



A LEADER IN LIFE SCIENCE

Merck KGaA, Darmstadt, Germany

Morgan Stanley Global Healthcare Conference, New York

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Agenda

01 Business introduction

02 Strategic review Life Science





01

BUSINESS INTRODUCTION



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



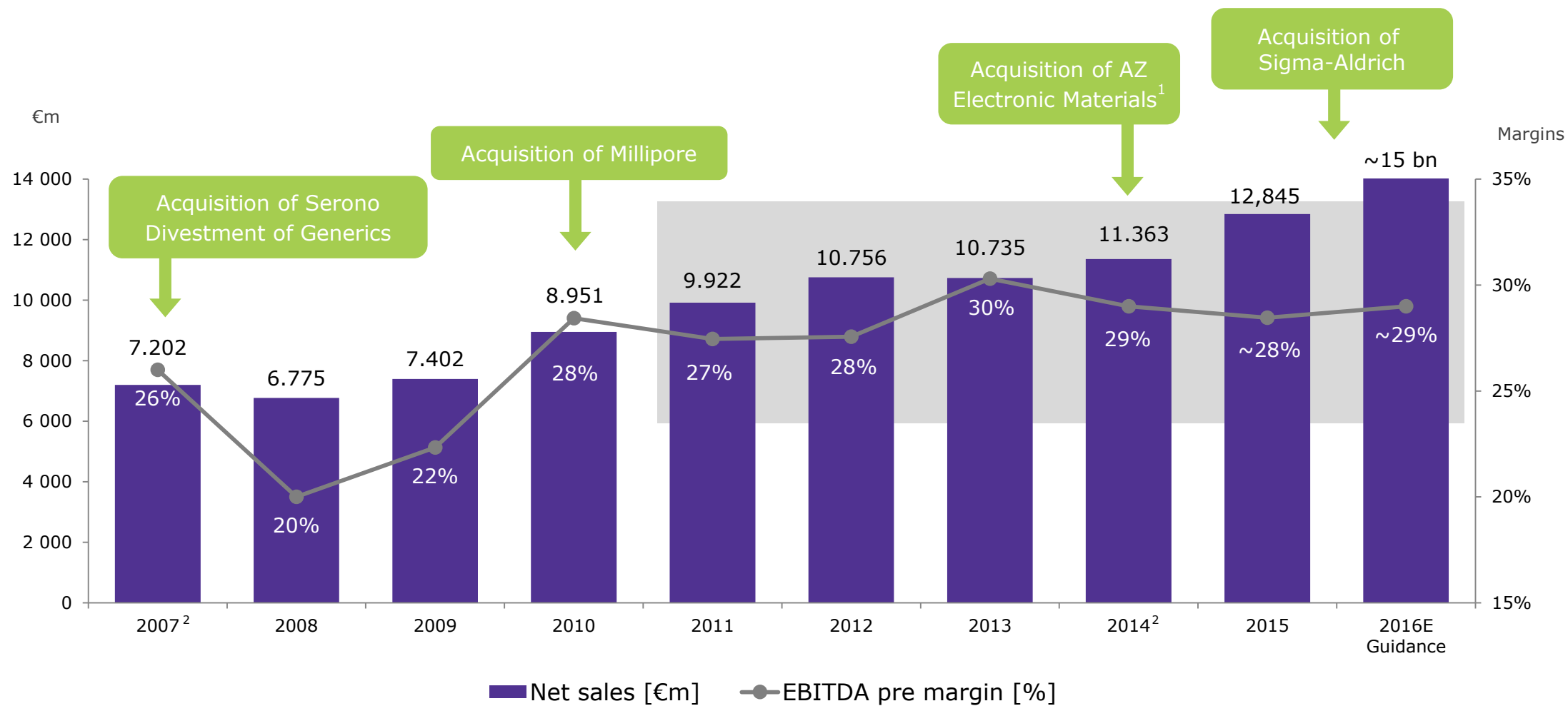
Market leader in display materials

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



Group

Profitability improved fundamentally

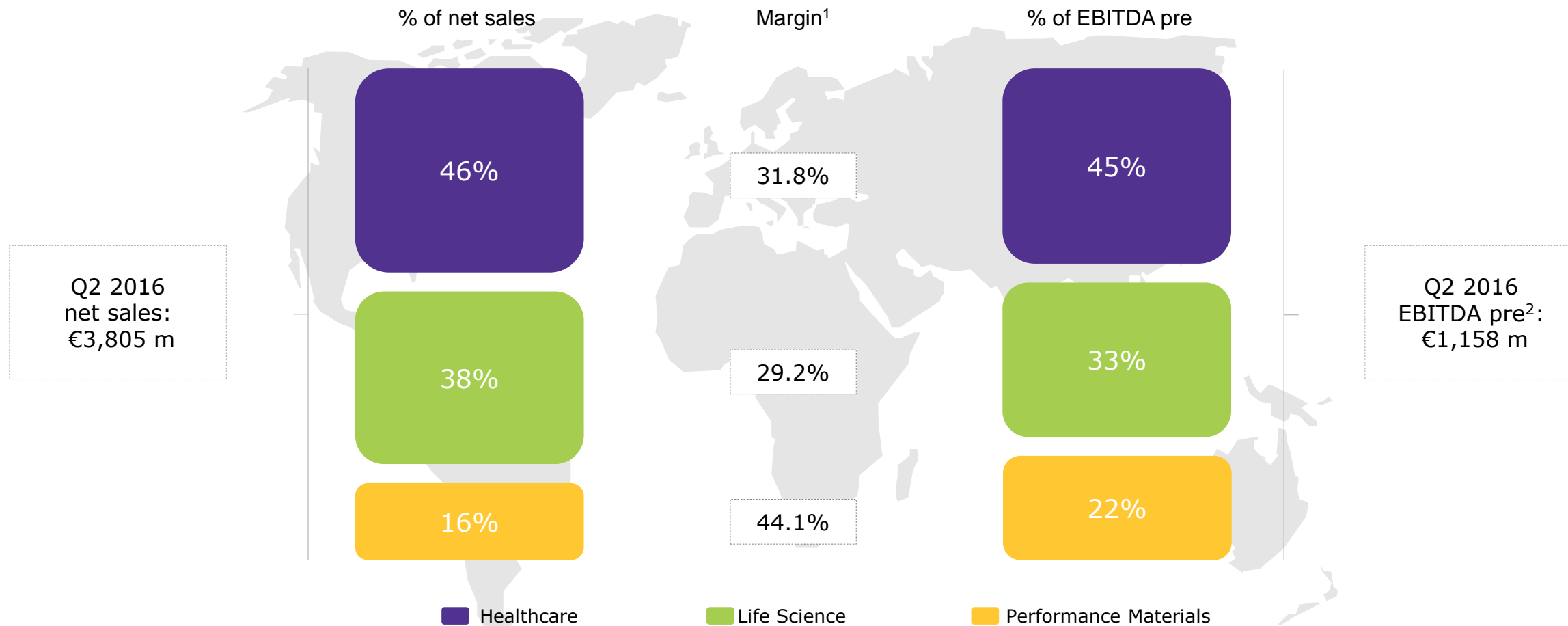


¹Included since 2 May 2014; ²2007 and 2014 EBITDA pre margin adjusted for comparability



Group

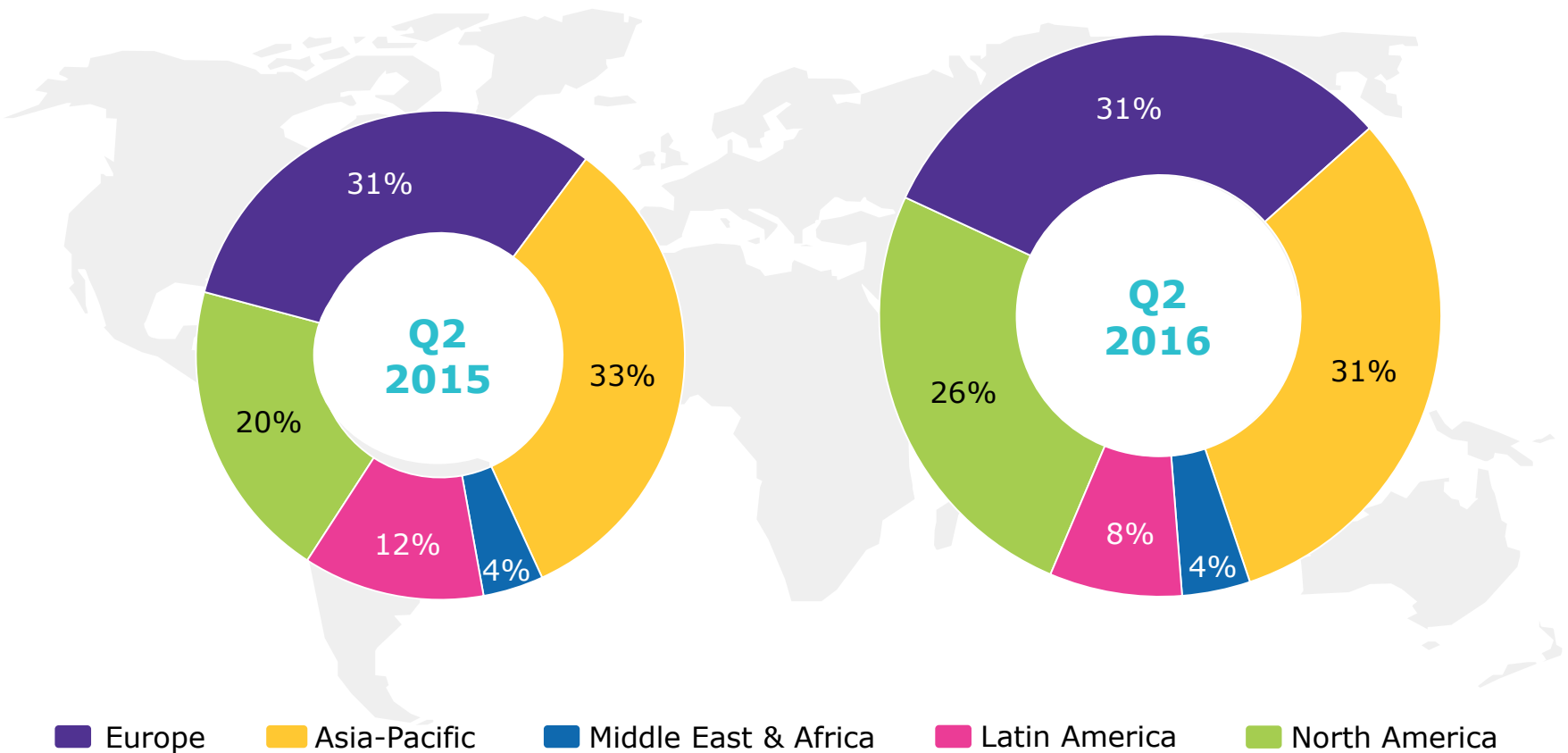
Strong businesses with attractive margins



Group

Balanced geographic footprint

Group Q2 2015 and Q2 2016 net sales by region [in %]



Group

We are well set for profitable and sustainable growth



Maximize growth of existing franchises
Deliver on pipeline



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



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



Group Upgrade of full-year 2016 guidance

Group guidance for 2016

▶ **Net sales:** ~ €14.9 – 15.1 bn ◀

▶ **EBITDA pre:** ~ €4,250 – 4,400 m ◀

▶ **EPS pre:** ~ €5.85 – 6.10 ◀





02

STRATEGIC REVIEW LIFE SCIENCE



MilliporeSigma: Serving customers across Life Science

RESEARCH



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

PROCESS



- Pharmaceutical companies
- Small biotech
- Contract manufacturing organizations

