MERCK KGAA, DARMSTADT, GERMANY

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Dr. Michael Heckmeier
Executive Vice President and Head of Business Unit
Display Materials | Performance Materials

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This quarterly presentation contains certain financial indicators such as EBITDA pre exceptionals, net financial debt and earnings per share pre exceptionals, which are not defined by International Financial Reporting Standards (IFRS). These financial indicators should not be taken into account in order to assess the performance of Merck KGaA, Darmstadt, Germany in isolation or used as an alternative to the financial indicators presented in the consolidated financial statements and determined in accordance with IFRS. The figures presented in this quarterly statement have been rounded. This may lead to individual values not adding up to the totals presented.

Agenda

01 **Business overview**

02 **Transforming the company**

03 **Performance Materials – Expanding leadership and innovation**

04 **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

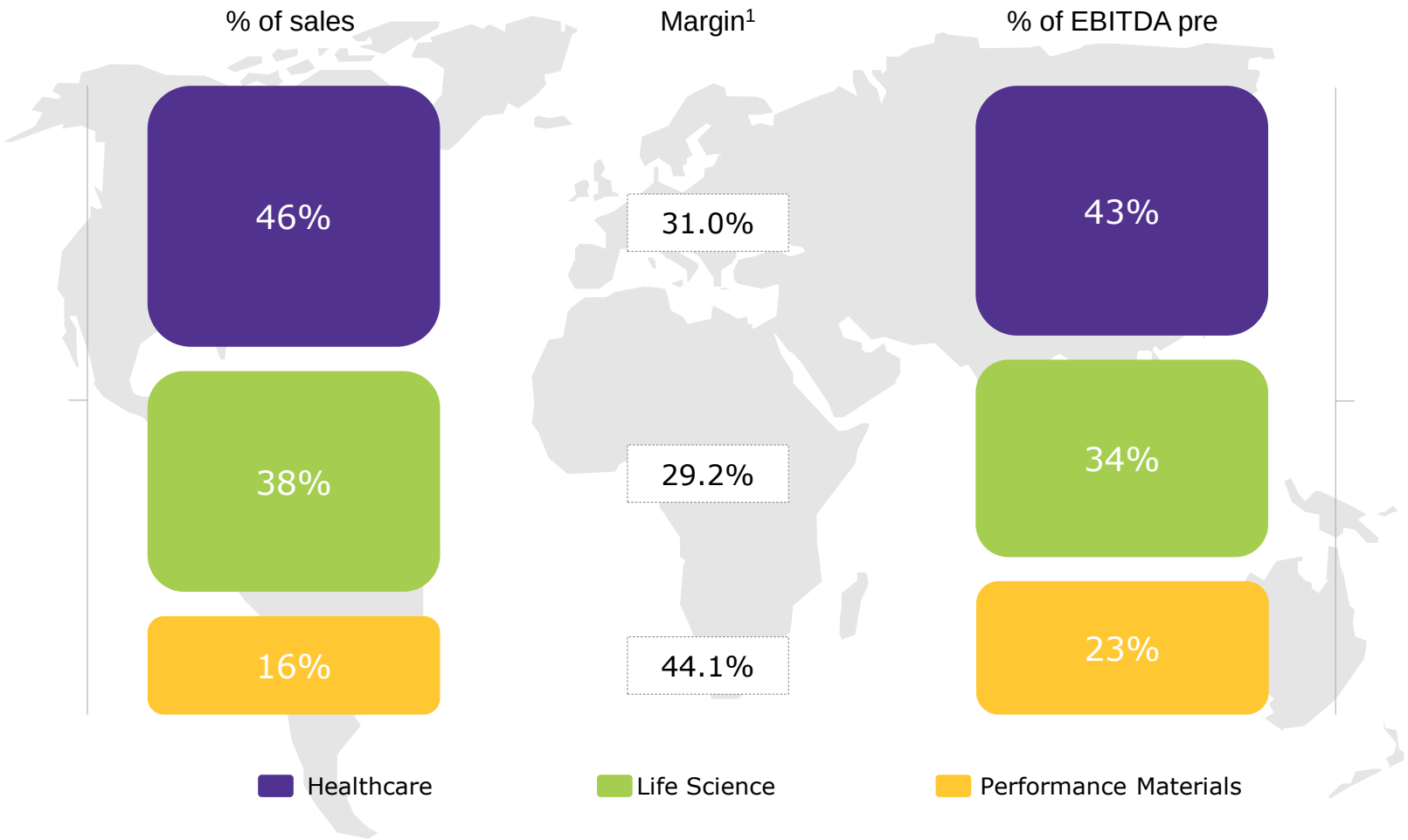
Leading life science company

- 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



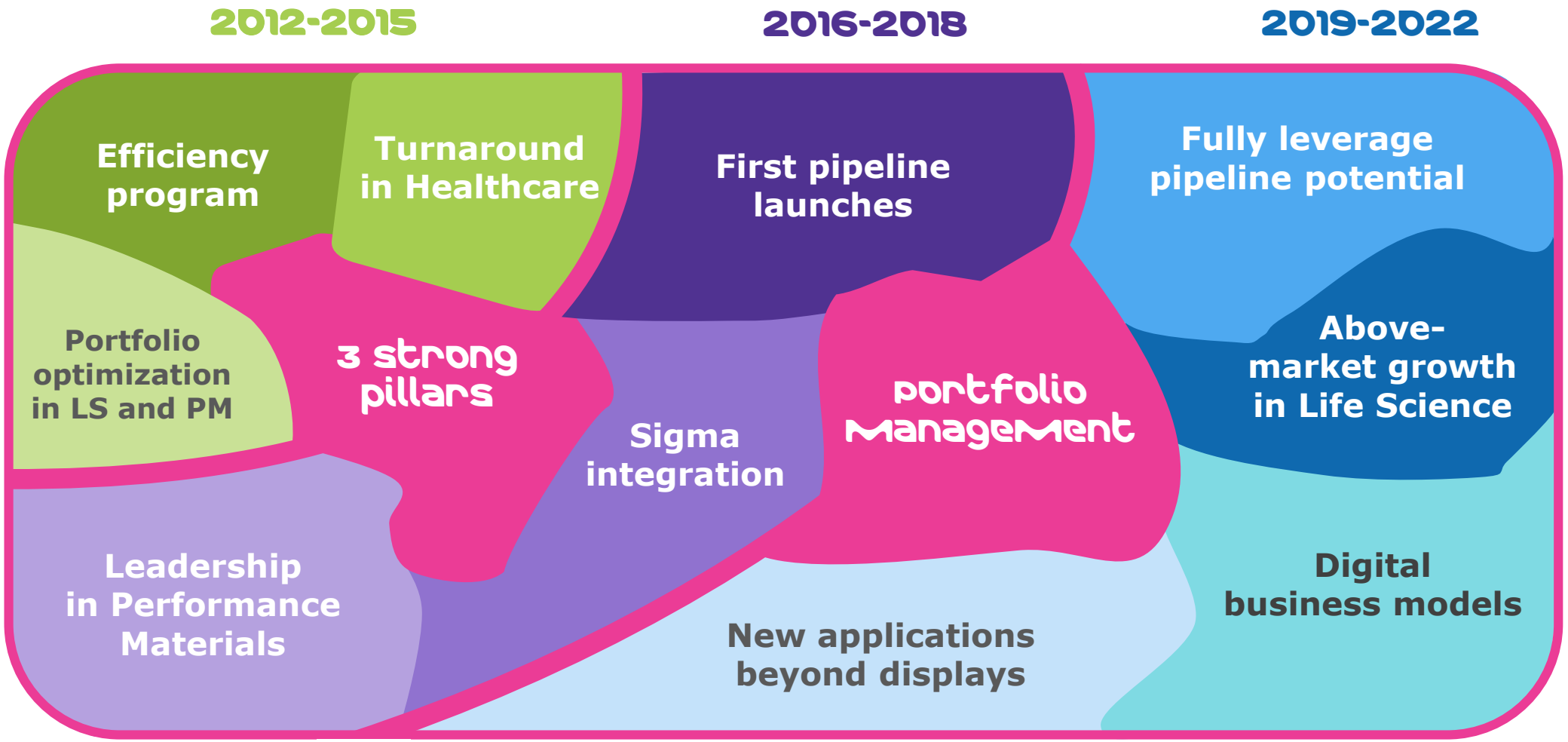
FY 2016
Sales:
€15,024 m

FY 2016
EBITDA pre[2]:
€4,490 m

[1]EBITDA pre margin in % of net sales; [2]Including Corporate/Others (-€396 m)

