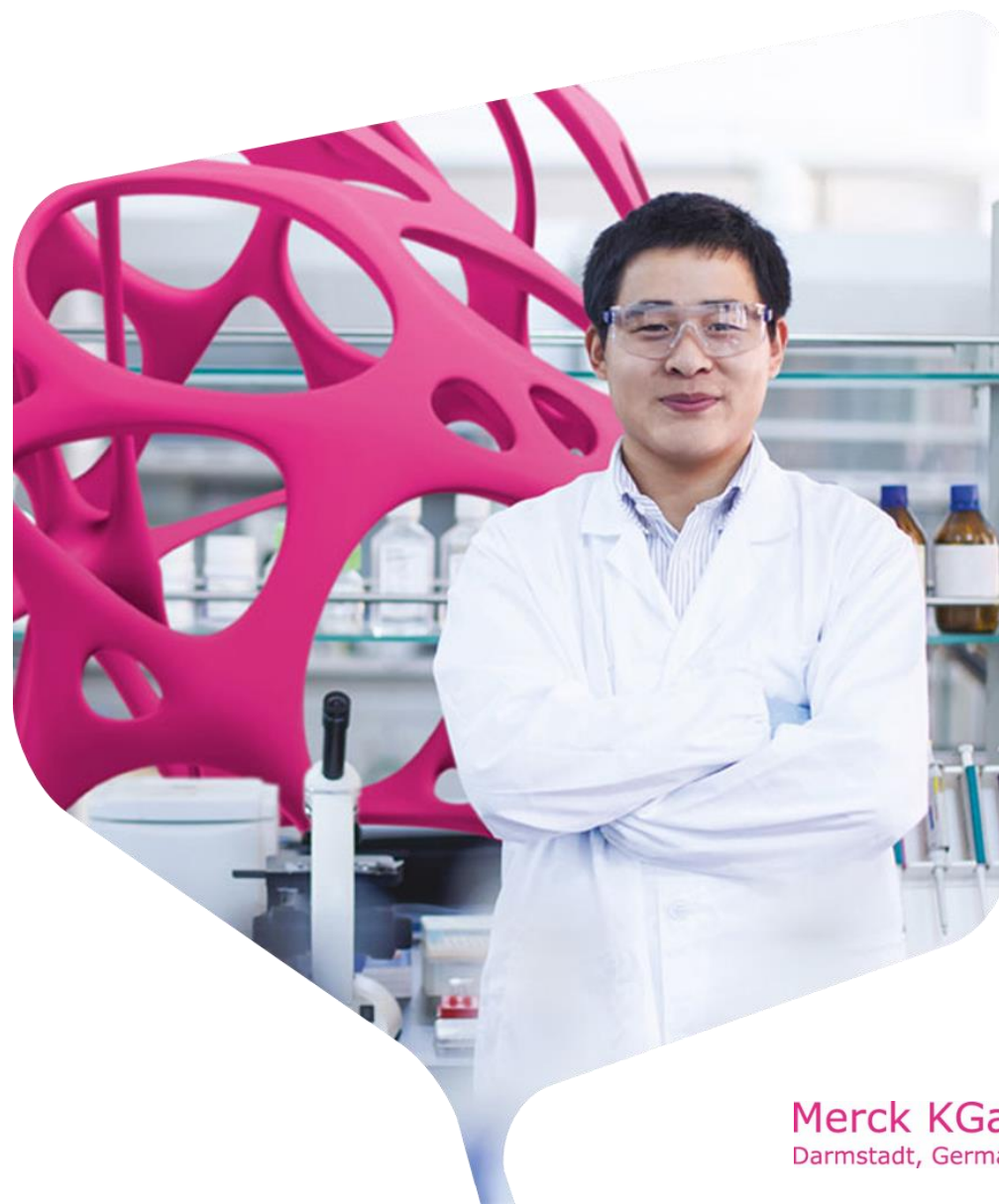
Exceptionals in Q3 2016

Exceptionals in EBIT

[€m]	Q3 2015		Q3 2016	
	Exceptionals	thereof D&A	Exceptionals	thereof D&A
Healthcare	-1	0	5	0
Life Science	21	0	25	0
Performance Materials	5	0	8	0
Corporate & Other	18	0	25	0
Total	44	0	63	0

Financial calendar

Date	Event
March 9, 2017	Q4 2016 Earnings release
April 28, 2017	Annual General Meeting
May 18, 2017	Q1 2017 Earnings release
August 3, 2017	Q2 2017 Earnings release
November 9, 2017	Q3 2017 Earnings release



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