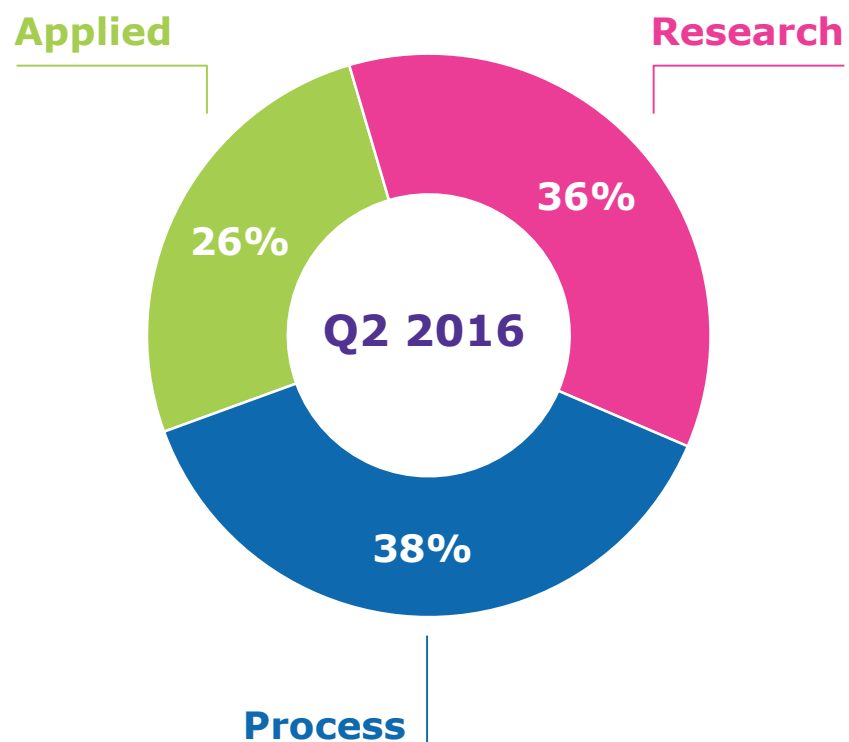
APPLIED



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

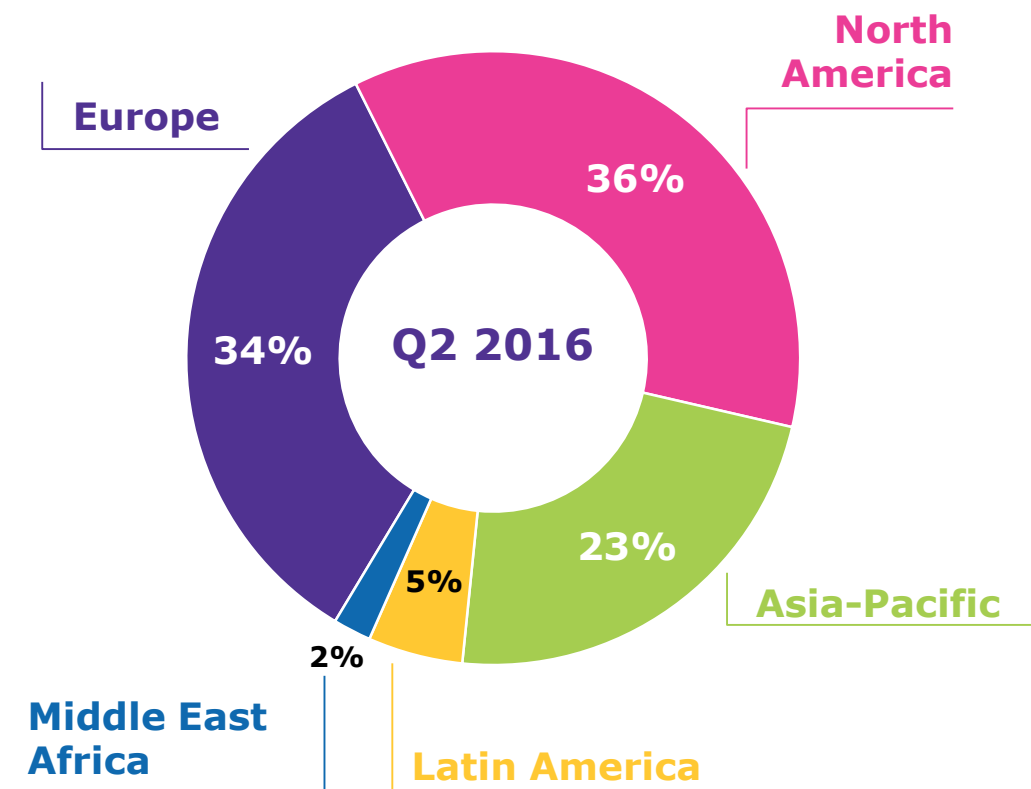
A balanced portfolio and geographic presence

Sales by business unit



FY 2015
pro-forma*
sales:
€5.3 bn

Sales by region



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 and differentiation, a customer-centric approach and world-class 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)

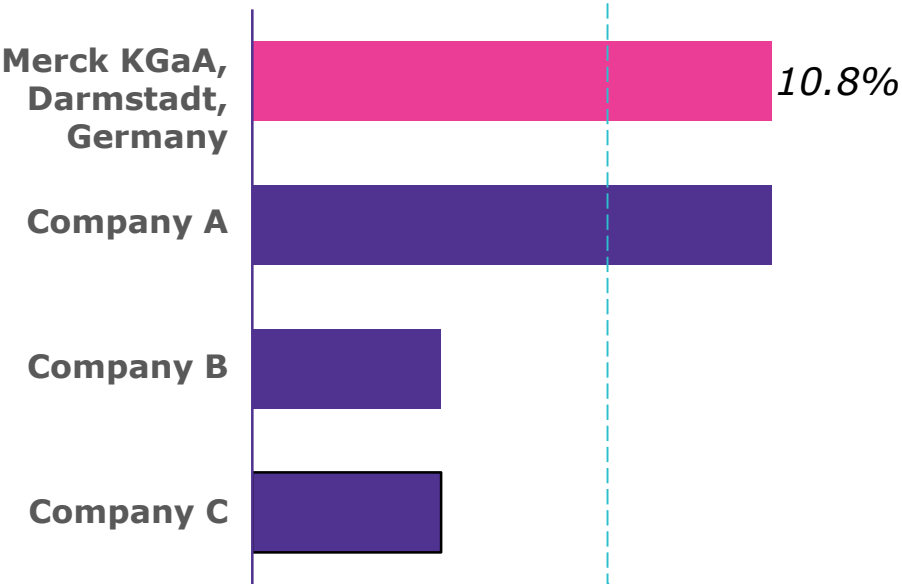
Demonstrated quality & regulatory leadership



Continued momentum and outperformance of peers in Q2 2016

Organic growth Q2 2016

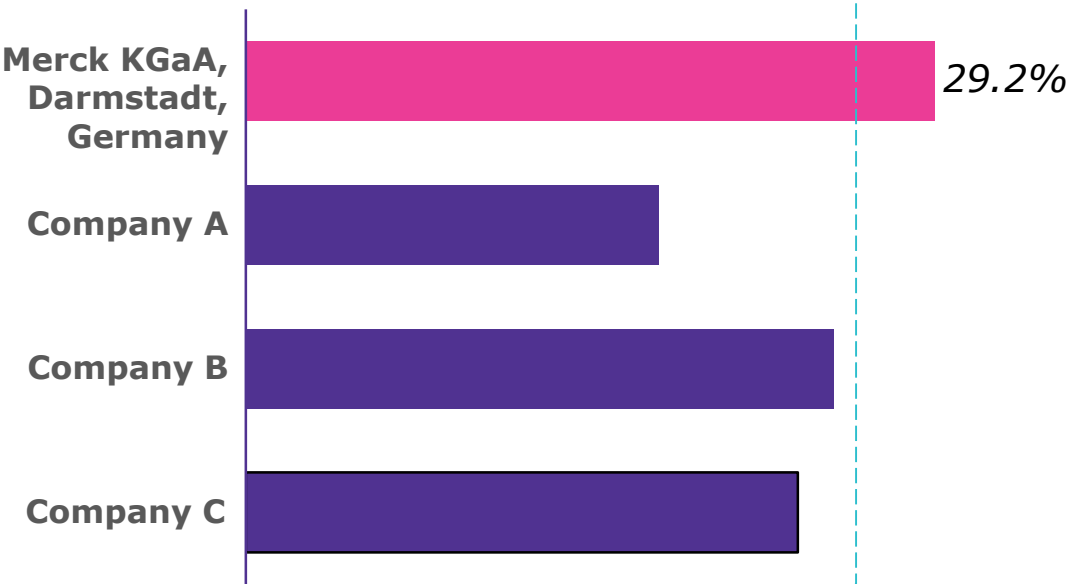
(%)



Weighted average 7.5%

EBITDA pre Q2 2016

(% net sales)



Weighted average 25.8%



Integration on track

Value

- On track to deliver cost synergy while maintaining sales momentum

Organization

- Organization placement complete
- Ongoing engagement with employees

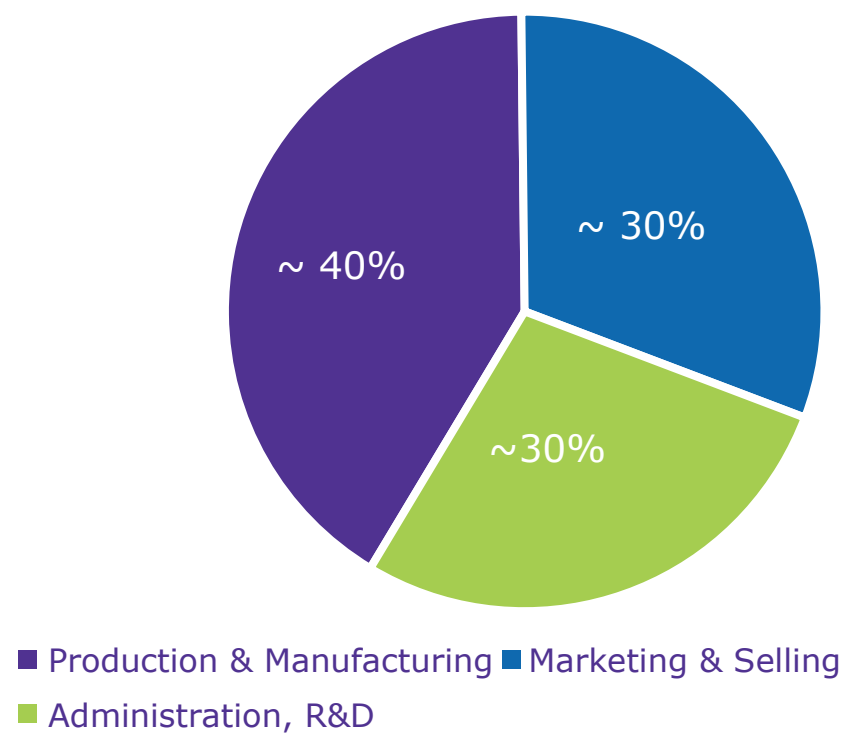
Processes

- **Integrate operations**, e.g. Branding, ERP systems
- **Establish operational excellence**



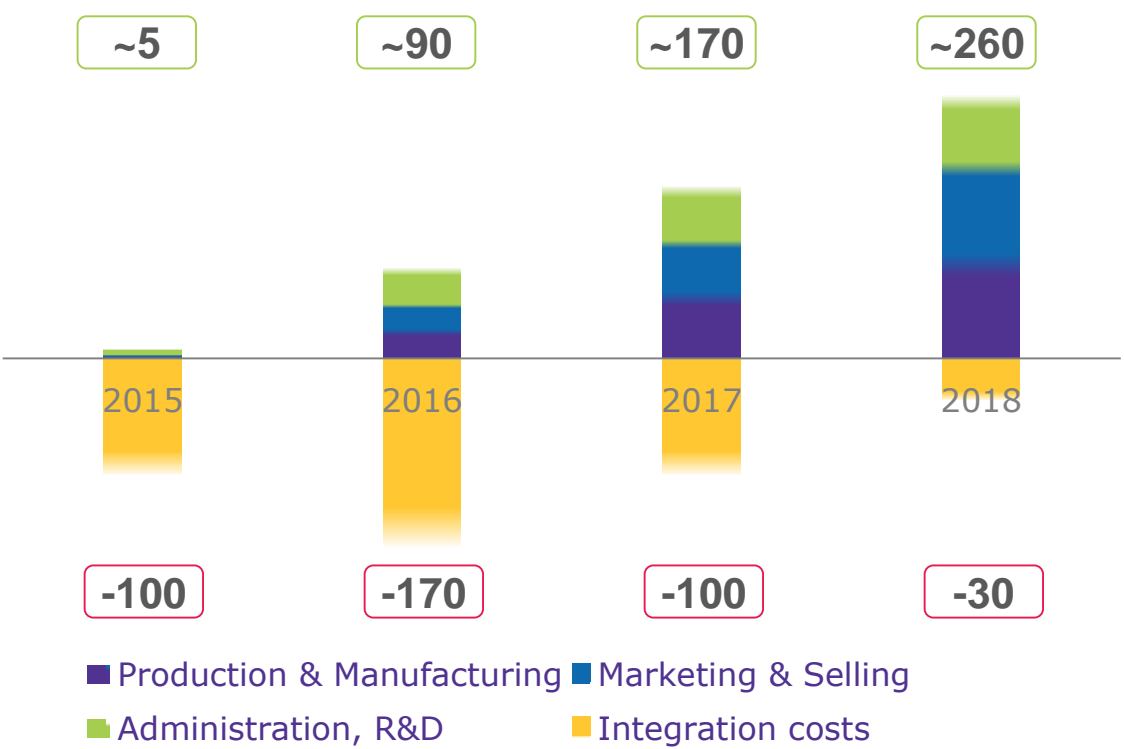
Expected synergies identified and fully confirmed

Sources of synergies (3rd full year 2018)



Three major areas for delivering the synergies

Timing of expected synergies and related costs [€m]



Fast synergy ramp-up to reach two thirds of target in 2017



Three levers for value creation



Broad, innovative portfolio

- **Over 300,000 products**
- **End-to-end in biologics manufacturing**
- **Short- and long-term innovation**, e.g. antibodies and bioreactors



Balanced geographic footprint

- **Over 60 countries**
- Leader in **North America**, and critical mass in **emerging markets**, e.g. Latin America, APAC
- **Global manufacturing and distribution footprint**



Industry-leading capabilities

- World-class **ecommerce platform**
- Deep **technical expertise**
- **Focus on quality and service**



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



#1 website in research life science industry

Industry leading e-commerce platform and supply chain capability



SEARCH

76 m Visits



CONTENT

270 m Page views



ORDER

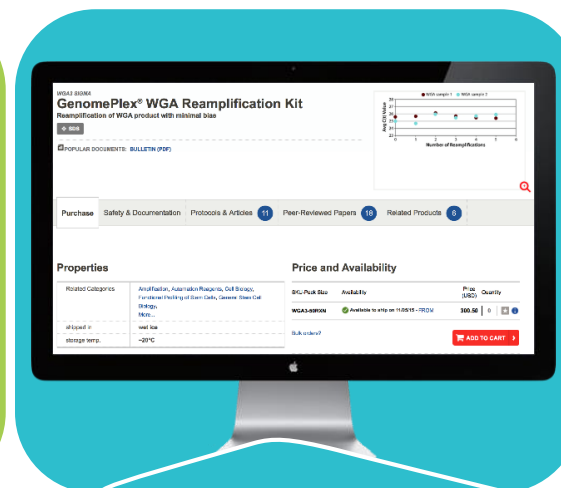
2.9 m Orders



Hundreds of thousands of products at your fingertips



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



Real-time pricing and availability



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



Executive summary: Life Science

**Attractive
Market**

**Solid growth drivers for a ~125bn€
market growing at mid-single digit**

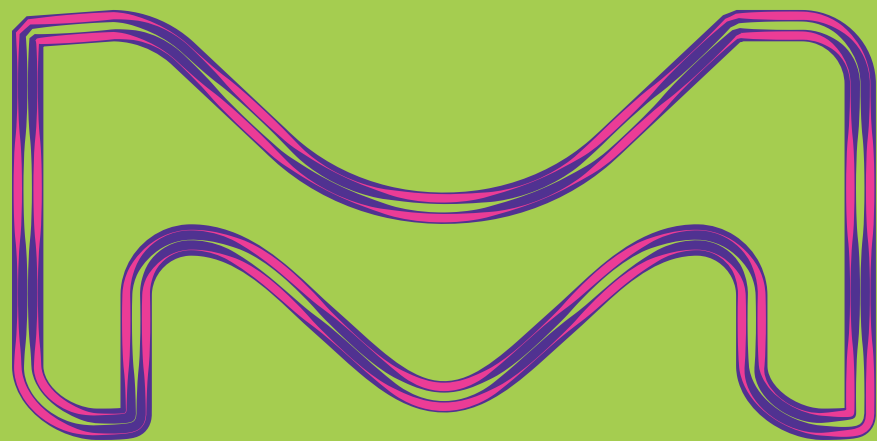
**strong
performance**

**Strong momentum,
growing at least with market**

integration

**Progress on value delivery, organization
setup, and process integration**





Appendix

01 Guidance Details

02 Sigma acquisition

03 Healthcare

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

~ €1,950 – 2,050 m



Net sales

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

EBITDA pre

~ €1,620 – 1,670 m



Net sales

- Moderate organic decline
- Improving macro signals amid destocking in liquid crystals
- 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 ~1.10 to 1.15
2016 Ø EUR/USD assumption	~1.07 – 1.12