02 TRANSFORMING THE COMPANY

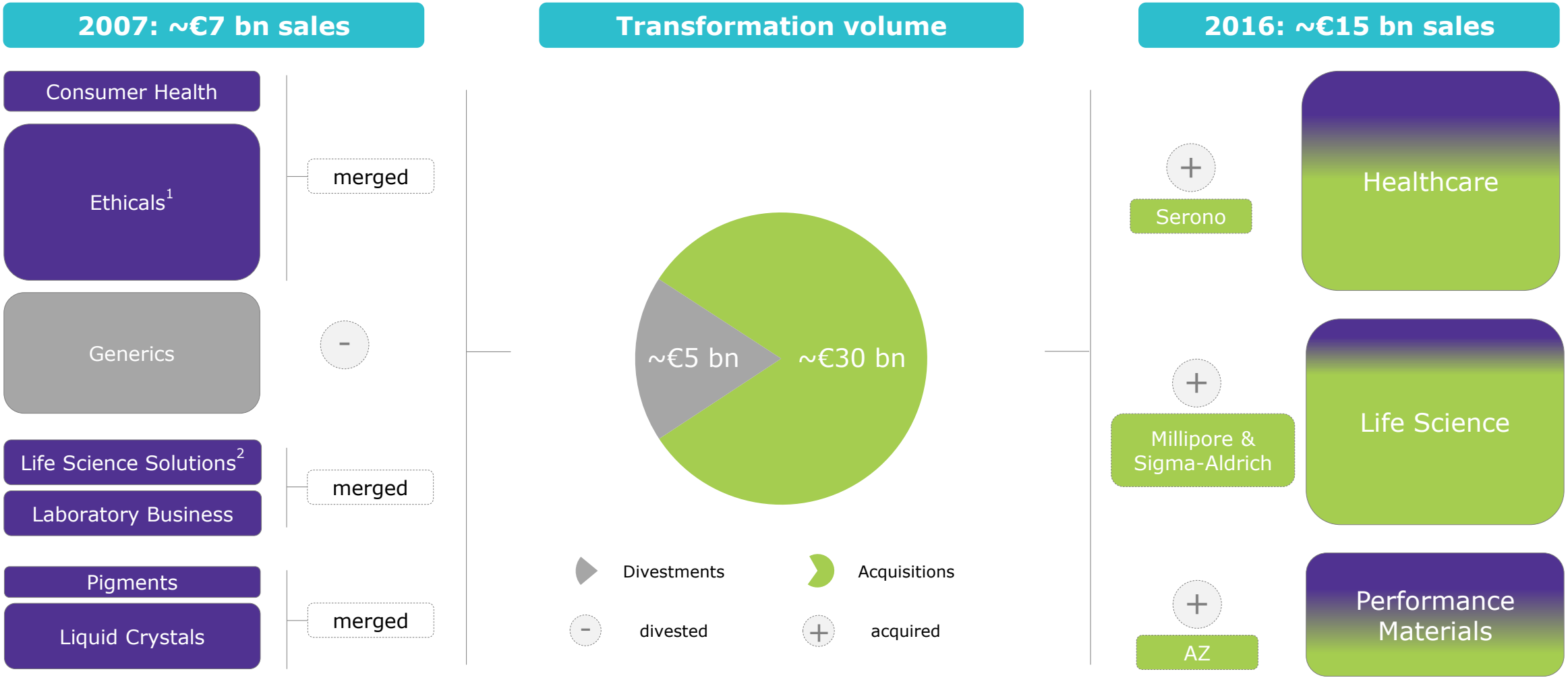
Group
Strategic roadmap 2016-2022



Illustration

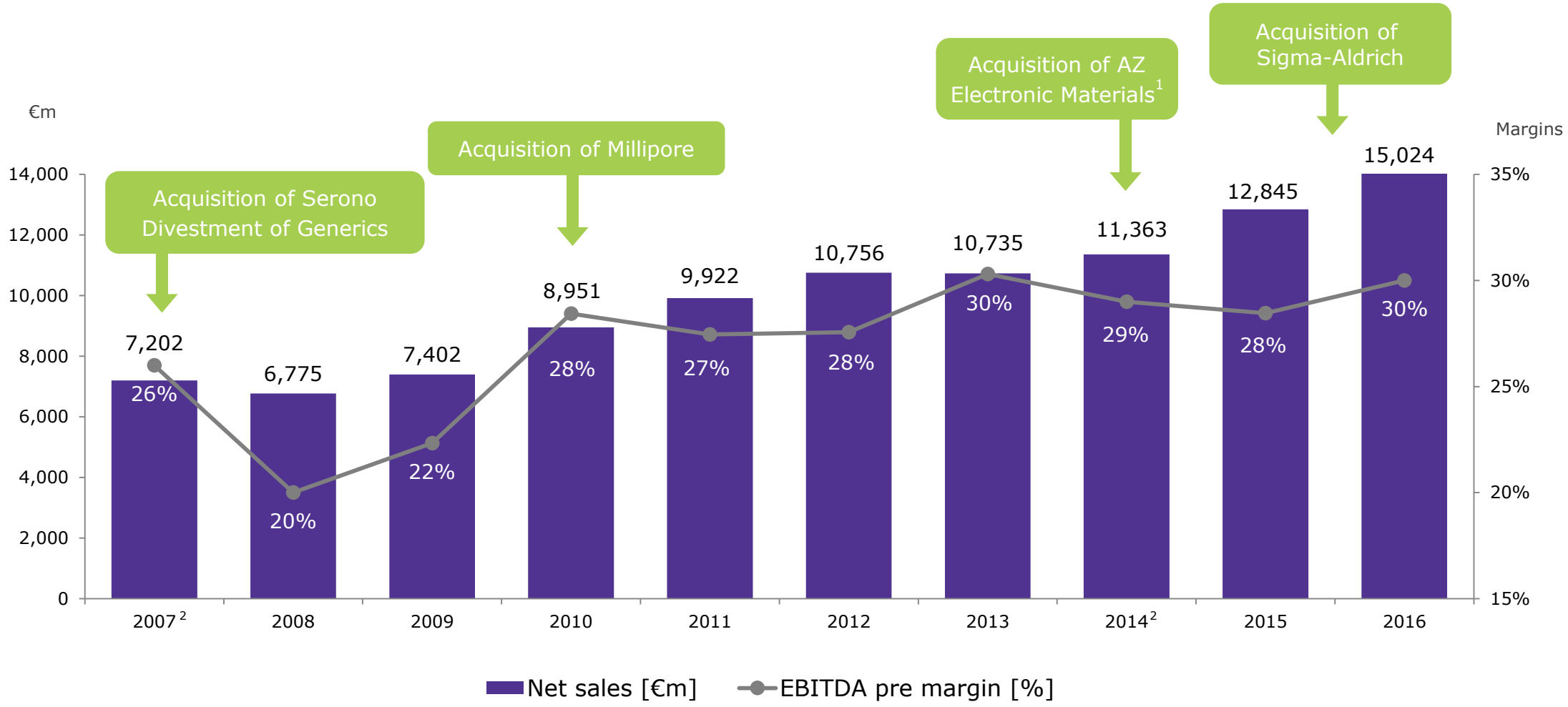
Group

We have added scale and strengthened the attractiveness of our portfolio



[1]Excluding "Theramex", which was divested; [2]Excluding "Crop Bioscience", which was divested

Group
Profitability improved fundamentally



[1]Included since 2 May 2014; [2]2007 and 2014 EBITDA pre margin adjusted for comparability

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. 3 in the world market
- Broad and global product portfolio
- Leading eCommerce platform
- Best-in-class supply chain management

Performance Materials

+ AZ

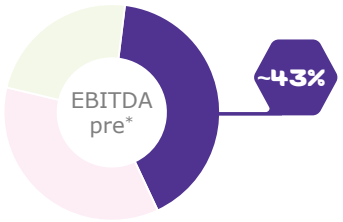
- World market leader
- Technology and innovation leader

Science | Technology | Innovation | Specialties | Quality | Customer focus

Group

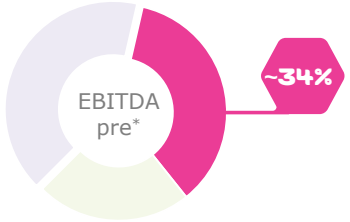
Clear set of priority goals to be realized by 2018

Healthcare



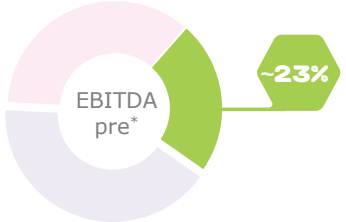
- **Maximize growth of existing franchises**
- **Deliver pipeline: one product launch or indication p.a. from 2017**

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**

*based on FY 2016 reported EBITDA pre, excluding Corporate & Other

03 PERFORMANCE MATERIALS – EXPANDING LEADERSHIP AND INNOVATION

Performance Materials

Driving business model beyond the classical material supplier

Performance Materials
is the key player
in its markets

Display Materials

- We are exploiting rich innovation opportunities in display market while advancing liquid crystals together with partners

Integrated Circuit Materials

- We are a Solution Provider for semiconductor customers addressing the needs of their production processes by providing innovative materials

Pigments & Functionals

- We are dominating pearlescent pigment technology and we create a portfolio of new materials for non-decorative high-tech applications

Advanced Technologies

- We are developing new businesses based on materials for PM as well as Merck KGaA, Darmstadt, Germanyin general

Performance Materials
Q1 2017 top-line recovery despite still declining Liquid Crystals

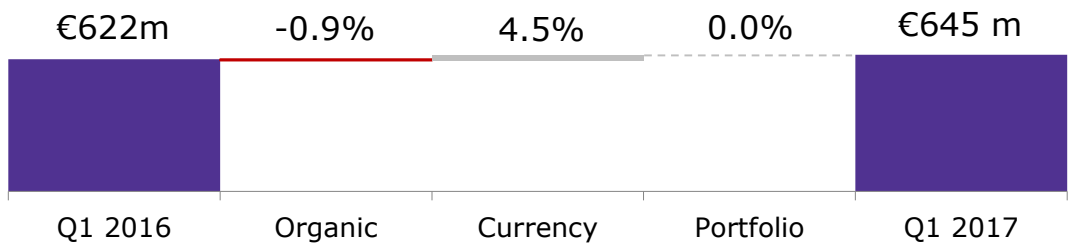
Performance Materials P&L

[€m]	Q1 2016	Q1 2017
Net sales	622	**645**
Marketing and selling	-58	**-62**
Administration	-16	**-18**
Research and development	-48	**-58**
EBIT	207	**195**
EBITDA	267	**257**
EBITDA pre	273	**263**
Margin (in % of net sales)	*43.9 %*	***40.9%***

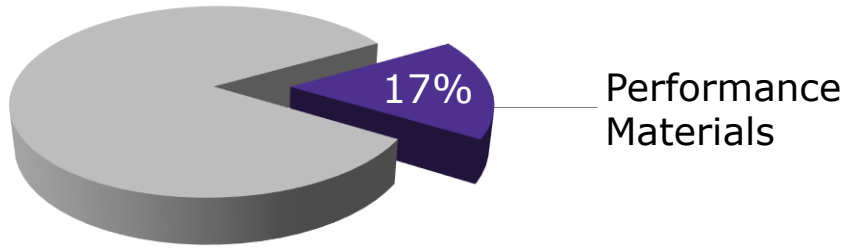
Comments

- Organic growth of Integrated Circuit Materials, Pigments and OLED mitigate LC softness
- Liquid Crystals impacted by further market share normalization
- Integrated Circuit Materials with record quarter and above market growth due to strong demand from key accounts
- Pigments & Functionals post solid organic growth mainly driven by coatings applications especially automotive
- R&D increase reflects investments in LC technologies beyond displays
- Sound profitability despite negative business mix & higher R&D

Net sales bridge



Q1 2017 share of group net sales



Totals may not add up due to rounding

Performance Materials
The four pillars are set for future profitable growth

Business unit	% sales	Products	Mid-term growth trend
 **Display Materials**	~50-55%	• Liquid crystals (LC) and photoresists for TVs, smartphones and tablet computers • Other display and non-display applications (e.g. LC Windows)	
 **Integrated Circuit Materials**	~15-20%	• Dielectrics, colloidal silica, lithography materials, yield enhancers, edge-bead removers • Polyimide raw materials and printing materials	
 **Pigments and Functional Materials**	~15-20%	• Effect pigments and functional materials for coatings, plastics, printing and cosmetics • Functional materials for cosmetics & special applications	
 **Advanced Technologies**	~5-10%	• Organic and inorganic light emitting diodes • Functional materials for electronics and energy solutions	

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

Performance Materials

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

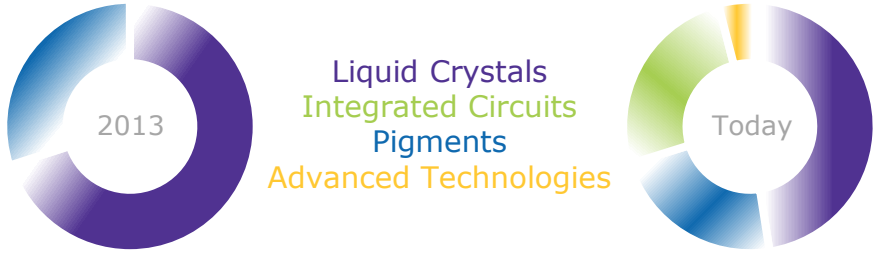
1. **Superior profitability**
2. **Strong earnings resilience**
3. **Low to mid single-digit mid-term growth**

Performance Materials
Sound platform to deliver high earnings

1 Four-pillar platform diversifies earnings stream

- Liquid Crystals remain key earnings contributor
- Integrated Circuit business growing ahead of market
- Pigments continue to grow with high-end products
- OLED is becoming a visible growth driver

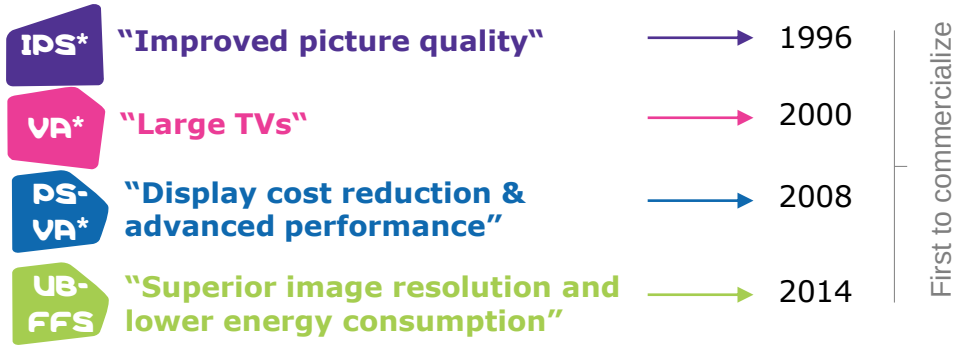
Balanced sales and consistently high earnings



2 Continuous innovation as key profitability driver

- New products contribute to growth and profitability
- Liquid crystal technology mode UB-FFS and upcoming SA-VA are the most recent examples

We are the innovation leader



Diversification of portfolio and ongoing innovation lead to solid growth trajectory

*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

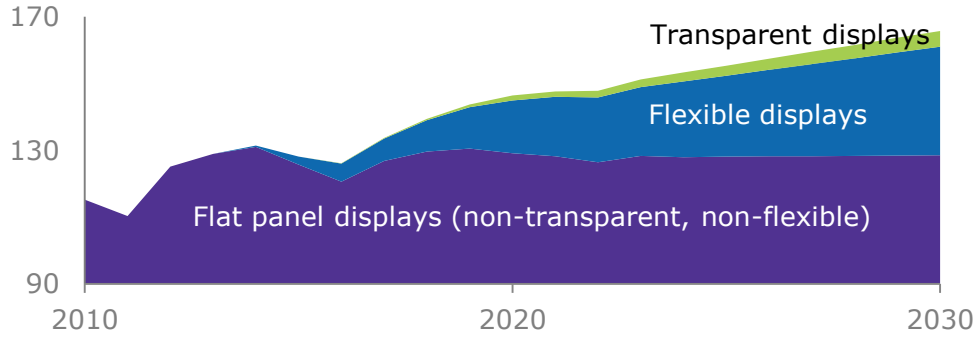
Performance Materials

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, esp. in China

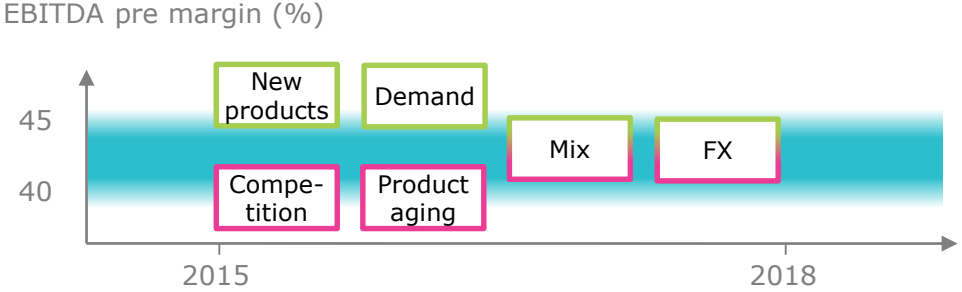
Display market opportunities continue to evolve



4 High value-added products yield superior profitability

- High market share in all relevant products
- Differentiation via innovation still possible
- Customer intimacy further supports uniqueness

Sustainable profitability drivers

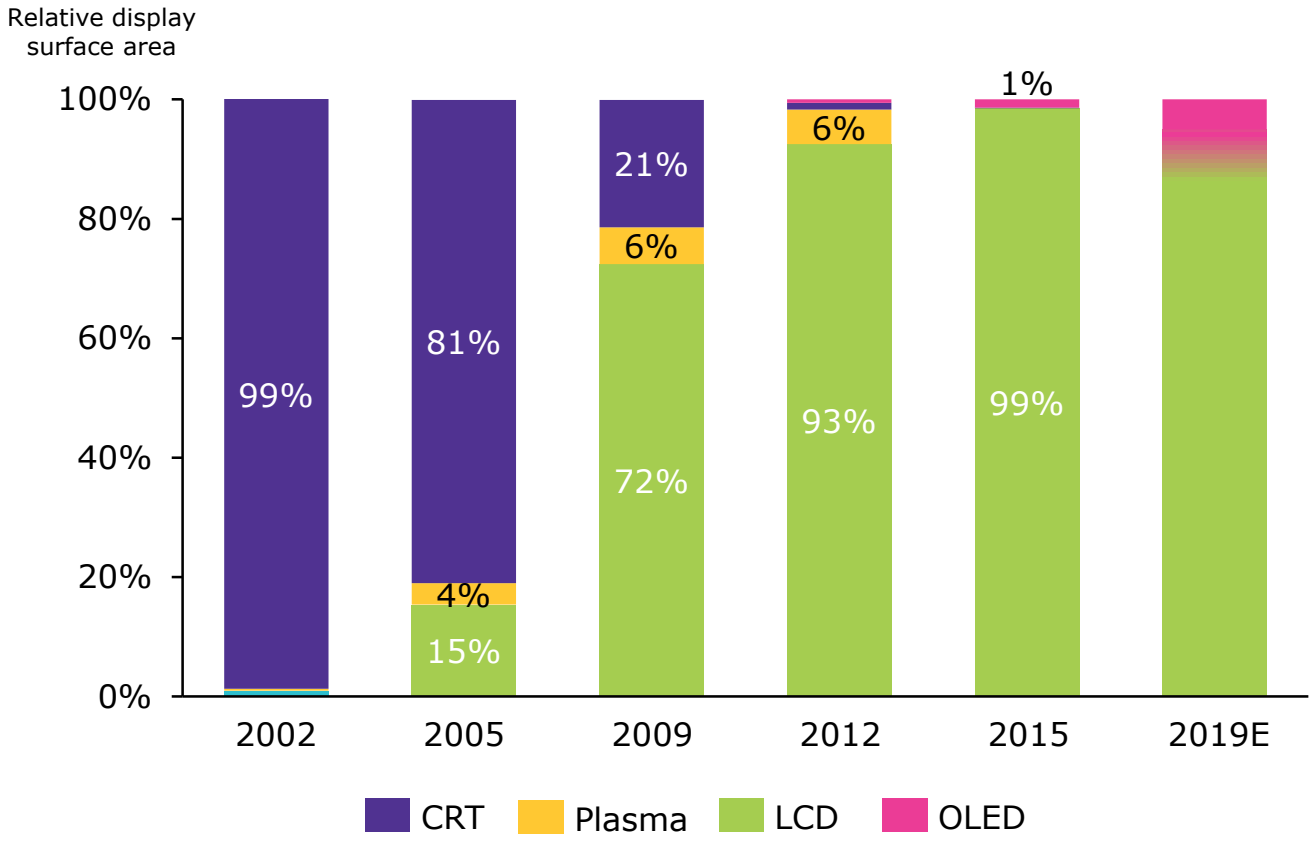


Unique differentiation and market position will continue to lead to strong profitability

Source: IHS, Merck KGaA, Darmstadt, Germany, VLSI; *Gross domestic product

Display 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 techno-logical and commercial entry barriers

OLED share will increases in mobile applications

Source: DisplaySearch/IHS, WWF & Long Term Demand Report

Display Materials
Unique selling proposition of SA-VA for manufacturers and consumers

1 Process
- Elimination of LC alignment process
- Fewer sources of production errors
- Fully compatible with current PS-VA process

2 Costs
- Lower material costs as alignment material not needed anymore
- Lower Capex requirements

3 Innovation
- Low-temperature production enables potential for future applications (Plastic, flexible, organic)
- Enables thin bezel TV production

4 Green
- Less energy and waste
- Reduced need for solvents

SA-VA has the potential to become a value driver for us

SA-VA = Self Aligned Vertical Alignment

Display Materials

Liquid crystals can extend their reach well beyond displays

1 Advanced user experience

- Holographic Display
- Free Form Display

2 Light & Data Management

- Light Guiding
- Smart Antenna
- LC Windows

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

Market position

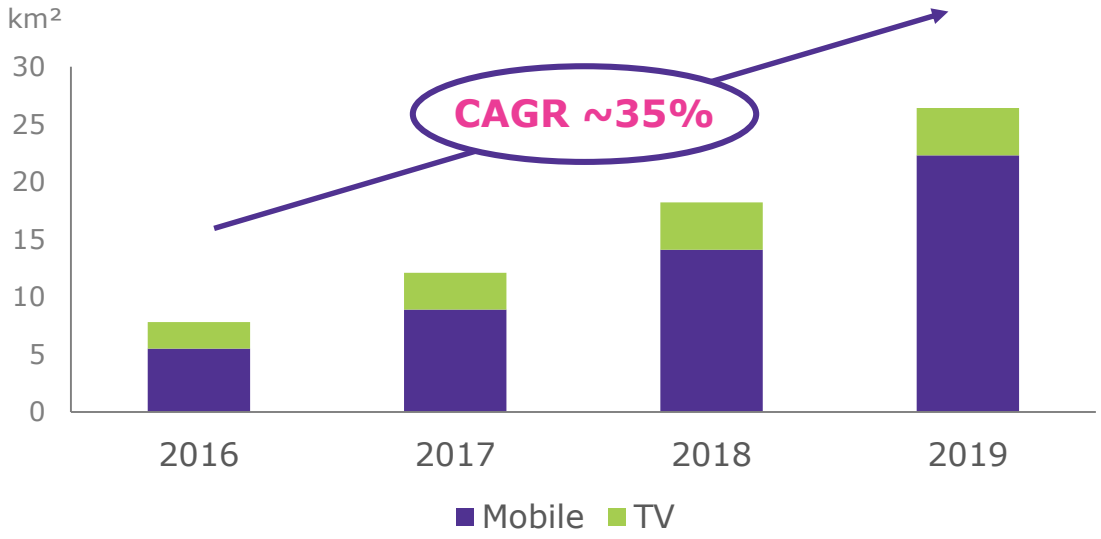
- Among top 3 OLED material provider
- Unrivaled experience and expertise in displays
- Long & intimate relationships with all display producers
- Recent capacity expansion to serve growing demand

our ambition

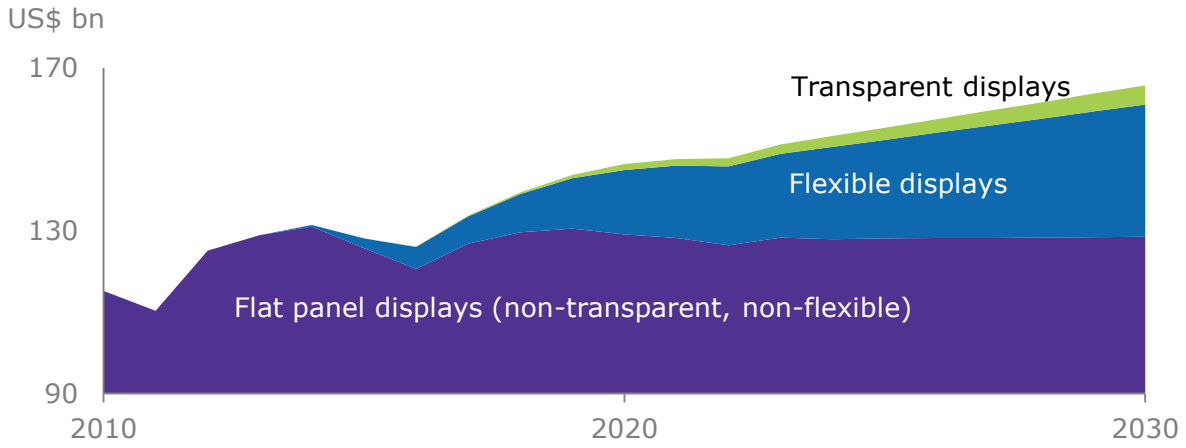
solution provider

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

Announced OLED capacity expansion[1]