02

SIGMA ACQUISITION



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

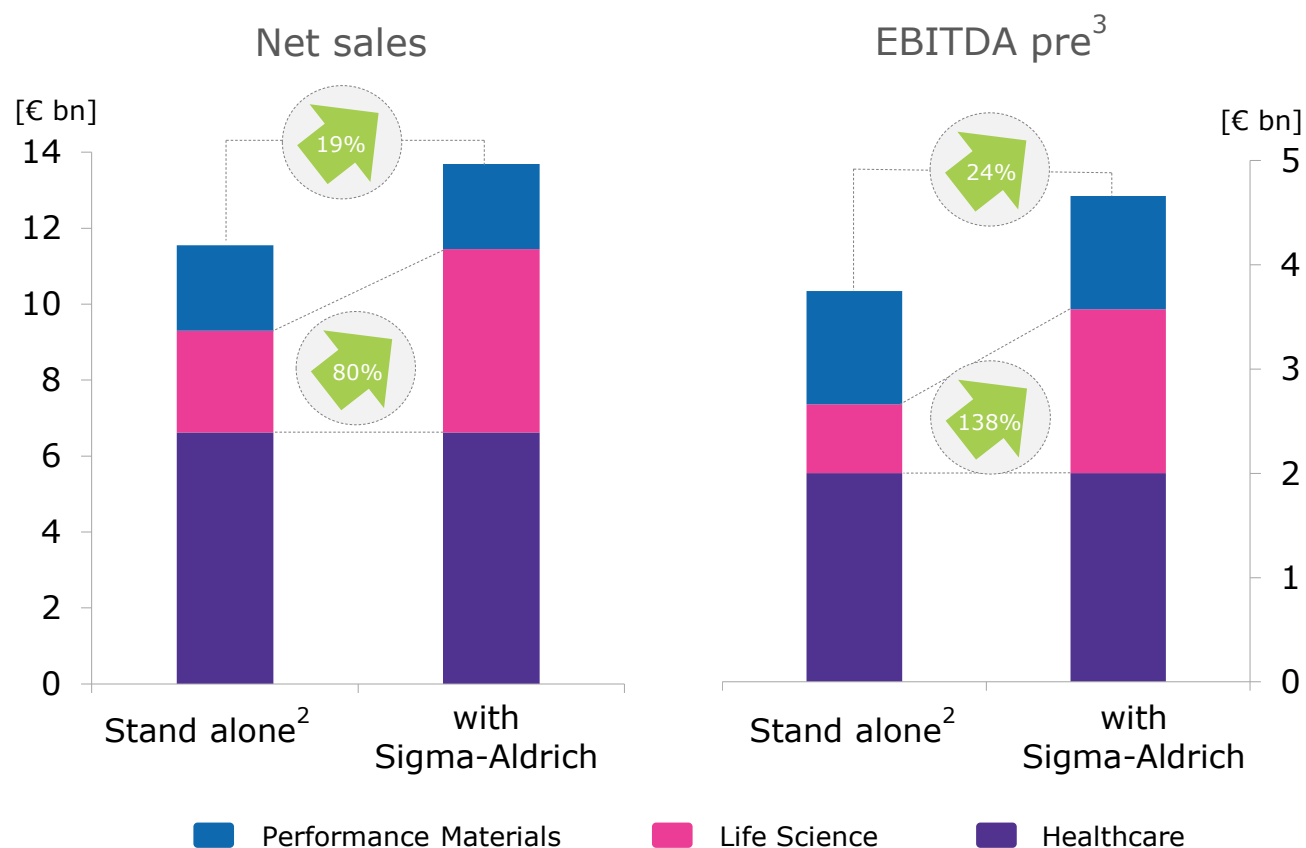
Financial fit

- 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 acquisition enhances our financial profile

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



Sigma-Aldrich – A leading life science consumables supplier

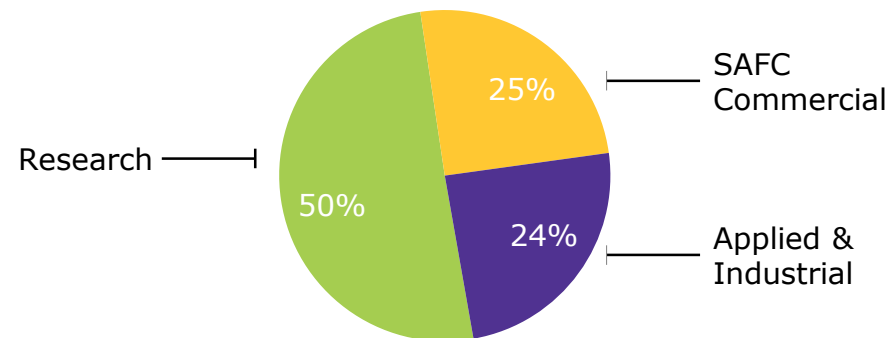
Business

- 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

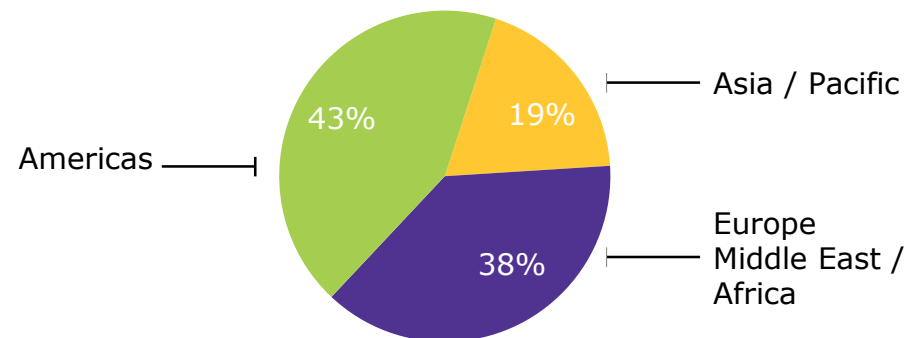
Footprint

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

Sales by division FY 2014*



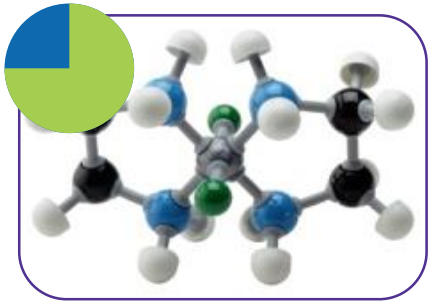
Sales by region FY 2014*



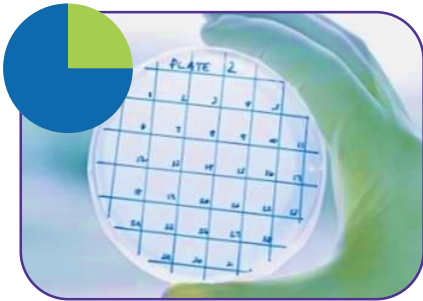
Broad and complementary product fit in attractive segments

Research & Applied

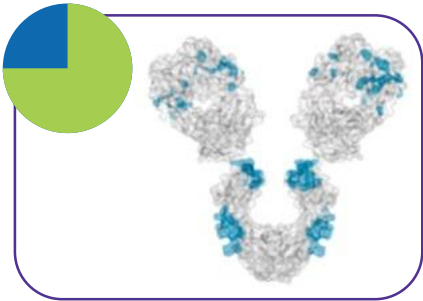
Analytical standards



Microbiology



Antibodies



Biochemicals



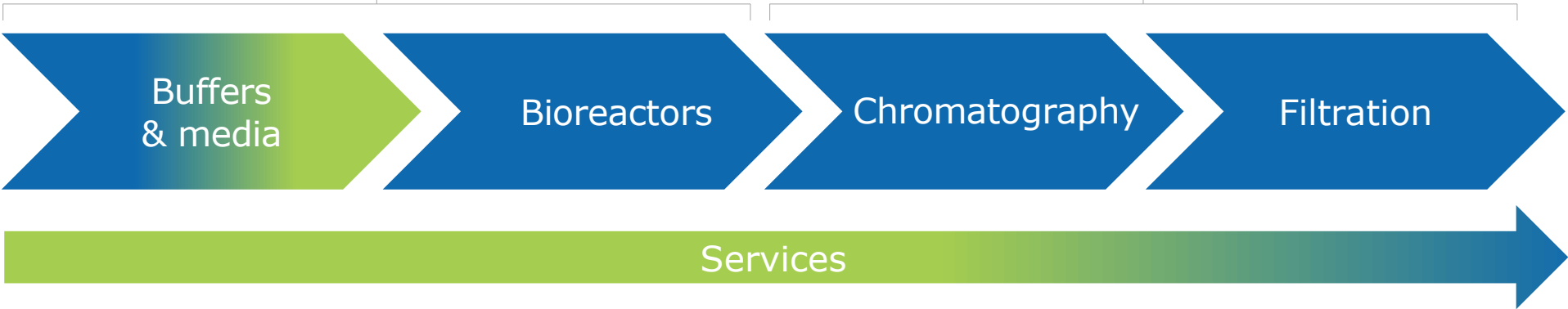
Merck KGaA,
Darmstadt, Germany

Sigma-Aldrich

Process

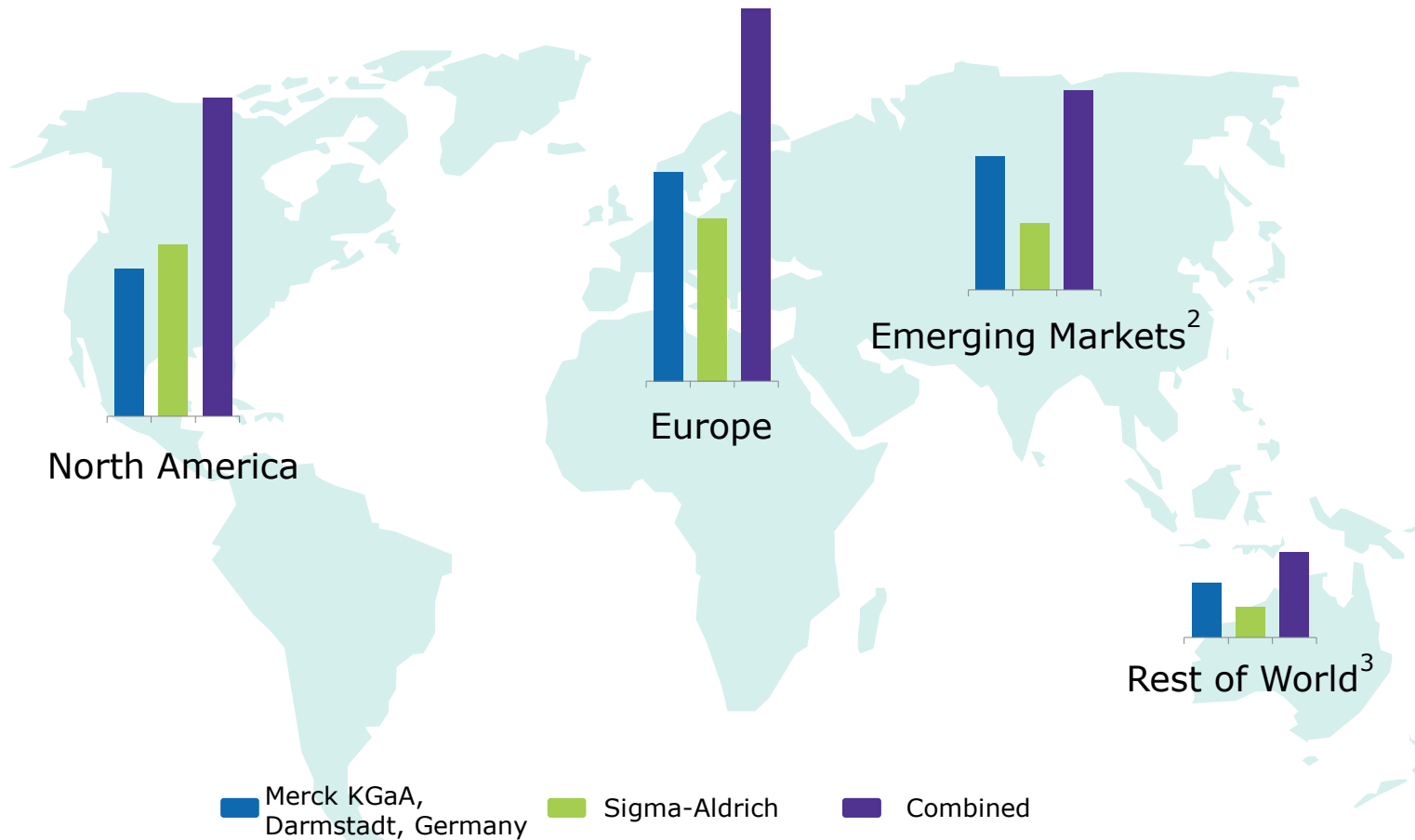
Upstream process

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 – Business and transaction financials