Display market development[1]



[1]Source: IHS, Merck KGaA, Darmstadt, Germany, VLSI

Integrated Circuit Materials
Our material solutions are key enablers of electronics megatrends

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

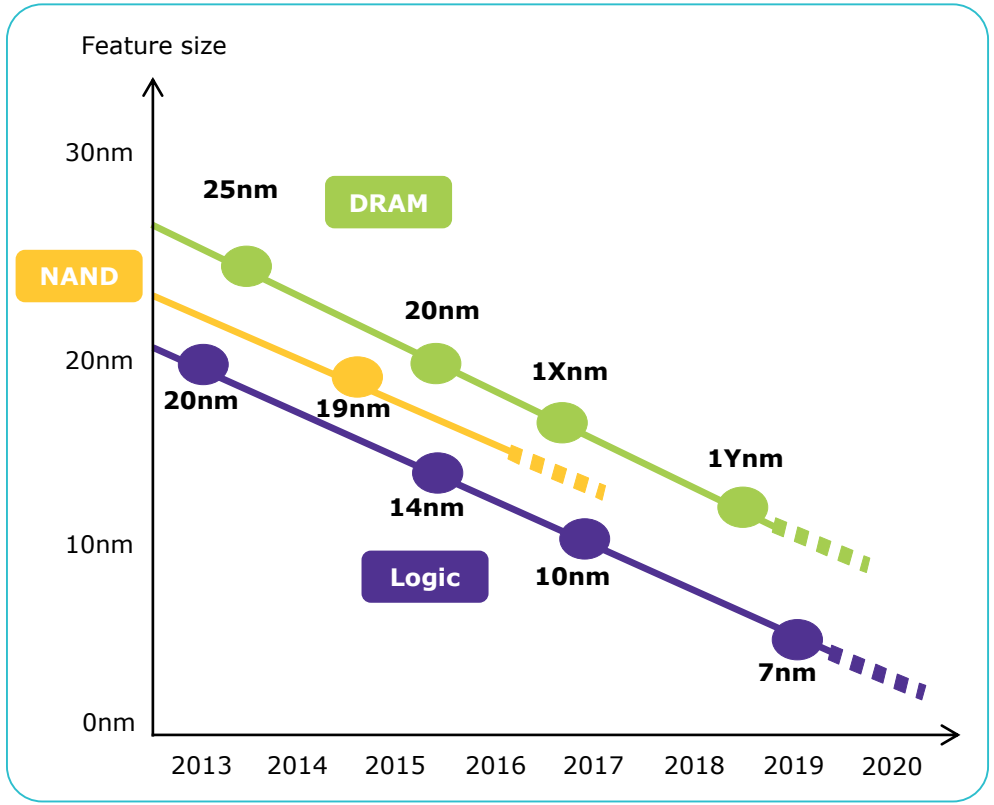
Internet of Things: Everything is continuously connected
- More gadgets and devices that include chips
- Increasing amount of communication and sensor chips

Big Data: Increasing need for intelligent data storage
- Switch from hard disk drives (HDD) to solid state drives (SSD)

Selected competitors

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

Feature sizes develop as per Moore's law



Our materials solutions are crucial in chip manufacturing and advanced packaging as market grows and Moore's Law already ended from an economic perspective

Pigments & Functional Materials
Leading supplier of high-tech performance chemicals

Decorative Materials

- We are the leading supplier of effect pigments
- These are used in decorative materials such as Automotive and Industrial, Cosmetics, Printing and Plastic applications
- Unique optical properties are key for customers

Functional Materials

- We are a leading player in functional materials such as Cosmetic Actives & Fillers, Laser Marking, Security
- Our offering includes technical functional materials and selected raw materials for cosmetic applications
- Specific features related to product functionalities are key for customers in a wide range of markets

04 EXECUTIVE SUMMARY AND GUIDANCE

Group

We are well on track to deliver on our promises

Group

Net debt reduced by ~€1.4 bn[1]
Strict financial discipline supports rating

Healthcare

Base business growing
2 avelumab indications launched

Life Science

Sigma-Aldrich synergies raised and well on track
Organic growth above market

Performance Materials

Introduce new technologies
Volatility well managed

Important Milestones reached to deliver on our promises

CMD[2] December 2015

Q1 2017 Results

2018

Illustration; [1]Net financial debt ex pension provisions as of March 31, 2017 versus December 31, 2015; [2]Capital Markets Day

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 our profitable growth path

Group
Full-year 2017 guidance

Net sales: **~ €15.5 – 16.0 bn**

EBITDA pre: **~ €4,400 – 4,600 m**

EPS pre: **~ €6.15 – 6.50**

Appendix

01 GUIDANCE DETAILS

2017 business sector guidance

Net sales

- Slight organic growth
- Ongoing organic Rebif decline
- Other franchises growing; repatriation of Glucophage/China supportive

EBITDA pre

~ €1,900 – 2,000m

Net sales

- Organic growth slightly above market, driven by Process Solutions
- First minor contribution of top-line synergies

EBITDA pre

~ €1,780 – 1,850m

Net sales

- Slight organic decline
- Volume increases in all businesses
- Further market share normalization in Liquid Crystals

EBITDA pre

~ €1,050 – 1,130m

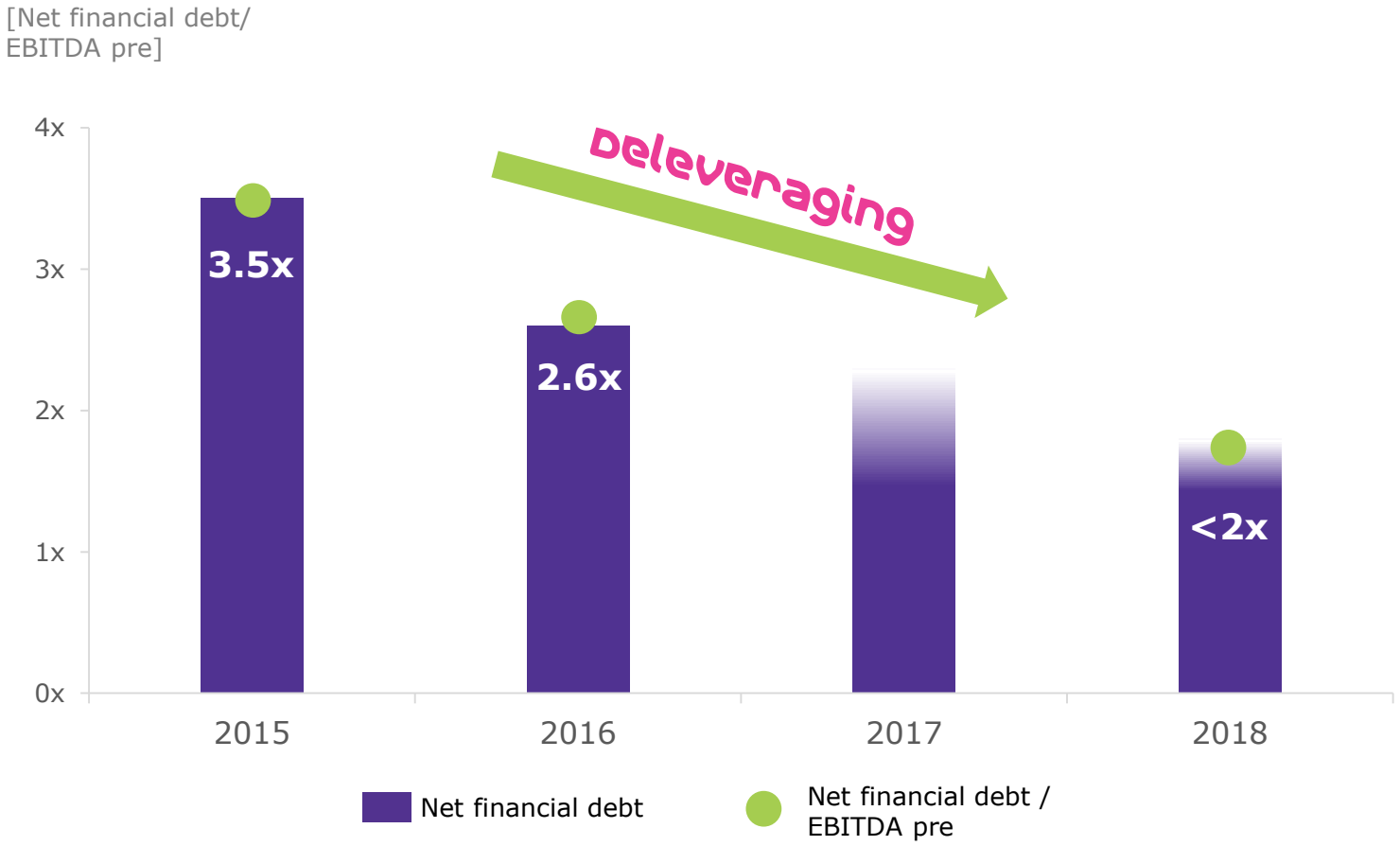
Additional financial guidance 2017

Further financial details

Corporate & Other EBITDA pre	**~ -€350 – -400m**
Interest result	**~ -€250 – -260 m**
Effective tax rate	**~ 23% to 25%**
Capex on PPE	**~ €850 – 900 m**
Hedging/USD assumption	**2017 hedge ratio ~60% at EUR/USD ~ 1.11 to 1.12**
2017 Ø EUR/USD assumption	**~ 1.06 – 1.10**

Strong focus on cash generation to ensure swift deleveraging

Net financial debt* and leverage development



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)

*Net financial debt (without pensions)

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

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

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

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

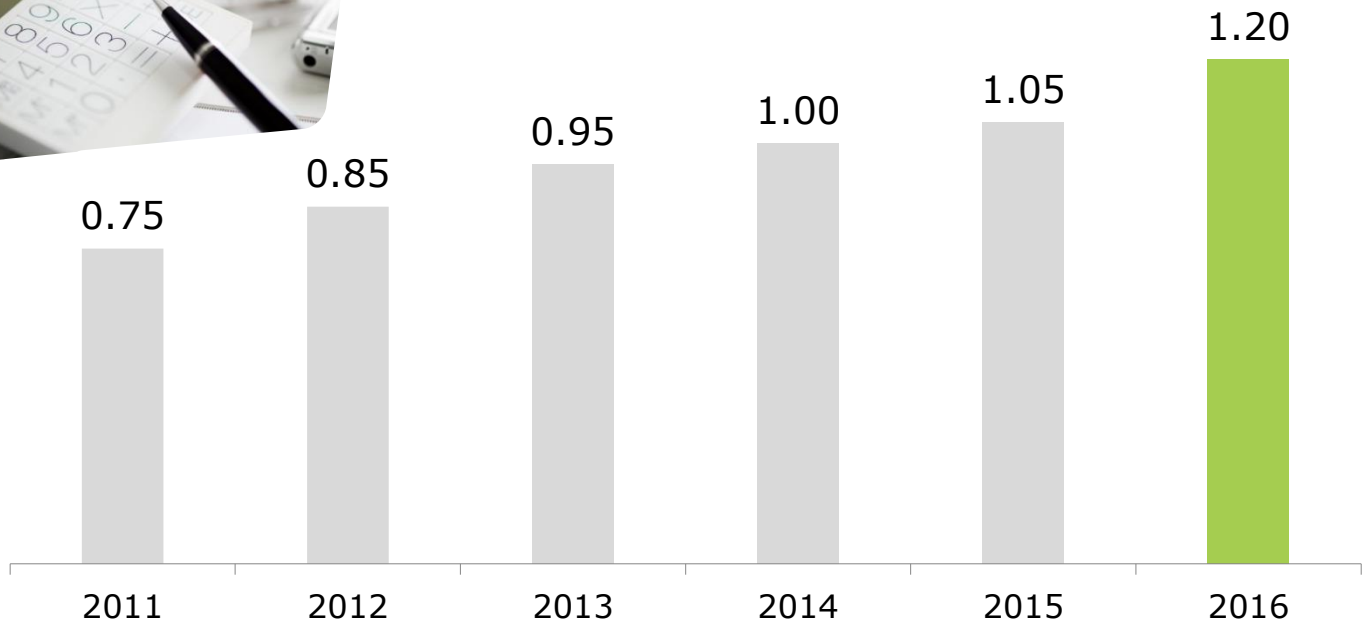
Costs
- Main production sites in Germany
- Several R&D and mixing facilities in Asia

FX Impact

Illustration; Acronyms: EU = Europe; NA = North America; RoW = Rest of World

Sustainable dividend development

Dividend[1] development 2011-2016



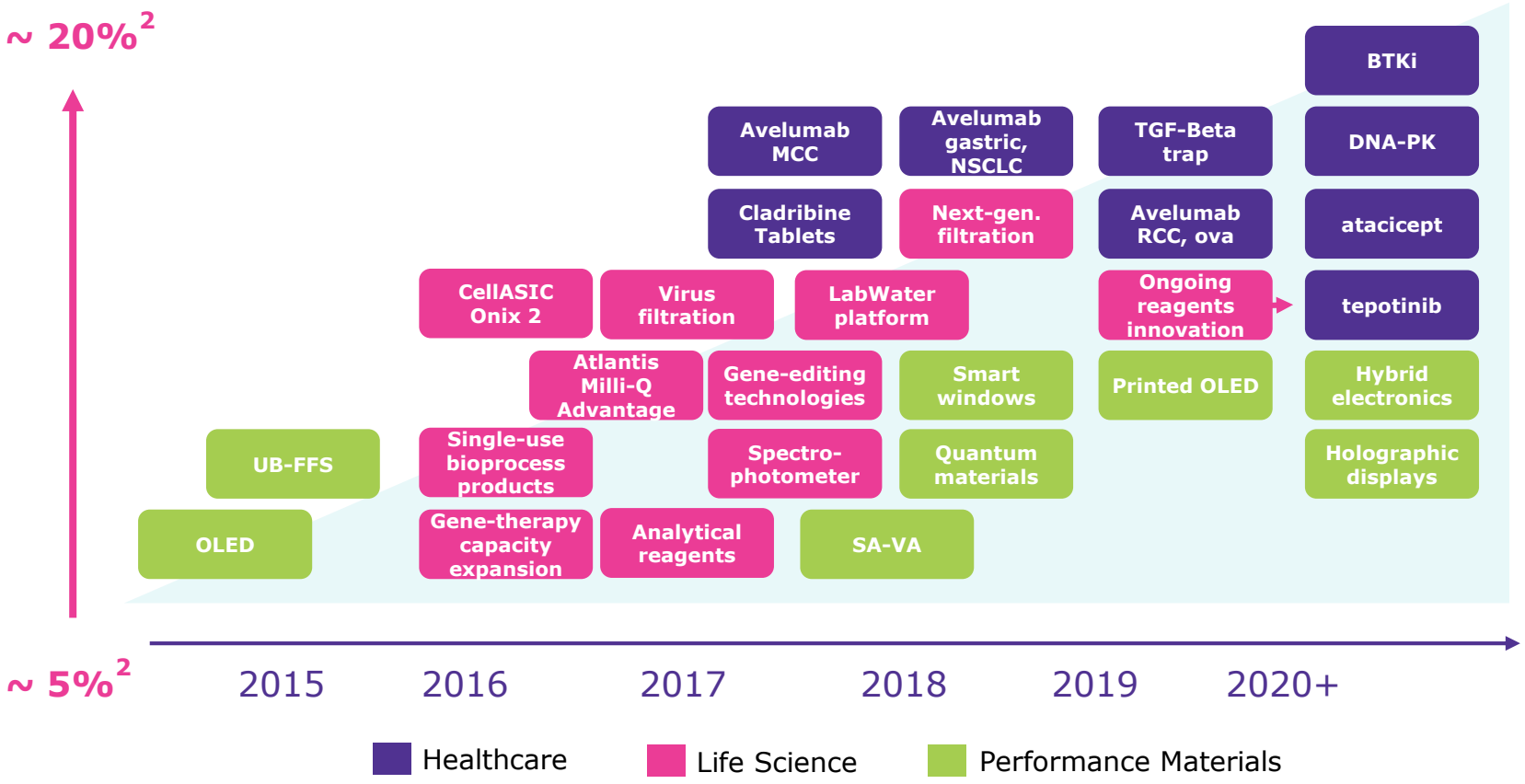
2016 dividend

- Dividend of €1.20 per share for 2016, reflecting 19.3% of EPS pre
- Dividend development in line with business performance and earnings progression
- Dividend yield[2] of 1.21%

[1]Adjusted for share split, which has been effective since June 30, 2014; [2]Calculated with 2016 year-end share price of 99.15€ per share

Our strong innovation capabilities will drive growth

New product launch cadence[1] by business sector



New product sales[3] potential 2022

> €2 bn[3]

> €1 bn[3]

> €1 bn[3]

Our rich pipeline will strongly drive sales

[1]Illustration: timelines may change as product introductions are subject to customer adoption and implementation; pharma pipeline products are under clinical investigation and there is no guarantee any product will be approved in the sought-after indication; [2]Share of total Group net sales from new products launched over the past 5 years, risk-adjusted; [3]risk-adjusted

02 HEALTHCARE – FUNDING FOR SUCCESS

Healthcare

Healthcare is set to deliver on promising pipeline candidates

Deliver
on organic growth

Focus
on pipeline

- At least stable existing business
- 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

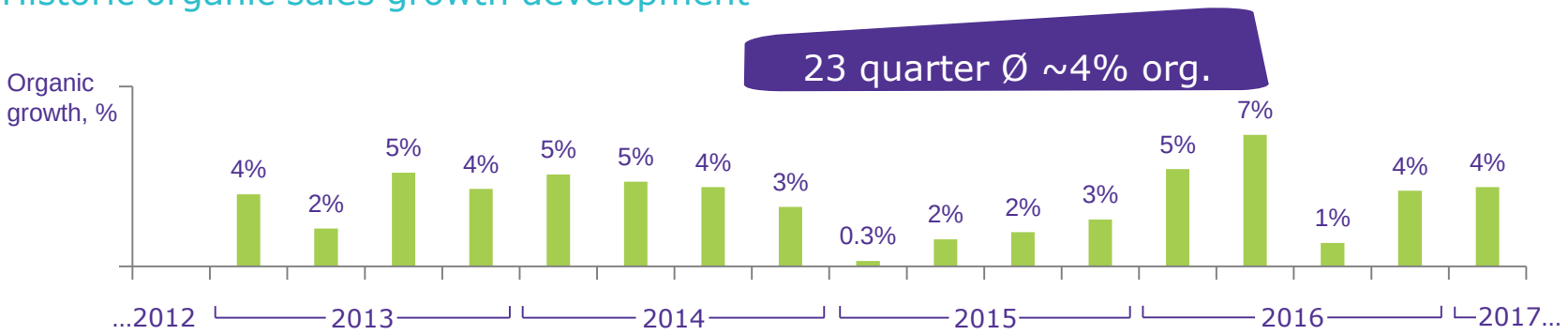
Healthcare

Operational excellence drives healthy growth of existing businesses

Organic growth for 23 consecutive quarters

Commitment to at least stable organic sales until 2018

Historic organic sales growth development



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

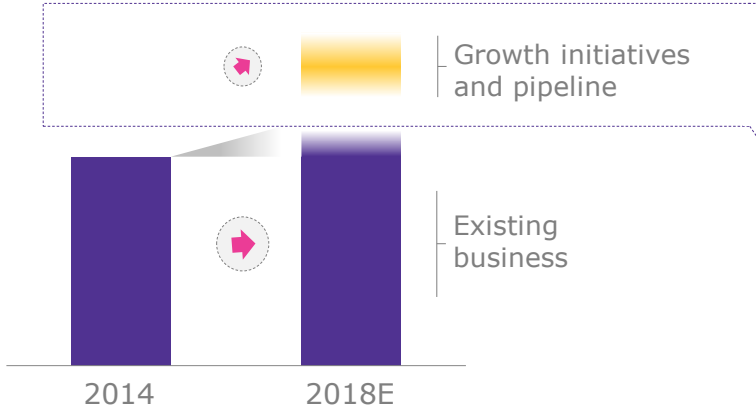
Endocrinology: Low single-digit growth

General Medicine: Mid to high single-digit growth

Consumer Health: Mid single-digit growth

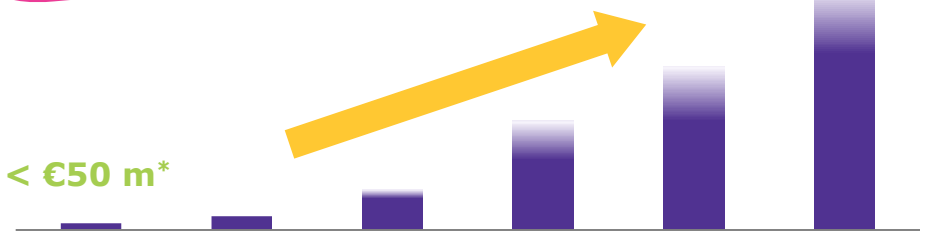
Healthcare
Well on track to deliver the pipeline

Deliver the pipeline



potential pipeline sales

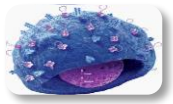
> €2 bn*



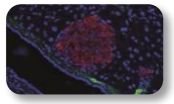
Increase R&D spending

Key investments

Avelumab



BTK – inhibitor



TGF-beta trap

~€150 – 200m higher R&D costs in 2017 vs. 2016

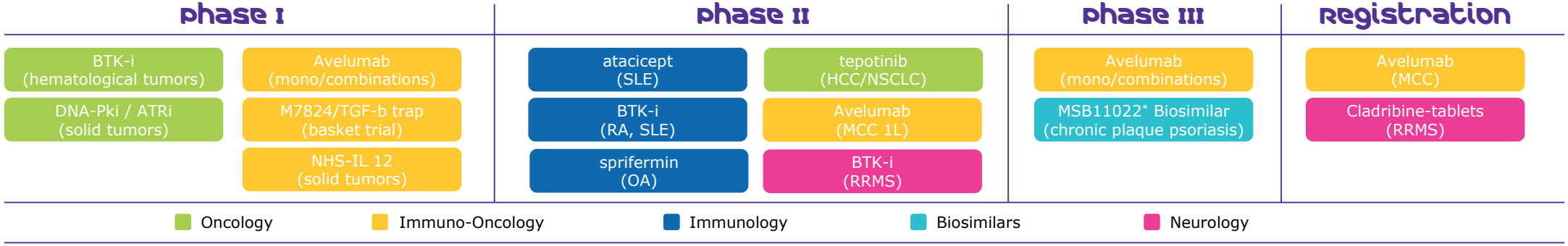
Main moving parts:

- Phase III progress of avelumab
- Dynamics of ramp-up for TGF-beta and BTK-i
- Regular prioritization in view of market dynamics