Overview of financial data¹

US\$ m	2012	2013	2014 ⁴
Revenue	2,623	2,704	2,785
% YoY at constant FX	+3%	+3%	+4%
EBITDA (adjusted)	809	821	847
% of sales	31%	30%	30%
D&A	136	138	132
% of sales	5%	5%	5%
Net financial debt (period end)	-41	-357	-513
No. of shares (diluted, m)	122	121	120

Proposed transaction details²

- Equity value ~US\$17 bn (€13.1 bn)
- Enterprise value (EV) ~€12.7 bn including net cash ~€360 m⁵
- Financing through cash and debt; no equity
- Assumed synergies: ~€260m
- In line with core acquisition criteria
 - Immediately accretive to EPS pre
 - Solid investment grade rating will be maintained

Implied forward transaction multiples³

	2013	2014
EV/Sales	6.1x	5.9x
EV/EBITDA	20.1x	19.4x
EV/EBITDA pro-forma incl. synergies ³	14.3x	13.9x

¹Source: Company reports; ²FX conversion: EUR/USD 1.30; ³"Pro-forma" calculation based on 100% expected synergies; ⁴FY 2014 results; ⁵at time of announcement (Sept. 2014)



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 delivery

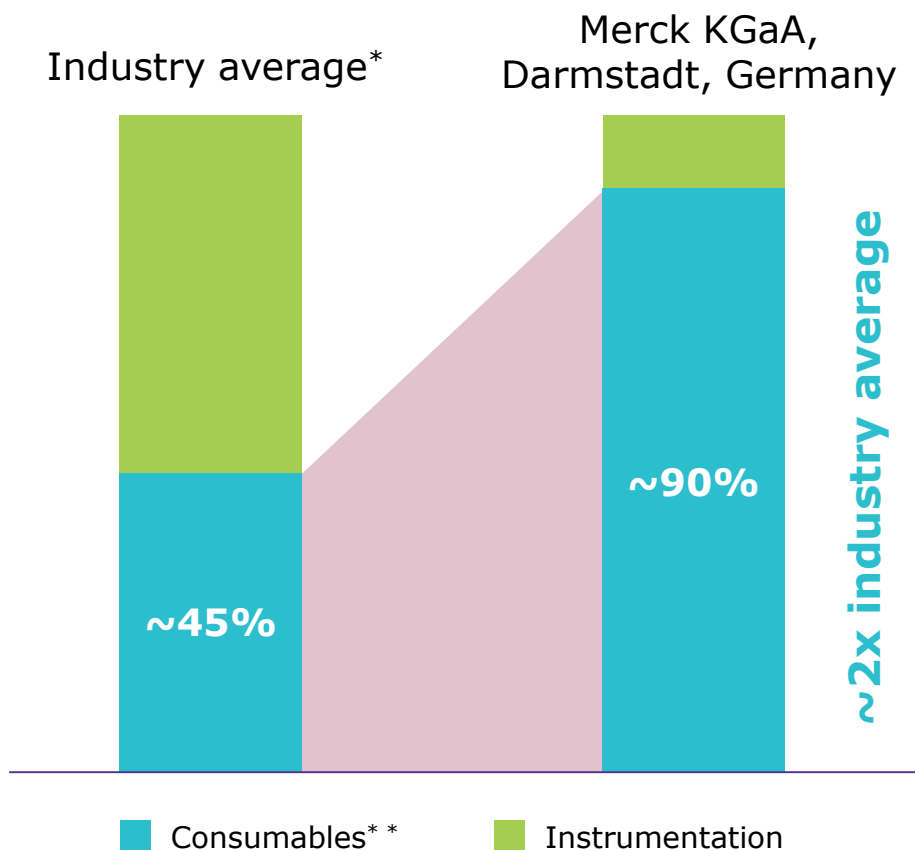


- Synergies: ~€260 m, i.e. ~12% of Sigma-Aldrich sales
- Fully implemented in third full year after closing
- Expected integration costs: ~€400 m; spread over 2015-2018



High exposure to consumables makes us unique compared to industry

Consumables exposure



Pros and cons

- + Consumables paid out of operating versus capex budgets
- + Products are often not discretionary and must be used to conduct research or manufacture drugs
- Risk of getting locked out by equipment manufacturer



03 HEALTHCARE



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



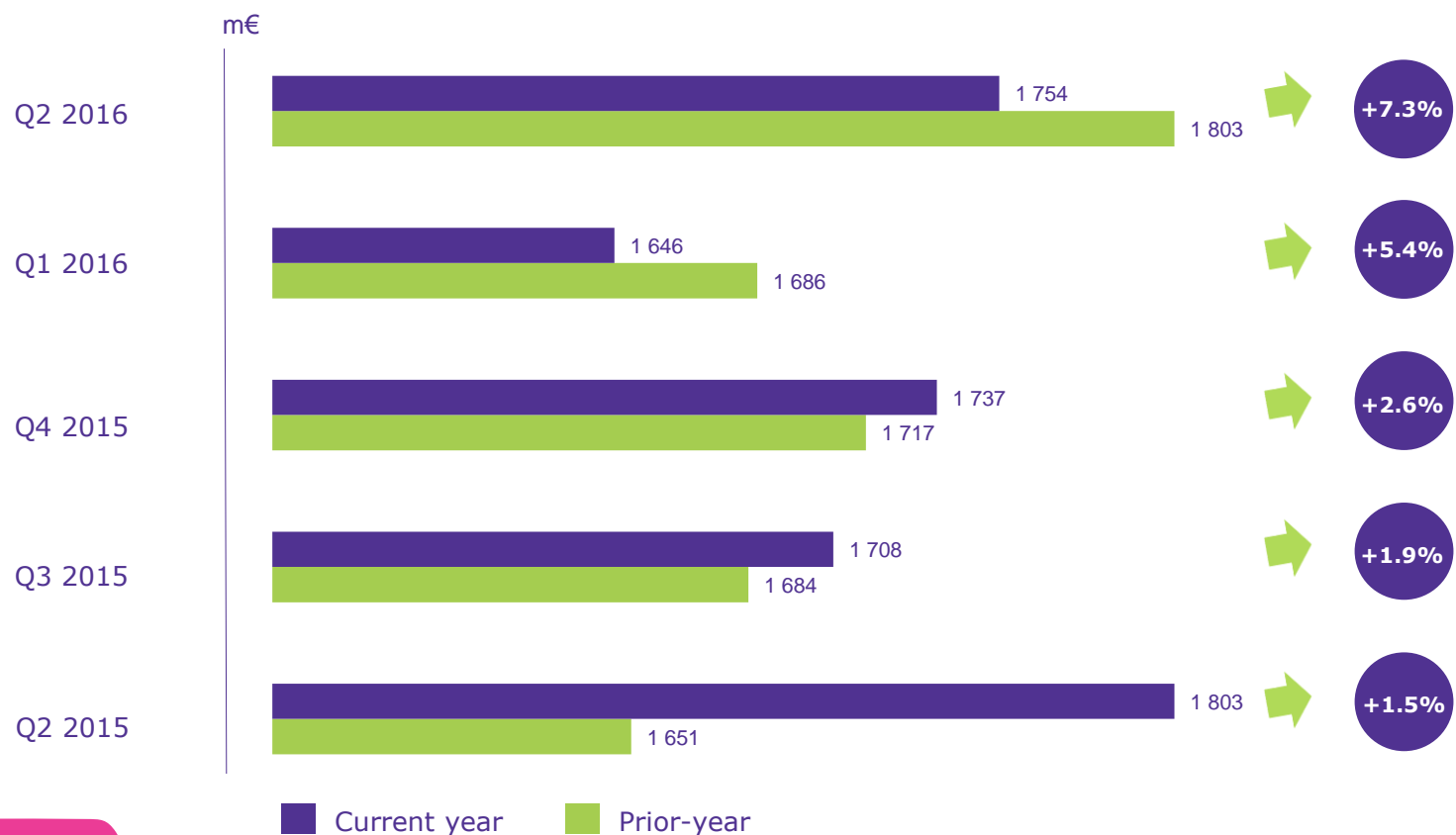
Cost discipline and efficient execution



Healthcare

Delivered organic sales growth, committed to future performance

Stable to slight organic growth



ERBITUX[®]
CETUXIMAB

Consumer Health

Rebif[®]

GONAL-[®]

Pergoveris[®]
(hCG and hCG for injection)

VIDREL[®]

Luveris[®]

Cetrotide[®]



Glucophage[®]

Concor[®]

Euthyrox[®]

Defending the existing product portfolio is a key strength of Healthcare

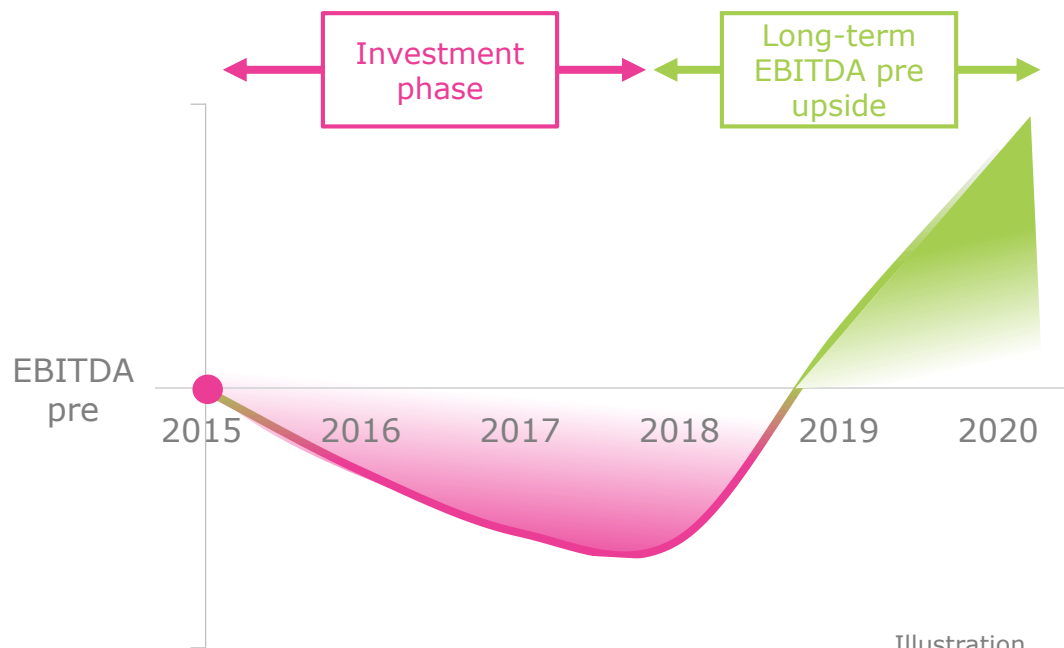
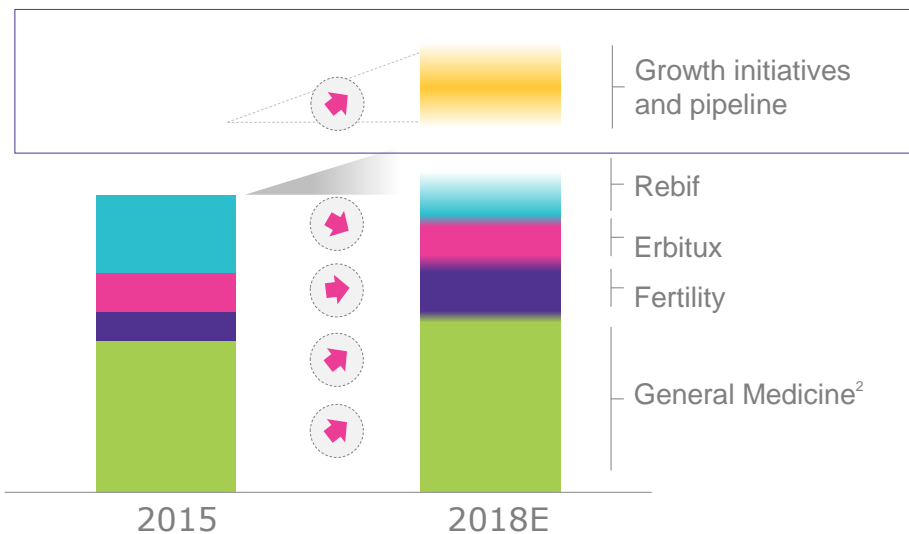


Healthcare

Pipeline opportunities will lead to rising investments

Stable to slightly growing¹ sales until 2018 confirmed

Should pipeline catalysts materialize, investments will lead to considerable payback as of 2018+



¹Organic; ²including Consumer Health, Cardiometabolic Care, Endocrinology, General Medicine and Others

Illustration

Rising investments until 2017 to accelerate sales and earnings growth as of 2018



Healthcare

Investments in future growth

R&D*

- Immuno-Oncology: avelumab and ramp-up of earlier pipeline projects +€150-200m cost increase in 2016
- Oncology/Immunology, e.g. tepotinib, BTK inhibitor: mid to high double-digit €m cost increase in 2016

Marketing & Selling*

- Launch readiness to be ensured for avelumab and cladribine
- Costs for launch preparation in the mid to high double-digit €m range in 2016

- **Cost discipline remains high on the agenda**
- **Stringent pipeline assessments continue**
- **Investments based on sound business cases and robust clinical data**