Illustrations; *risk adjusted

Healthcare

Increasing R&D productivity with focus on potentially transformative assets



Avelumab
- 30 clinical programs ongoing (>5,200 patients in >15 tumor types)
- Nine phase III trials and various Phase I cohorts ongoing
- For MCC, decision by EMA expected in H2 2017

TGF-b trap
- Enrolling in phase Ib cohorts (>10 indications); >500 patients enrolled
- Interim data expected by mid 2017

BTK inhibitor
- Three immunology phase II trials initiated (RA, SLE, MS)
- One phase I trial in Oncology ongoing (different molecule)

DDR-Program
- Transition of in licensed ATRi and DNA-PKi compounds ongoing
- Analysis of M3814 Phase I data for RT combination expected in H2 2017

Cladribine-tablets
- Decision by EMA expected in Q3 2017

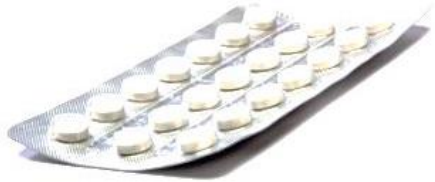
2017 Milestones:

- **Bavencio successfully launched in MCC and mUC in the U.S.**
- **Potential Cladribine-tablets approval**
- **Major trial updates**

Timelines may change: pharma pipeline products are under clinical investigation and there is no guarantee any product will be approved in the sought-after indication
Acronyms: SLE = Systemic lupus erythematosus; RA = Rheumatoid arthritis; OA = Osteoarthritis; HCC = Hepatocellular cancer; NSCLC = Non-small cell lung cancer MCC = Merkel cell carcinoma; UC = Urothelial cancer; RRMS = Relapsing-remitting multiple sclerosis; *On April 24, 2017 the divestment of Merck's KGaA, Darmstadt, Germany Biosimilars business to Fresenius was announced. Closing is expected in H2, 2017, subject to regulatory approvals and other conditions

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 Healthcare's existing franchises is clear

ERBITUX CETUXIMAB

Continue to drive mCRC* share by increasing patient testing and expanding head and neck coverage

consumer health

Ongoing 3x3 growth strategy implementation to strengthen sales and marketing activities delivering above-market organic sales growth

Rebif

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

GONAL-f Pergoveris (follitropin alfa and lutropin alfa for injection) OVIDREL Luveris Cetrotide

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

Glucophage Concor Euthyrox Saizen

Build on existing track record in emerging markets, drive brand and lifecycle management and expand business including asset repatriation

*Abbreviations: mCRC = metastatic colorectal cancer, ART = Assisted Reproductive Technology

Clinical pipeline

Phase I

M2698 – p70S6K & Akt inhibitor
Solid tumors

M3814 – DNA-PK inhibitor
Solid tumors

M9831 (VX-984) – DNA-PK inhibitor
Solid tumors

M6620[7] (VX-970) – ATR inhibitor
Solid tumors

M4344 (VX-803) – ATR 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)
Cancer immunotherapy
Solid tumors

M7824 - anti-PD-L1/TGF-beta trap
Solid tumors

M1095[9] (ALX-0761)
Anti-IL-17 A/F nanobody
Psoriasis

Phase II

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 1L[1]

Sprifermin
Fibroblast growth factor 18
Osteoarthritis

Atacicept
Anti-Blys/anti-APRIL fusion protein
Systemic lupus erythematosus

Atacicept
Anti-Blys/anti-APRIL fusion protein
IgA nephropathy

Evobrutinib
BTK inhibitor
Rheumatoid arthritis

Evobrutinib
BTK inhibitor
Systemic lupus erythematosus

Abituzumab
anti-CD 51 mAb
Systemic sclerosis with interstitial lung disease

Evobrutinib
BTK inhibitor
Multiple sclerosis

Phase III

Avelumab – Anti-PD-L1 mAb
Non-small cell lung cancer 1L[1]

Avelumab – Anti-PD-L1 mAb
Non-small cell lung cancer 2L[2]

Avelumab – Anti-PD-L1 mAb
Gastric cancer 1L[1M]

Avelumab – Anti-PD-L1 mAb
Gastric cancer 3L[3]

Avelumab – Anti-PD-L1 mAb
Urothelial cancer 1L[1M]

Avelumab – Anti-PD-L1 mAb
Ovarian cancer platinum resistant/refractory

Avelumab – Anti-PD-L1 mAb
Ovarian cancer 1L[1]

Avelumab - Anti-PD-L1 mAb
Renal cell cancer 1L[1]

Avelumab - Anti-PD-L1 mAb
Locally advanced head and neck cancer

MSB11022[8]
Proposed biosimilar of Adalimumab
Chronic plaque psoriasis

Registration

Cladribine[4] Tablets – Lymphocyte targeting agent
Relapsing-remitting multiple sclerosis

Avelumab[5] – Anti-PD-L1 mAb
Merkel cell carcinoma

Recently registered

Avelumab[5] – Anti-PD-L1 mAb
Merkel cell carcinoma

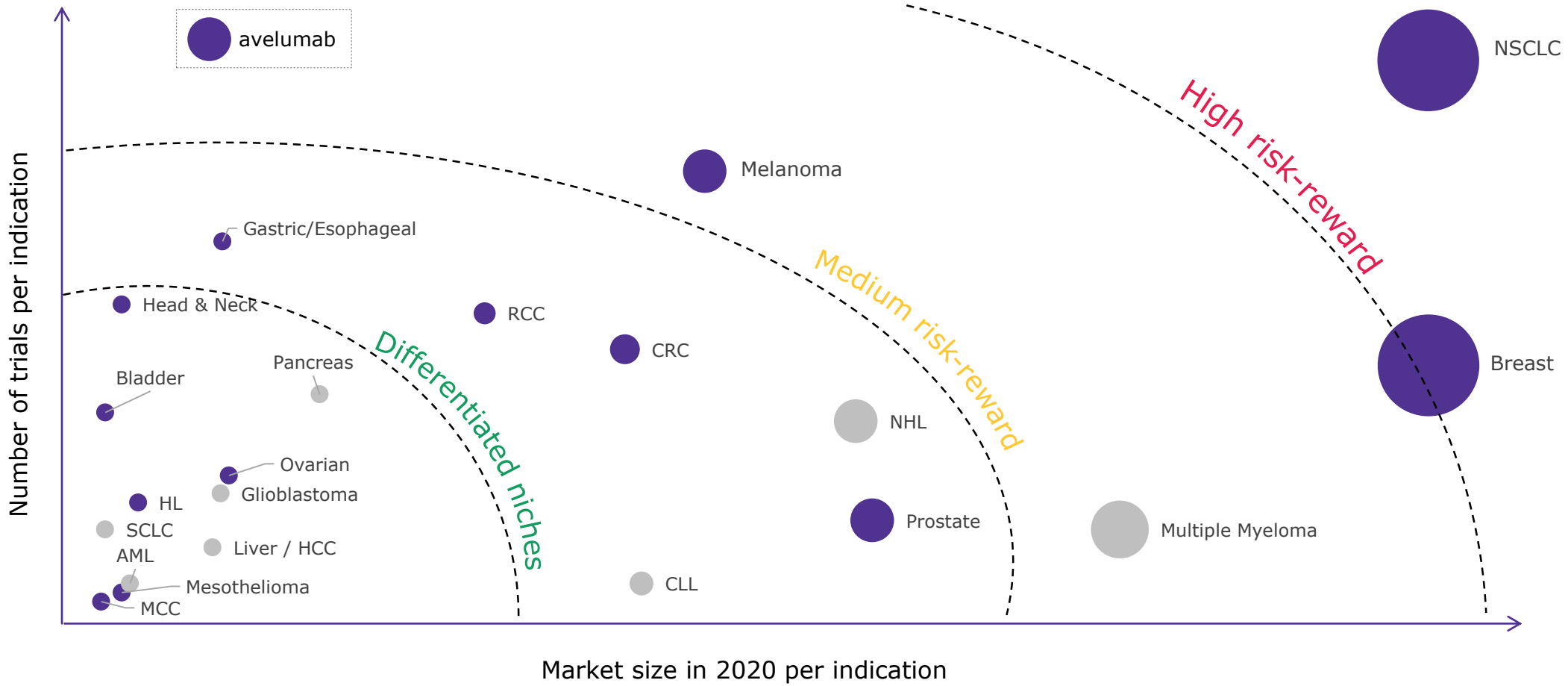
Avelumab[6] – Anti-PD-L1 mAb
Urothelial cancer 2L[2]

- Neurology
- Oncology
- Immunology
- Immuno-Oncology
- Biosimilars

Pipeline as of May 11th , 2017
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] 1st line treatment; [1M] First Line maintenance treatment; [2] 2nd line treatment; [3] 3rd line treatment; [4] European Medicines Agency (EMA) accepted Marketing Authorization Application (MAA) from Merck KGaA, Darmstadt, Germany in July 2016; [5] EMA accepted MMA from Merck KGaA, Darmstadt, Germany in July 2016 and on March 23, 2017, the US FDA has approved avelumab for the treatment of adults and pediatric patients 12 years and older; [6] On May 9, 2017 the US FDA approved avelumab for the treatment of patients with locally advanced or metastatic urothelial carcinoma who have disease progression during or following platinum-containing chemotherapy therapy, or who have disease progression within 12 months of neoadjuvant or adjuvant treatment with platinum-containing chemotherapy;
[7] Includes expansion cohorts in non small cell lung cancer, small cell lung cancer and triple negative breast cancer; [8] On April 24, 2017 the divestment of Merck's KGaA, Darmstadt, Germany, Biosimilars business to Fresenius was announced, closing is expected in H2 2017, subject to regulatory approvals and other conditions; [9] As announced on March 30, 2017 in a agreement with Avillion, anti-IL-17 A/F nanobody will be developed by Avillion for plaque psoriasis and commercialized by Merck KGaA, Darmstadt, Germany

Avelumab plays predominantly in attractive and differentiated niches



Illustration; Sources: Trialtrove 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. BTD 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

Acronym: BTD = Breakthrough designation

The alliance initiated nine Phase III studies

	Indication	Treatment line	Estimated patient enrollment	Comparator	Estimated primary completion
1	Ovarian	Platinum res./ref.	550	Pegylated liposomal doxorubicin	H1 2018
2	Ovarian	1st line	951	Platinum-based chemotherapy	H2 2019
3	NSCLC	1st line	1095	Physician‘s choice of platinum containing chemotherapy	H1 2019
4	NSCLC	2nd line	792	Docetaxel/chemotherapy	H1 2018
5	Gastric	1st line maint.	666	Best supportive care (BSC)	H1 2019
6	Gastric	3rd line	330	Physician’s choice of chemotherapy/BSC	H2 2017
7	Bladder	1st line maint.	668	Best supportive care	H2 2019
8	Renal cell	1st line	583	Sunitinib	H1 2018
9	SCCHN	Front-line	640	Standard of care chemoradiation therapy	H1 2021

Note that timelines are event-driven and may change (basis: clinicaltrials.gov)

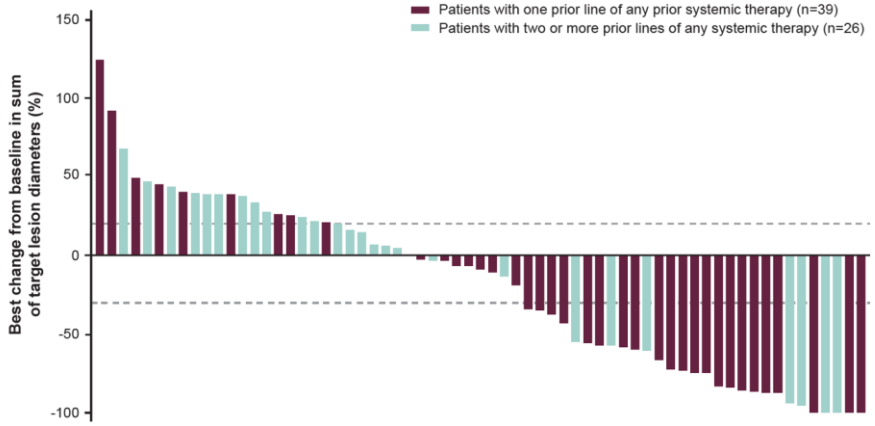
Clinical results support avelumab as therapeutic option for metastatic Merkel cell carcinoma

Encouraging response rates[1]

- 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

Potential for differentiation

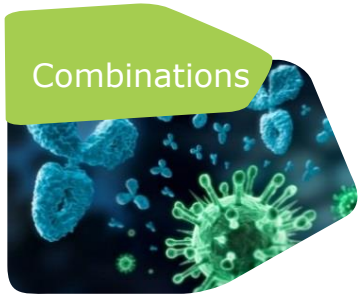
- Largest international multicenter, open-label study of anti-PD-L1/PD-1 reported in this patient population (88 patients) – Responses observed in large number of patients
- Improved response rates observed when used earlier, i.e. fewer lines of prior chemotherapy appeared to be associated with better 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



Note: timelines are event-driven and may change

[1]Avelumab (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.

For Avelumab, combinations will drive differentiation strategy



- **In registration: metastatic Merkel Cell (EU)**
- Phase III: Ovarian (1L & Plat. Res. Ref.) [1]
- Phase III: Gastric (1L MN & 3L)
- Phase III: NSCLC (1L & 2L)
- Phase III: Urothelial (1L MN)
- Phase III: SCCHN (Locally advanced, Front line)
- Phase II: Merkel Cell (1L)
- Multiple other tumor types

- **Phase III: Ovarian 1L & Plat. Res. Ref.**[1]
  (Avelumab + Chemotherapy)
- **Phase III: Renal 1L**
  (Avelumab + Inlyta)
- **Phase III: L/A Head and Neck**
  (Avelumab + Chemoradiation)
- **Phase I: DLBCL**[2]
  (Avelumab + various agents)
- **Phase I/II: Advanced malignancies**
  (Avelumab + 4-1BB / + OX40)
- **Phase Ib/II: Ovarian**
  (Avelumab + Entinostat; Syndax)
- **Phase I/Ib: Ovarian**
  (Avelumab + VS-6063; Verastem)
- **Phase I/II: SCCHN**
  (Avelumab + TG4001; Transgene)
- **Phase Ib/II: NSCLC**
  (Avelumab + VX15/2503; Vaccinex)
- **Phase I/Ib: NSCLC**
  (Avelumab + Debio1143; Debiopharm)
- **Phase I/Ib: Glioblastoma and Colorectal**
  (Avelumab + VXM01; VAXIMM)

[1]Avelumab is explored in both mono- and combination therapy; [2]Diffuse Large B-cell lymphoma

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 therapy[5]
- 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 years[4]

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 efficacy[1]

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.

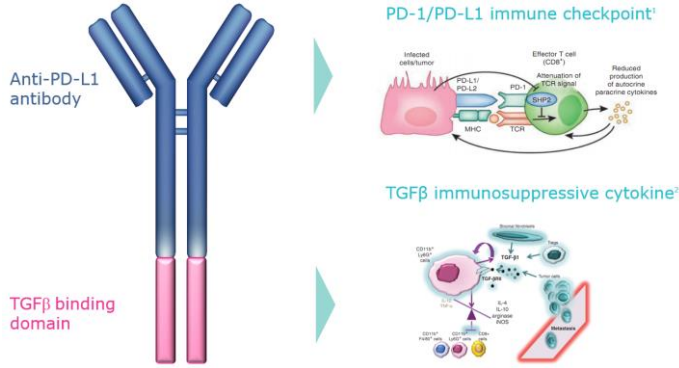
PD-L1–TGF-beta indicates potential to move beyond checkpoint inhibitors

Four focus areas for exploration

- Replace current IO SOC (leveraging Dual MOA)
- Identify opportunities where current IO SOC is not established yet
- Explore non-immunogenic tumor types (alter micro-environment)
- Explore opportunity in PD-x Failures

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

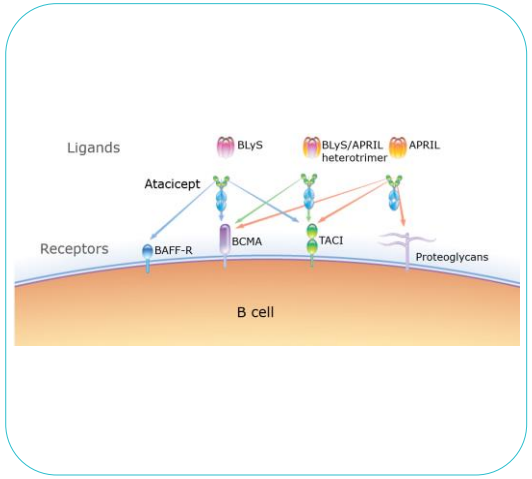


Note: timelines are event-driven and may change

[1]Okazaki T et al., Nature Immunology, 2013; [2]Souza-Fonseca-Guimaraes F and Smyth M, Cancer Discovery, 2013

Update on selected assets (1/2)

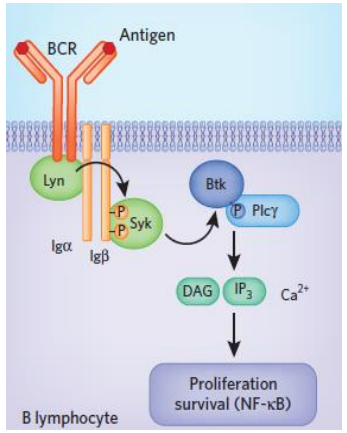
Atacicept



- 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 (Phase IIb) in SLE patients (n=306):
- Primary endpoint not met, but analyses of predefined subpopulation with high disease activity (HDA; n=158) demonstrated statistically significant treatment effects (e.g. SRI-6 response at week 24 significantly greater with atacicept 150 mg vs. placebo); both doses led to significant reductions in BILAG A and SFI flares

Phase III decision subject to interactions with authorities

BTK



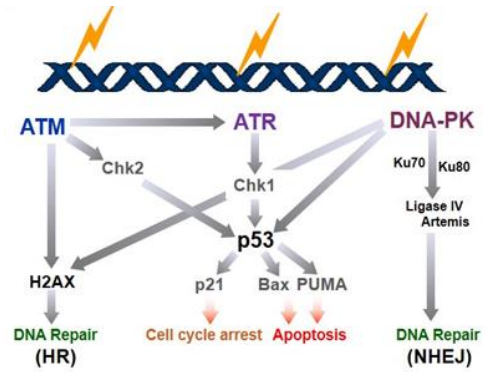
- Suppress autoantibody-producing cells
- High and differentiated efficacy in preclinical models; promising kinase selectivity profile
- Aim to achieve best in class through minimization of off-target effects
- Three immunology phase II trials initiated (RA, MS, SLE)
- Phase I trial in Oncology ongoing (different molecule)
- Partnering opportunities under consideration

Phase IIa signal confirmation in Q2 2017 (RA)

Note: timelines are event-driven and may change

Update on selected assets (2/2)

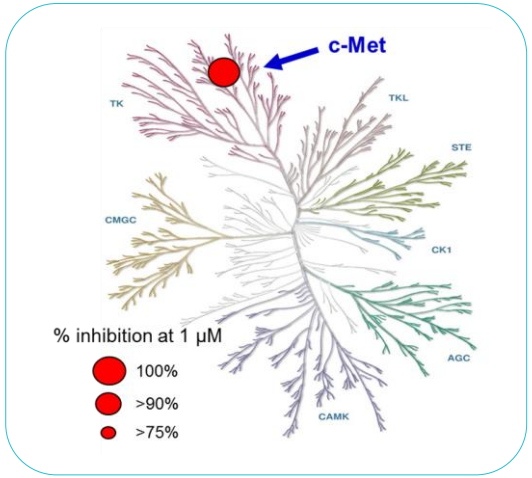
DDR-program



- M3814 is a selective and potent inhibitor of DNA-PK, a kinase mediating DNA double strand break repair
- Preclinical models 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 DDR programs licensed-in, incl. two ATR compounds VX-970[1]/VX-803[2], and one DNA-PK compound VX-984[3], which will be combined with existing DNA-PK assets (M3814) into a single development program

Analysis of M3814 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 and graphics are only illustrative
[1]Includes expansion cohorts in non small cell lung cancer, triple negative breast cancer and small cell lung cancer; [2]VX-803 is an orally dosed ATR inhibitor currently in Phase 1 trials evaluating escalating doses of VX-803 alone and in combination with chemotherapy; [3]A Phase 1 trial is now evaluating escalating doses of VX-984 alone and in combination with pegylated liposomal doxorubicin in subjects with advanced solid tumors

Key ASCO abstracts at a glance (two oral presentations)

MCC (1L)

- Initial results from a cohort of chemotherapy-naïve pts with mMCC (ongoing study)
- Manageable safety profile, consistent with findings for 2L+ cohort
- **Unconfirmed ORR: 64.0%** (≥6 weeks follow-up) / **Confirmed ORR: 56.3%** (≥3 months follow-up)
- Avelumab is associated with early responses; preliminary results suggest that responses mature to become durable

NSCLC

- Exposure-response and PD-L1 expression analysis of NSCLC 2L (Phase I cohort)
- Patients in upper half of increased exposure ($C_{troughfirst}$-dose quartiles Q3-Q4) showed increasing ORR (by higher PD-L1-staining level); **ORR: 25% (≥1%); 26% (≥5%); 33% (≥50%); 43% (≥80%)***
- Analysis provides rationale for the modification of the NSCLC 1L Phase III trial

Urothelial

- Updated efficacy and safety data of avelumab in metastatic urothelial carcinoma 2L (pooled Phase Ib)
- Durable responses in heavily pretreated patients, irrespective of tumor PD-L1 expression status
- **Confirmed ORR: 17.4%;** 6.2% CR (≥6m follow-up)

RCC (oral presentation)

- First line avelumab + axitinib therapy in patients with advanced renal cell carcinoma 1L (Phase Ib)
- Preliminary findings confirm manageable safety profile and consistent with agents administered as monotherapy
- **Confirmed ORR: 54.5%,** based on 2 CR and 28 PR (follow-up ongoing)

Anti PD-L1/ TGF-beta trap (oral presentation)

- Preliminary results from Phase I dose-escalation study (bifunctional fusion protein targeting PD-L1 and TGF-β)
- Manageable safety profile in patients with heavily pre-treated advanced solid tumors
- Early signs of clinical efficacy: **1 ongoing confirmed CR** (cervical) and **1 durable PR** (pancreatic), a 25% reduction in the sum of diameters of target lesions after 2 doses of M7824 (cervical), and 2 cases of prolonged stable disease (pancreatic; carcinoid).

Source: ASCO abstracts; Acronyms: ORR: Objective Response Rate | PFS: Progression-free survival | OS: Overall Survival | CR: complete response | PR: partial response
*These ORRs are higher compared to the lower half
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.