Long-term growth investments partly mitigated by strict cost management

*For scenario that pipeline catalysts materialize



Portfolio management: Differentiating across diverse business models

General Medicine portfolio



- Limited risk with high cash generation
- Sustainable steady growth fueled by Emerging Markets



Biologicals portfolio



- Moderate risk and reward profile
- Economies of scale due to state-of-the-art production capabilities
- Emerging Markets gain importance



Oncology & Immunology innovation portfolio



- High reward at high risk
- Innovation key success factor – high R&D spend
- Promising pipeline projects



Mid-term, all parts of the portfolio need to earn their cost of capital

The road to maximizing existing franchises is clear



Continue to drive front-line mCRC share by increasing patient testing and expanding head and neck coverage



Capitalize on strong efficacy and new smart devices to maximize differentiation and defend franchise



Build on No.1 position and ART¹ 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 life-cycle 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

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

M2736 (ATX-MS-1467)
Immune tolerizing agent
Multiple sclerosis

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

Tepotinib
c-Met kinase inhibitor
Hepatocellular cancer

Avelumab
Anti-PD-L1 mAb
Merkel cell carcinoma

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 Tablets⁵ –
Lymphocyte targeting agent
Relapsing-remitting multiple sclerosis

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

Pipeline as of July 28th, 2016

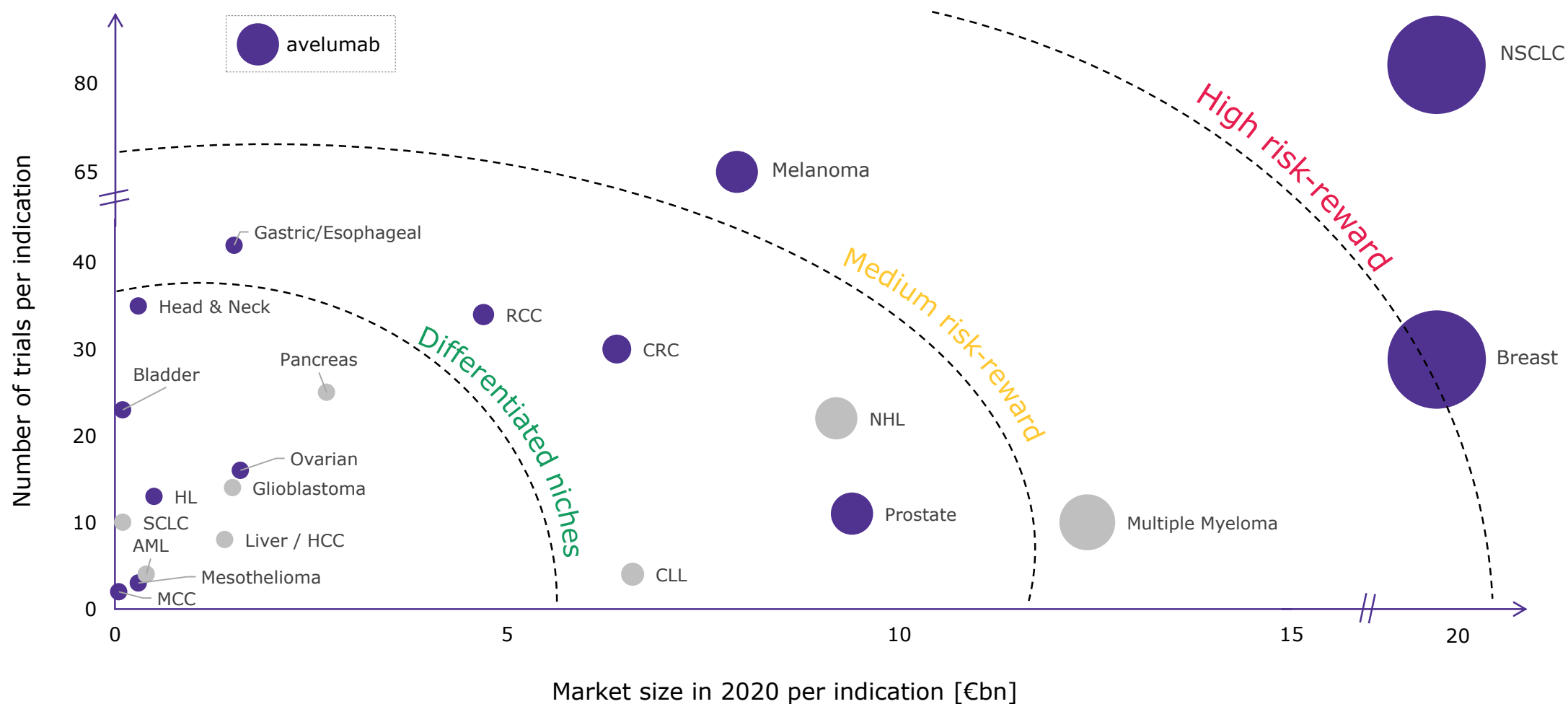
Pipeline products are under clinical investigation and have not been proven to be safe and effective. There is no guarantee any product will be approved in the sought-after indication.

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

⁵As announced on July 18th, 2016 the European Medicines Agency accepted Merck KGaA, Darmstadt, Germany, Marketing Authorization Application



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: Smart leader

- Indications (Merkel cell) or markets (Asia for gastric)
- Quick to market strategy, e.g. BTD for MCC in November 2015
- 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

Ambition: Smart follower

- Indications such as NSCLC or Bladder
- Learn from experience of incumbents/early movers
- Potential for combinations given breadth of combined development pipelines, e.g. lung
- 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: H1 2019*

3 Gastric 1L maint.

- Estimated patient enrolment: 668
- Comparator: Best supportive care
- Estimated primary completion: H1 2019*

4 Gastric 3L

- Estimated patient enrolment: 330
- Comparator: Physician's choice of chemotherapy/BSC
- Estimated primary completion: H1 2018*

5 NSCLC 1L

- Estimated patient enrolment: 420
- Comparator: Physician's choice of platinum containing chemotherapy
- Estimated primary completion: H1 2018*

6 NSCLC 2L

- Estimated patient enrolment: 650
- Comparator: docetaxel/chemotherapy
- Estimated primary completion: H2 2021*

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*



MCC 2L: Clinical results support avelumab as potential therapeutic option – planned to apply for marketing authorization in H2 2016

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



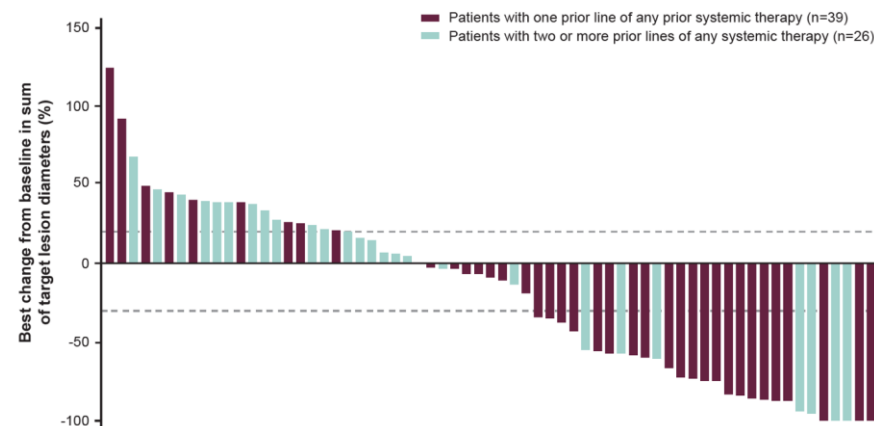
Note: timelines are event-driven and may change

Note: avelumab is the proposed nonproprietary name for the anti-PD-L1 monoclonal antibody (MSB0010718C)

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)
- 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

- We aim 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

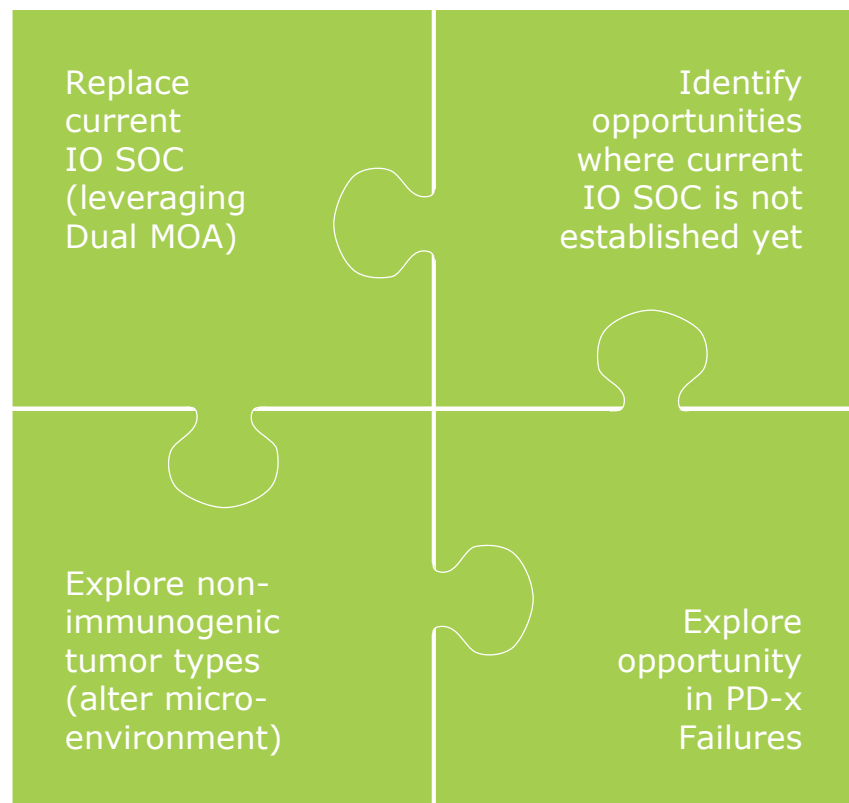
Note: timelines are event-driven and may change

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.



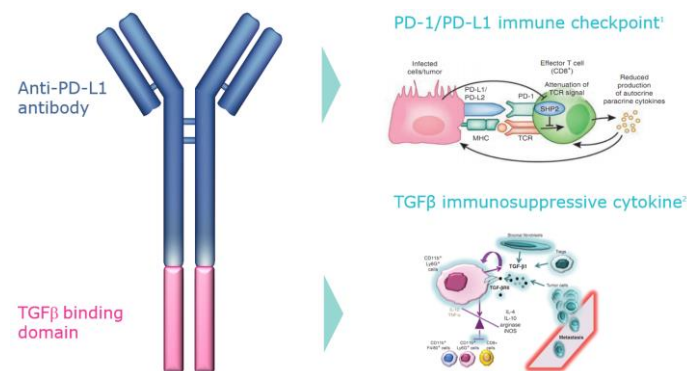
PD-L1–TGF-beta indicates potential to move beyond checkpoint inhibitors

Four focus areas for exploration



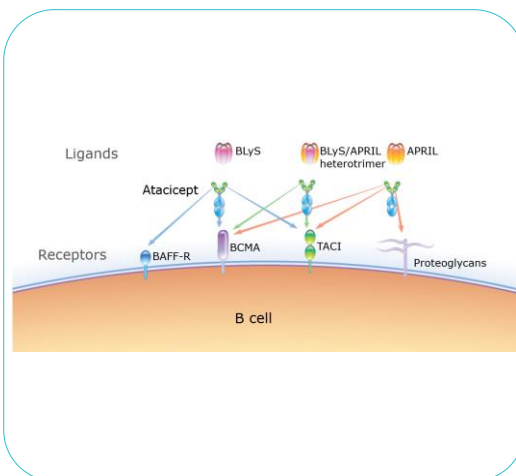
Status and next steps

- 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
- Expansion into Ib cohorts expected for Q3 2016



Update on selected assets (1/2)

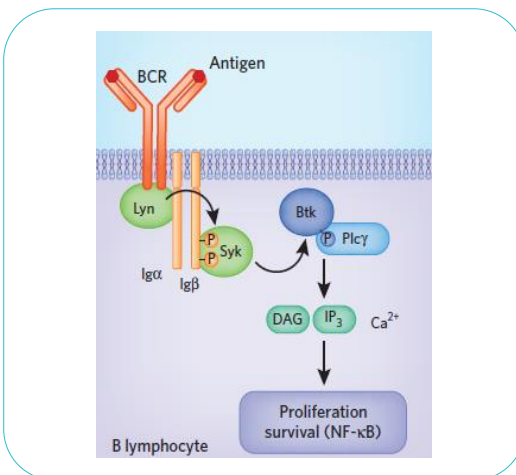
Atacicept



- 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 H2 2016

BTK



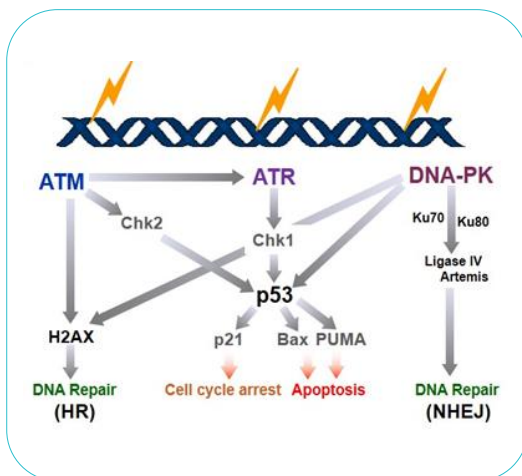
- Suppress autoantibody-producing cells
- Preclinical research suggests therapeutic use in certain autoimmune diseases
- High and differentiated efficacy in preclinical models; promising kinase selectivity profile
- Aim to achieve best in class through minimization of off-target effects
- 2nd dose level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

Three phase II trials expected to be started until end of 2016 (e.g. RA, SLE)



Update on selected assets (2/2)

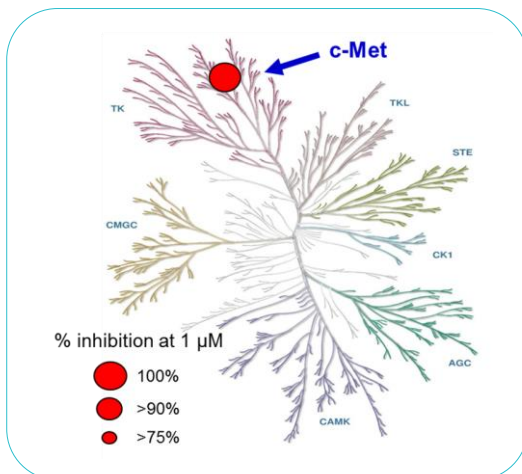
DNA-PK inhibitor



- 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



Outlook – MCC submission planned in H2 2016

Avelumab (MCC 2L)	▶	Expected submission	▶	H2 2016
Atacicept	▶	Phase III decision	▶	H2 2016
BTK	▶	Start three Phase II trials	▶	H2 2016
PD-L1–TGF-beta	▶	Signals of activity in cohorts	▶	H1 2017
DNA-PK inhibitor	▶	Analysis of Phase I data	▶	H2 2017
Tepotinib	▶	Analysis of Phase II data	▶	H1 2018

Note: timelines are event-driven and may change

Note: avelumab is the proposed nonproprietary name for the anti-PD-L1 monoclonal antibody (MSB0010718C)



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

Two expected submissions in 2016 may potentially result in product launches in 2017

Disciplined execution

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





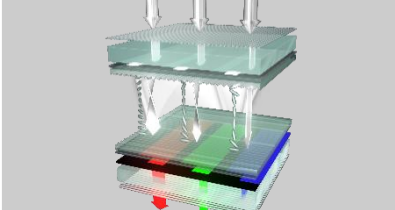
04

PERFORMANCE MATERIALS



Performance Materials


The four pillars are set for future profitable growth



Display Materials

~50-60% of total sales,

- 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

~15-20% of total sales,


- effect pigments and functional materials for coatings, plastics, printing and cosmetics
- functional materials for cosmetics and special applications



Integrated Circuit Materials

~15-20% of total sales,

- dielectrics, colloidal silica, lithography materials (photo resists), yield enhancers, edge-bead removers
- polyimide raw materials and printing materials



Advanced Technologies

~5-10% of total sales,

- organic (OLED) and inorganic (LED) light emitting diodes and functional materials for electronics and energy solutions, especially OLED is providing first substantial sales



Performance Materials

Innovation leadership is the backbone of future profitability and growth

evolutionary



Incremental product adjustments - only minor investments

LC

New singles for PSVA technology, new mode SA-VA

pigments

Meoxal luminous metal effect pigments

ICM¹

low defect CMP² slurries

advanced tech.

Organic Photovoltaics

revolutionary



Fundamental research - more substantial investments needed

LC

Smart windows, smart antennas

pigments

Counterfeiting prevention applications

ICM¹

Directed self-assembly (DSA) in lithography

advanced tech.

OLED printing technology



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



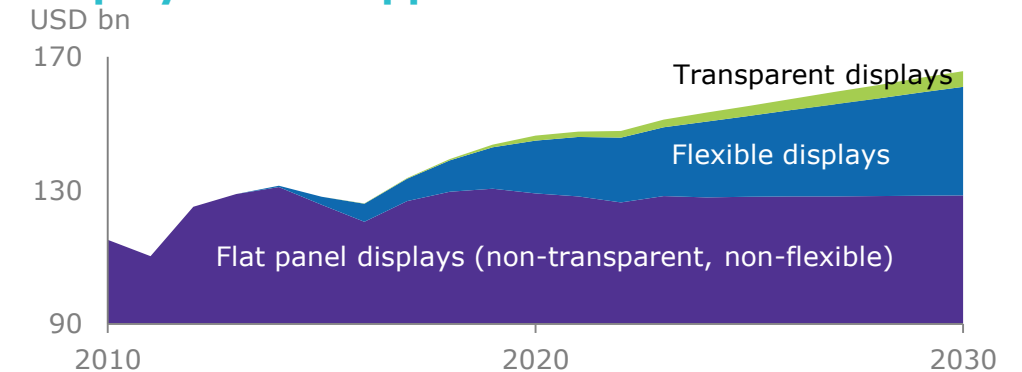
Performance Materials

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

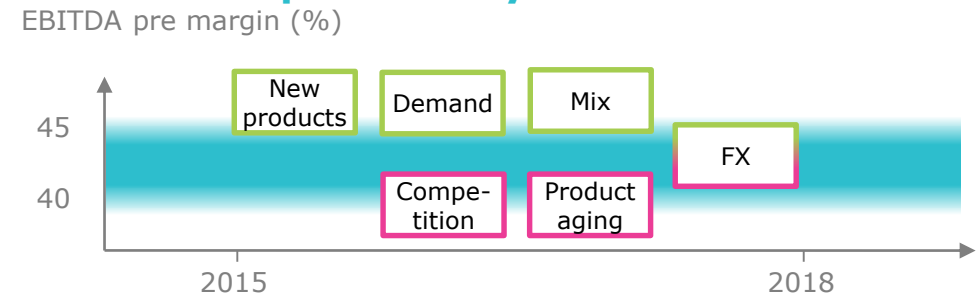
Display market opportunities continue to evolve¹



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



05

FINANCIAL OVERVIEW



Q2 2016: Overview

Key figures

[€m]	Q2 2015	Q2 2016	Δ
Net sales	3,219	3,805	18.2%
EBITDA pre	889	1,158	28.8%
Margin (in % of net sales)	27.9%	30.4%	
EPS pre	1.30	1.55	19.2%
Operating cash flow	326	311	-4.7%

[€m]	Dec. 31, 2015	June 30, 2016	Δ
Net financial debt	12,654	12,510	-1.1%
Working capital	3,448	3,813	10.6%
Employees	49,613	50,456	1.7%

Comments

- EBITDA pre & margin increase driven by Sigma, organic performance and end of Rebif commission expenses
- EPS pre up due to EBITDA pre increase, but higher LTIP* charges burden financial result
- Healthy operating cash flow due to strong business performance amid higher tax payments
- Net financial debt reflects operating cash flow and dividend payments
- Working capital shows increase in business activity – further room for improvement



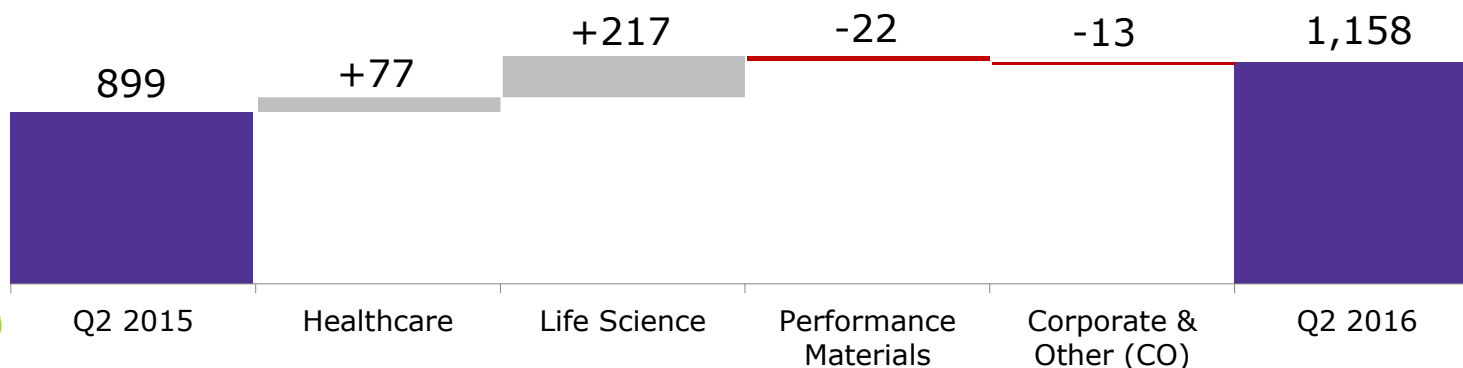
Life Science and Healthcare drive increase in EBITDA pre

Q2 2016 YoY net sales

	Organic	Currency	Portfolio	Total
Healthcare	7.3%	-9.0%	-1.0%	-2.7%
Life Science	8.1%	-2.8%	79.7%	85.0%
Performance Materials	-4.7%	-2.0%	3.1%	-3.5%
Group	5.1%	-6.1%	19.2%	18.2%

- Growth in Healthcare driven by strong Fertility, GM* as well as Xalkori commissions
- Process Solutions continues to drive strong organic growth in Life Science
- Organic decline in Performance Materials reflects display supply chain destocking
- Portfolio is Sigma and Kuvan

Q2 YoY EBITDA pre contributors [€ m]



- HC benefits from strong organic growth, end of Rebif commission expenses and ~€30 m disposal gain
- Life Science driven by Sigma, strong organic growth and synergies
- Performance Materials only slightly lower despite LC sales decline
- CO contains corporate initiatives & hedging

*General Medicine and CardioMetabolic Care
Totals may not add up due to rounding

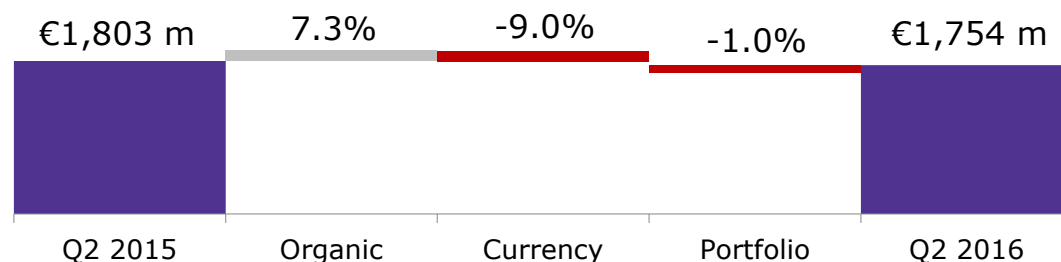


Healthcare: Strong organic growth, EBITDA pre and profitability

Healthcare P&L

[€m]	Q2 2015	Q2 2016
Net sales	1,803	1,754
Marketing and selling	-730	-643
Administration	-69	-66
Research and development	-358	-378
EBIT	267	298
EBITDA	461	558
EBITDA pre	480	557
Margin (in % of net sales)	26.6%	31.8%

Net sales bridge

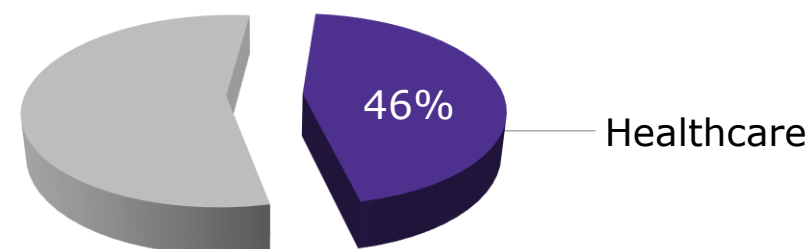


*Productive Development Partnership
Totals may not add up due to rounding

Comments

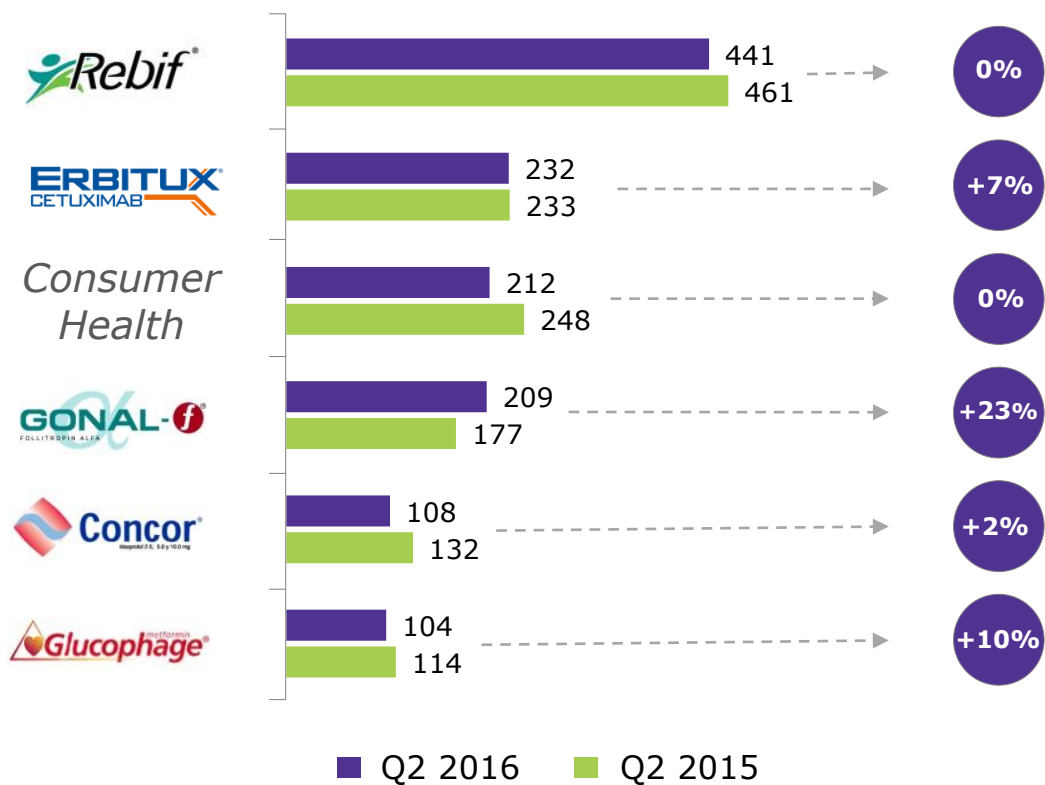
- Rebif organically stable; ramp-up of competition in Europe partially offset by tender in Russia; in U.S. pricing offsets declining volumes
- Solid organic growth of Erbitux across all regions, especially strong volume growth in China, but also low comparables
- Fertility shows strong growth across portfolio especially in China; Gonaf benefiting from competitive situation in U.S. and low base
- Marketing & selling reflects end of commission expenses for Rebif (U.S.) partially offset by reinvestments in sales force & launch preparations
- R&D spend increases as pipeline development progresses
- Higher EBITDA pre due to strong organic growth, end of Rebif commissions and ~€30 m disposal gain from Venture Fund minority

Q2 2016 share of group net sales

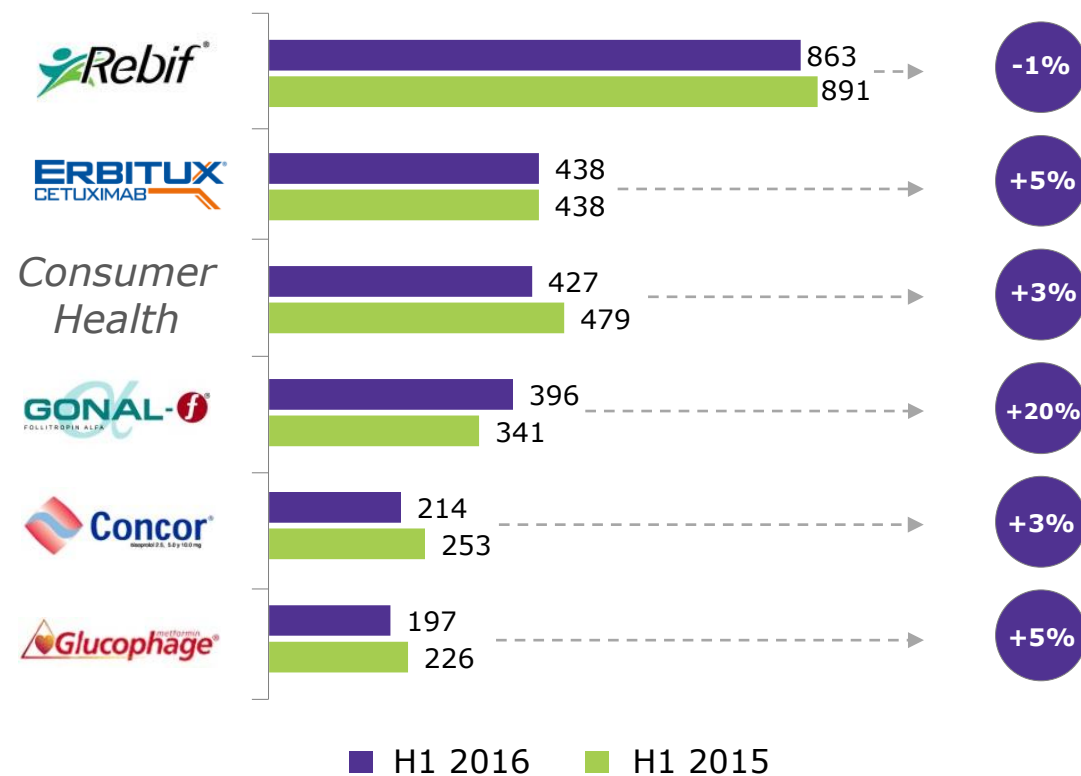


Healthcare organic growth by franchise/product

Q2 2016 organic sales growth [%]
by key product [€ m]

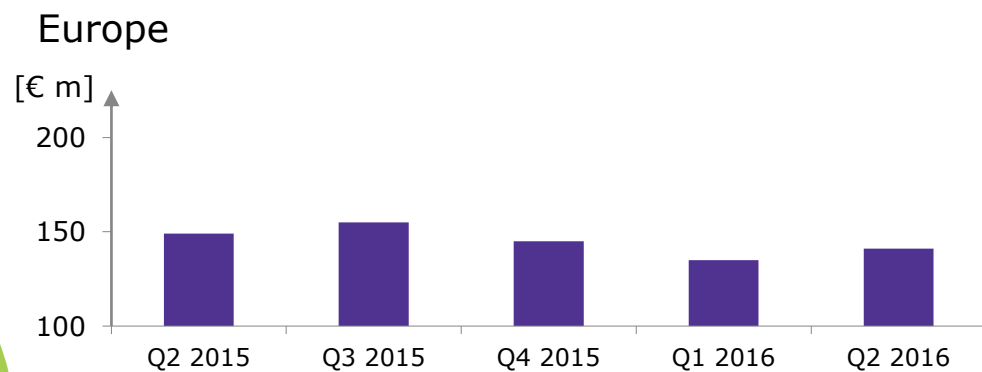
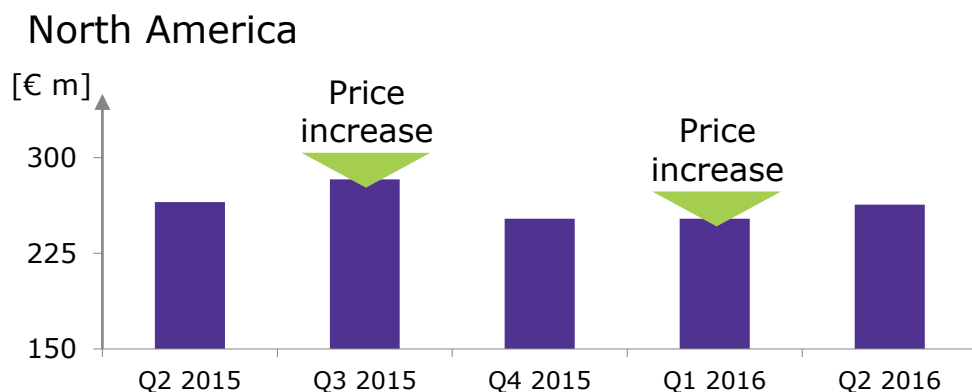


H1 2016 organic sales growth [%]
by key product [€ m]



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

Rebif sales evolution



Q2 drivers
0.0% org.

- Price
- Volume
- FX

Q2 drivers
-2.3% org.

- Price
- Volume

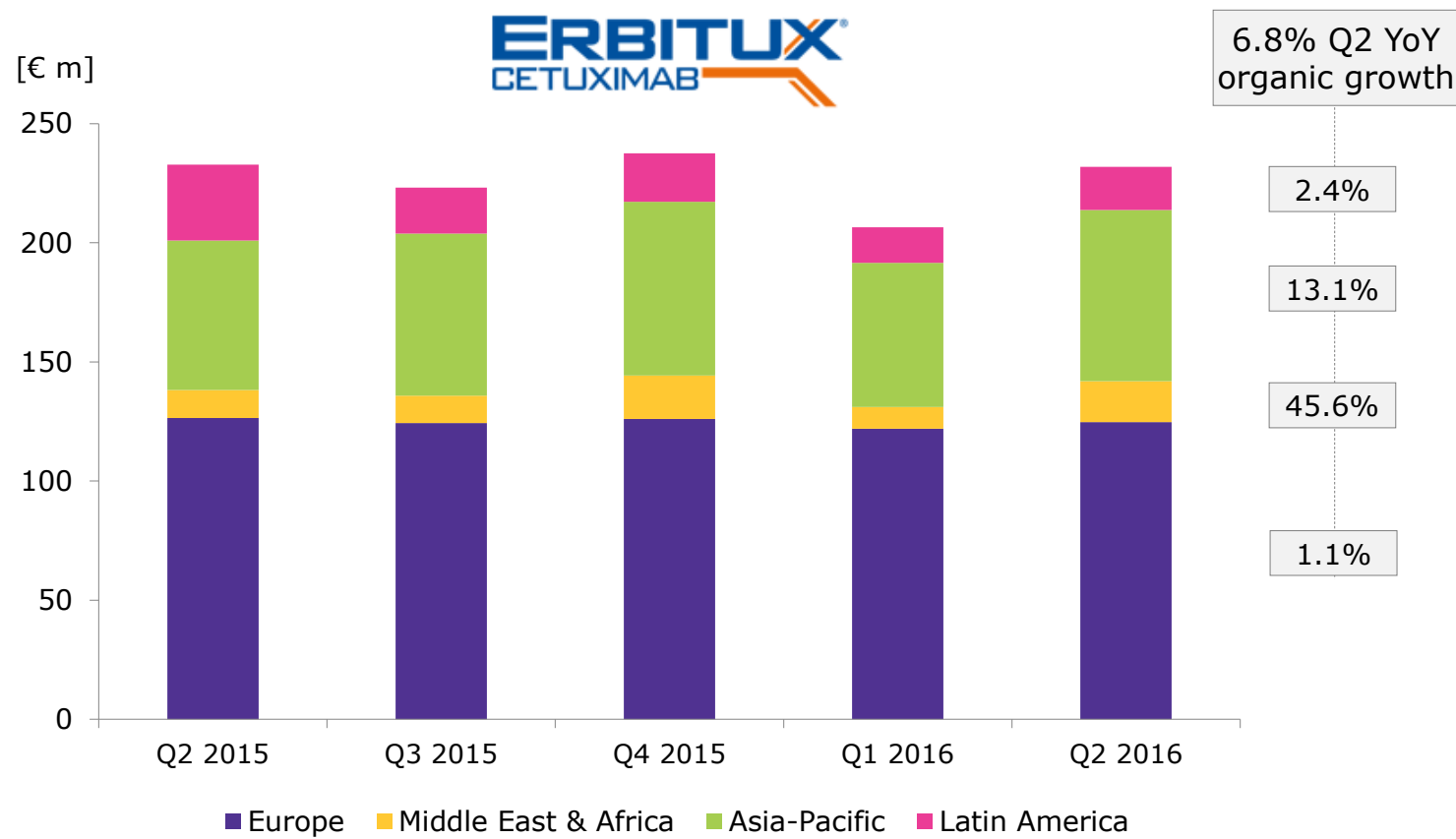
Rebif performance

- Rebif sales of €441 m in Q2 2016 reflect flat organic performance amid negative FX effects from LatAm & EU
- Market shares within interferons stable due to high retention rates and long-term safety track record
- U.S. pricing & market share stabilization offset decline of interferon class
- 5% U.S. price increases in July will support performance going forward
- Phased market entry of orals in Europe causes ongoing volume decline; Q2 2016 contains tender in Russia



Erbitux: A challenging market environment

Erbitux sales by region



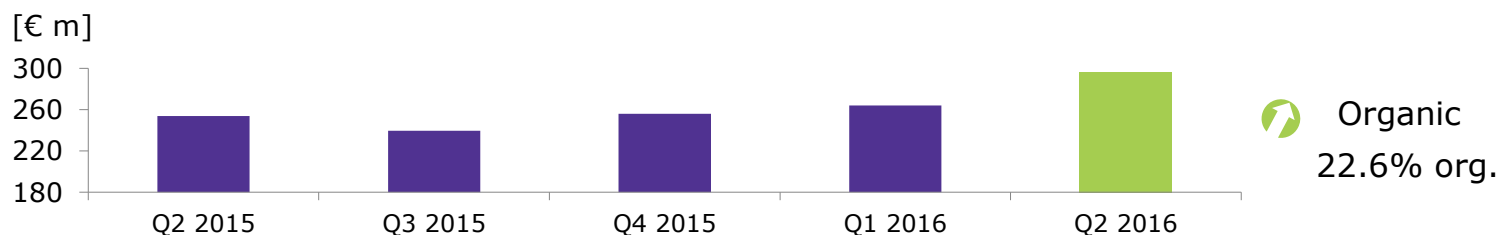
Erbitux performance

- Sales increase to €232 m due to solid volume development especially in growth markets
- Europe stable in ongoing tough environment (price and competition)
- Asia-Pacific shows strong growth led by China
- Organic jump in MEA reflects growing demand but also beneficial tender phasing

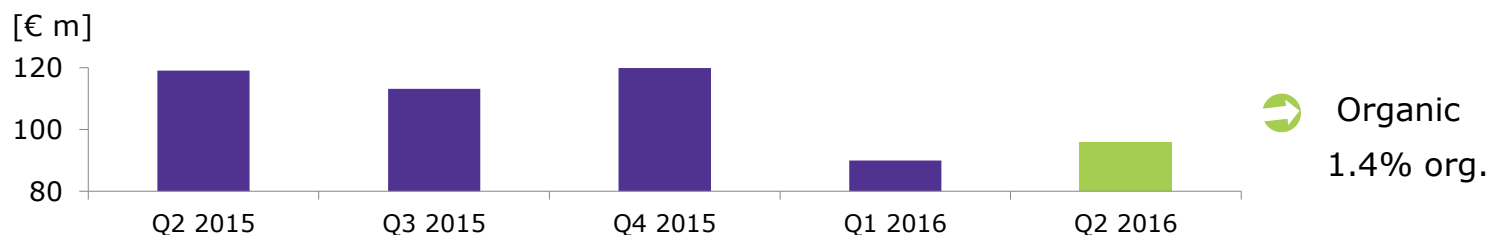
Strong organic growth in Fertility, General Medicine and Endocrinology

Sales evolution

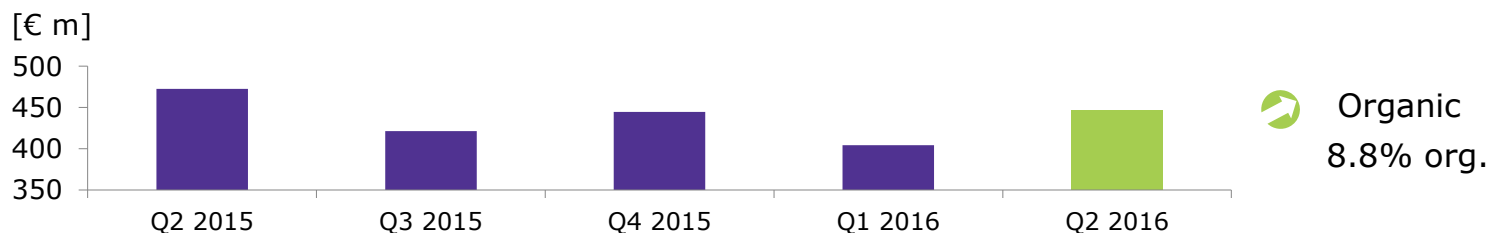
Fertility



Endocrinology



General Medicine*



Q2 drivers

- Gonal-f continues to benefit from competitive situation in U.S. and strong demand in China
- Sales drop in Endocrinology reflects Kuvan divestment; remaining portfolio (Saizen, Serostim) growing organically
- General Medicine sales burdened by FX headwinds from LatAM, organic performance sustainably healthy
- Euthyrox posts strong growth fueled by all regions, China remains key organic contributor of organic growth
- Glucophage growing in all regions especially benefiting from high demand in Middle East

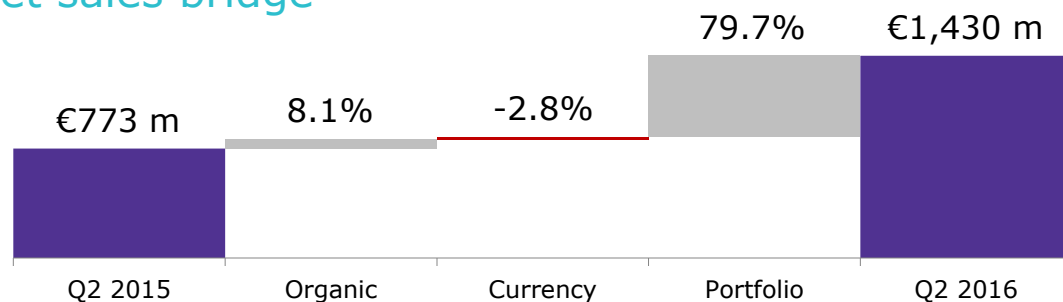


Life Science: Another strong quarter while integration on track

Life Science P&L

[€m]	Q2 2015	Q2 2016
Net sales	773	1,430
Marketing and selling	-244	-413
Administration	-28	-58
Research and development	-49	-65
EBIT	87	166
EBITDA	170	343
EBITDA pre	200	417
Margin (in % of net sales)	25.9%	29.1%

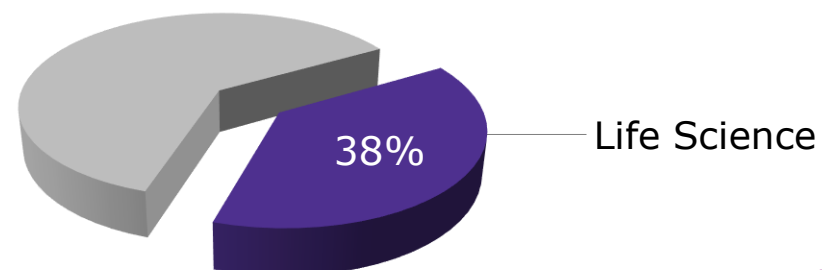
Net sales bridge



Comments

- Double-digit growth of Process Solutions driven by increasing production of large molecules across global and regional accounts
- Applied Solutions shows moderate organic growth, driven by bio-monitoring products for pharma & demand for analytical testing
- Research Solutions benefits from strong demand in Emerging Markets, and for chemical analytics and molecular biology products
- Absolute costs higher due to Sigma, but improve in relation to sales
- Profitability reflects Sigma, business mix and synergies

Q2 2016 share of group net sales

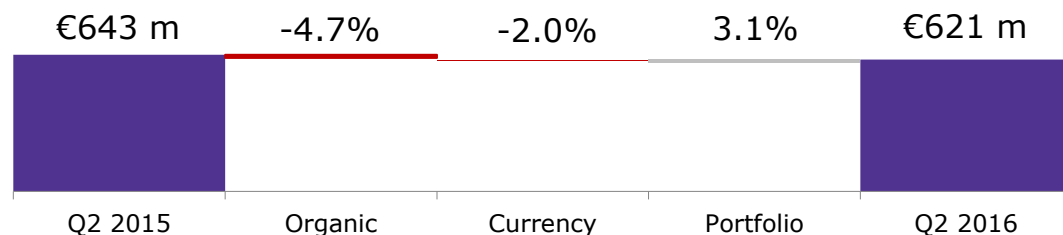


Performance Materials: Strong profitability amid ongoing destocking

Performance Materials P&L

[€m]	Q2 2015	Q2 2016
Net sales	643	621
Marketing and selling	-53	-59
Administration	-14	-14
Research and development	-49	-53
EBIT	238	193
EBITDA	299	267
EBITDA pre	295	273
Margin (in % of net sales)	45.9%	44.1%

Net sales bridge

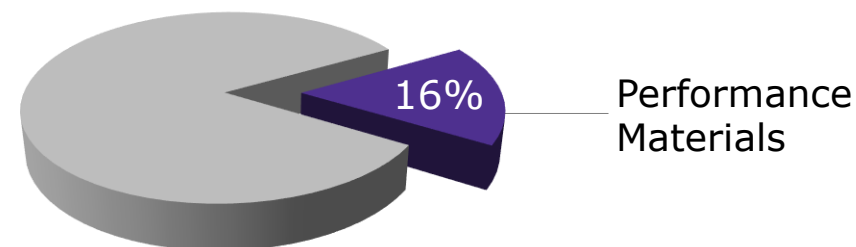


*Active pharmaceutical ingredient
Totals may not add up due to rounding

Comments

- LC declining as ongoing supply chain destocking & volume declines of mature TN-TFT outweighs volume increase in PS-VA and IPS
- Destocking is expected to continue into H2 2016
- OLED continues to grow on industry capacity expansion & investments
- Integrated Circuit Materials (ICM) shows above market growth mainly driven by dielectric and lithography materials for chip production
- Strong growth of Pigments & Functionals due to strong Xirallic for automotive coatings and cosmetic functionals, but on low comparables
- High profitability reflects leading market position, positive product mix within ICM and Pigments as well as active cost management

Q2 2016 share of group net sales



Reported figures reflect strong business performance

Reported results

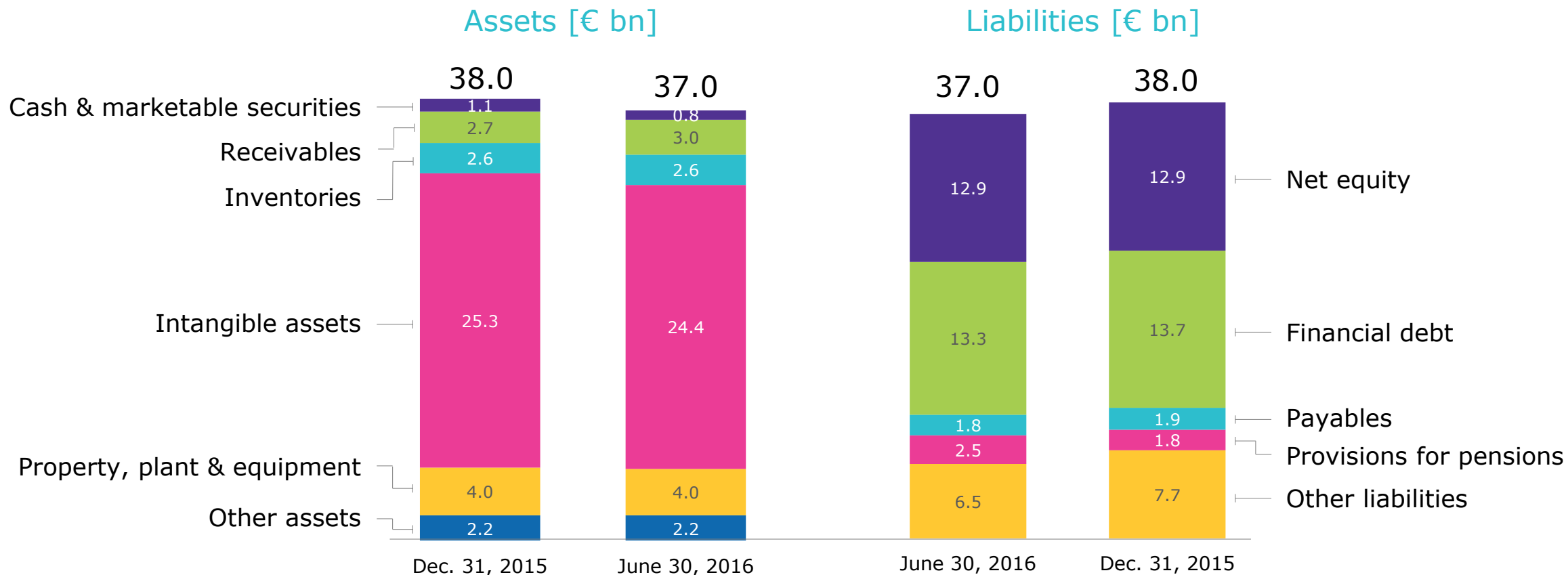
[€m]	Q2 2015	Q2 2016	Δ
EBIT	501	550	9.8%
Financial result	-41	-121	>100%
Profit before tax	461	429	-6.8%
Income tax	-115	-115	0.0%
<i>Effective tax rate (%)</i>	24.9%	26.7%	
Net income	343	312	-9.1%
EPS (€)	0.79	0.72	-8.9%

Comments

- EBIT reflects increased EBITDA pre amid integration costs, Sigma D&A and Xalkori impairment (~€70 m)
- Financial result contains Sigma financing interest expenses and significant adverse effects from LTIP
- Effective tax rate slightly above guided range of ~23% to 25% due to Xalkori impairment



Balance sheet – deleveraging in progress after Sigma acquisition



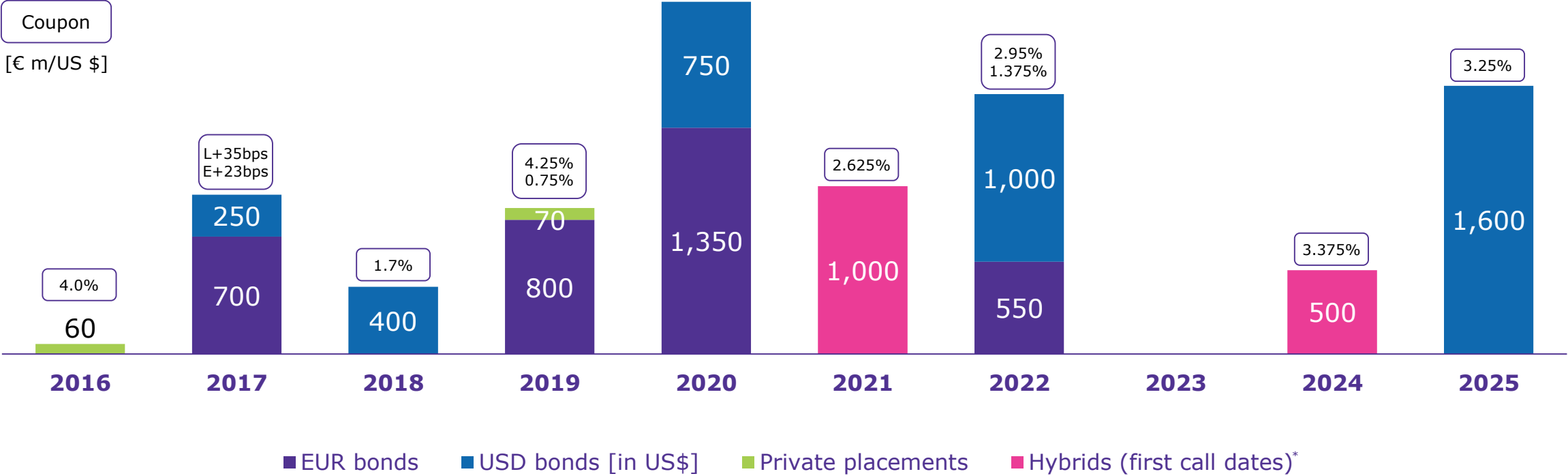
- Total assets decline by 2.6%, equity ratio grows to 34.7%
- Other liabilities decrease by €1.2 bn mainly due to dividend payment to E. Merck KG, Darmstadt, Germany and lower deferred taxes

- Further decline in interest rates increases pension provisions
- Stable net equity: Profit after tax offset by dividends, FX translation and actuarial losses



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

Maturity profile as of June 30, 2016



Financing structure enables flexible and swift deleveraging



Healthy underlying operating cash flow

Q2 2016 – cash flow statement

[€m]	Q2 2015	Q2 2016	Δ
Profit after tax	346	314	-32
D&A	343	519	176
Changes in provisions	-70	-67	3
Changes in other assets/liabilities	-270	-397	-127
Other operating activities	3	-28	-31
Changes in working capital	-25	-30	-5
Operating cash flow	326	311	-15
Investing cash flow	1,860	-114	-1,974
thereof Capex on PPE	-93	-125	-32
Financing cash flow	-174	-357	-183

Cash flow drivers

- D&A increases due to Sigma and Xalkori impairment
- Higher tax payments burden changes in other assets/liabilities
- Investing cash flow LY contained cash-in from Sigma hedging
- Capex higher due to HQ & Sigma; 2016 peak expected in Q4
- Financing cash flow reflects repayment of Millipore bond and commercial paper



Exceptionals in Q2 2016

Exceptionals in EBIT

[€m]	Q2 2015		Q2 2016	
	Exceptionals	thereof D&A	Exceptionals	thereof D&A
Healthcare	21	2	70	71
Life Science	30	0	74	0
Performance Materials	-3	0	7	0
Corporate & Other	9	0	10	0
Total	56	2	160	71



Financial calendar

Date	Event
October 13, 2016	Capital Markets Day - 2016
November 15, 2016	Q3 2016 Earnings release
March 9, 2017	Q4 2016 Earnings release
April 28, 2017	Annual General Meeting
May 18, 2017	Q1 2017 Earnings release



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