Newsflow: Upcoming pipeline catalysts

Avelumab	Expected EMA decision (MCC)	H2 2017
BTK inhibitor (RA)	Phase IIa signal confirmation[1]	Q2 2017
M7824 (anti PD-L1 – TGF-beta trap)	Phase I interim data[1]	mid 2017
Cladribine tablets	Expected EMA decision	Q3 2017
Sprifermin	Final Phase II data readout[1]	Q3 2017
Avelumab	Phase III data readout (Gastric 3L)[1] Phase III data readout (NSCLC 2L)[1]	Q1 2018 H1 2018
Atacicept	Phase III decision	Subject to interaction with authorities

Note: Timelines are event-driven and may change; Acronyms: MCC = Merkel cell carcinoma | RA: Rheumatoid Arthritis | NSCLC: Non small cell lung cancer
(1) Data-read out is internal date. Data to be presented at upcoming scientific congress.

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 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 – FOCUSING ON PROFITABLE GROWTH

Life Science

Serving customers across the life science industry

RESEARCH

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

PROCESS

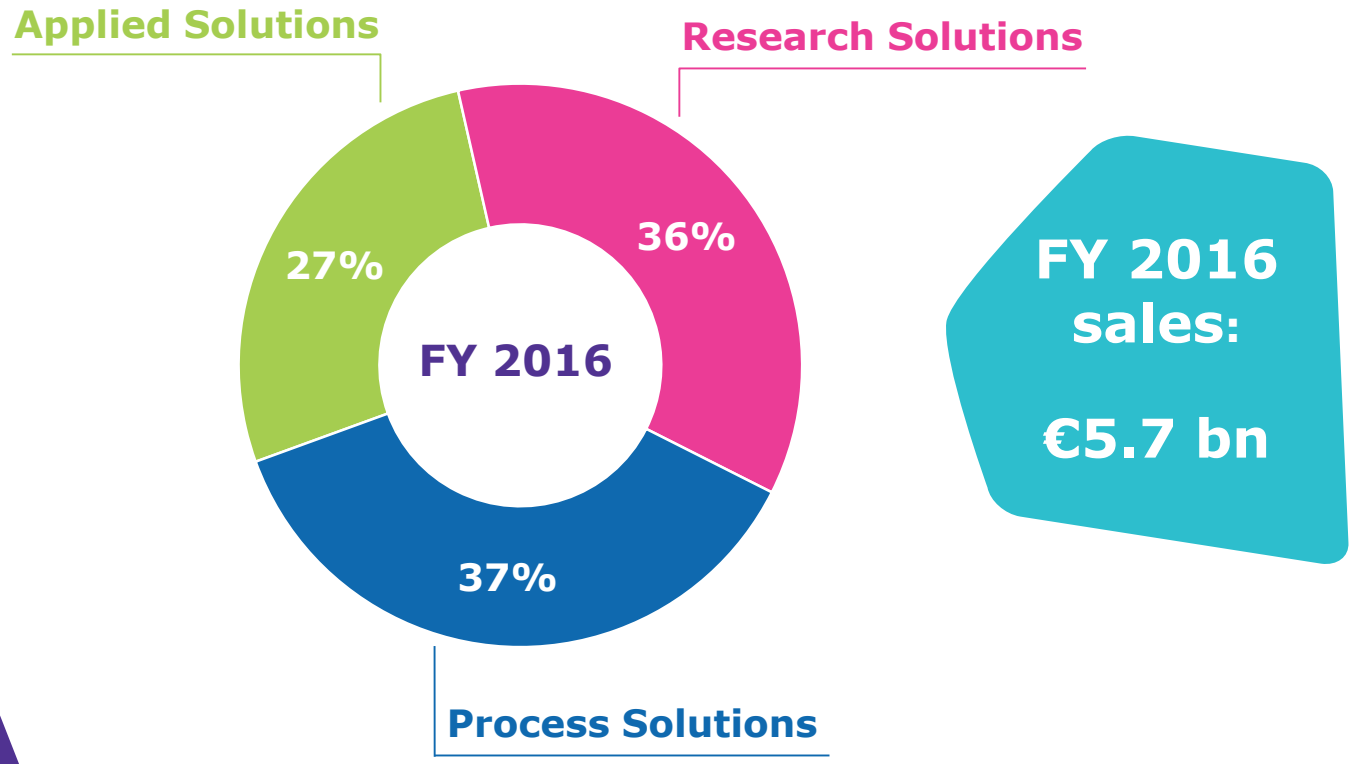
- Pharmaceutical companies
- Small biotech
- Contract manufacturing organizations

APPLIED

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

A balanced portfolio and geographic presence

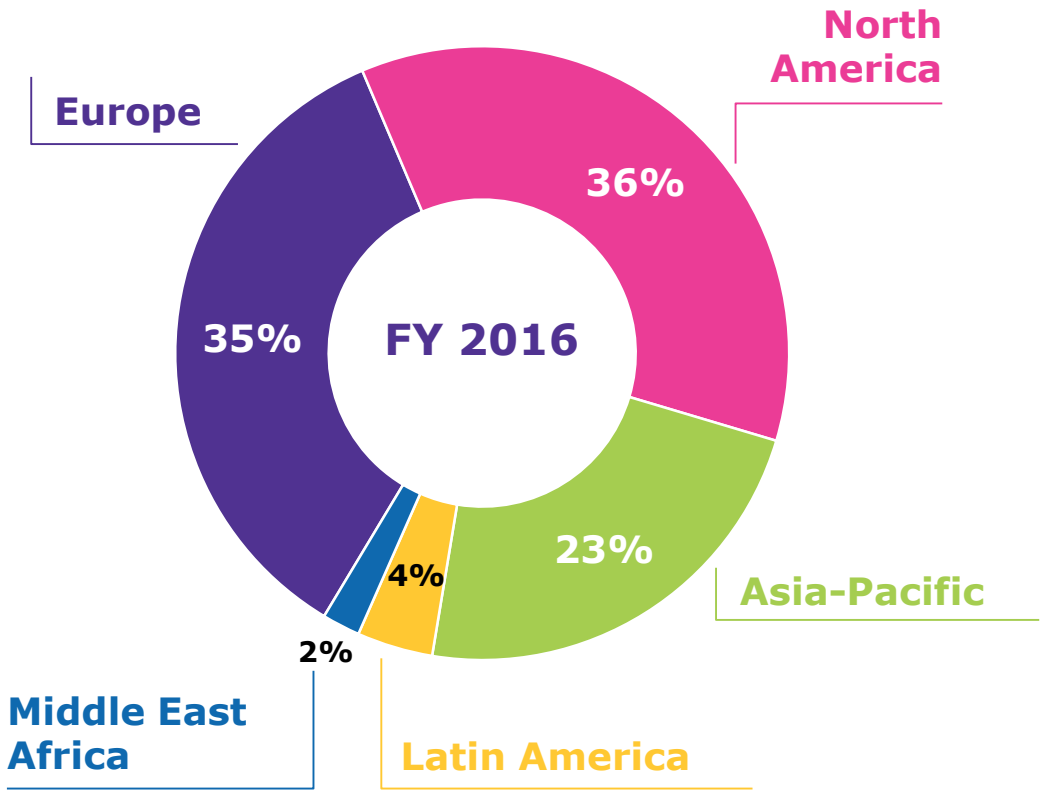
Sales by business unit



FY 2016 sales:

€5.7 bn

Sales by region



Life Science

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 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

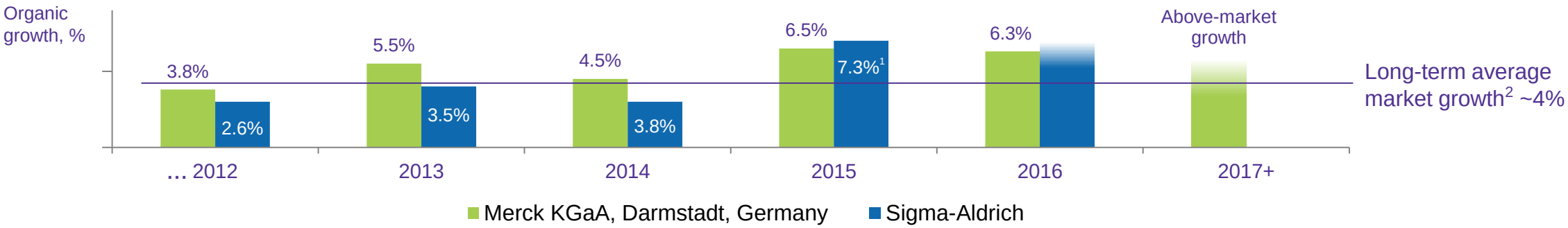
APPLIED
~€45 bn
Mid single digit

- Volume growth from
  - Population growth
  - Increased testing needs

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

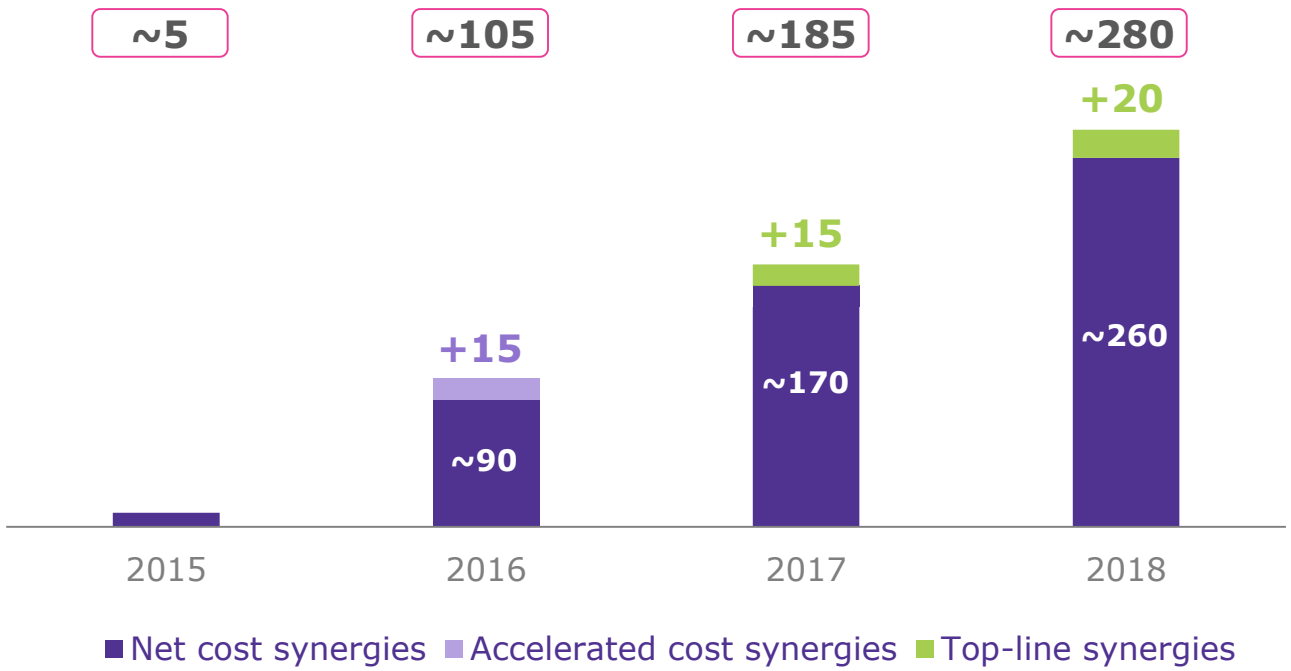
- **Best in class eCommerce**
- **Excellent service capabilities**
- **Global reach**

[1]Growth for 9M 2015 (organic growth of $152 m on prior 9M 2014 sales of $2,080 m; [2]Source: Merck KGaA, Darmstadt, Germany market intelligence and broker research

Life Science

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 status (for 2016)

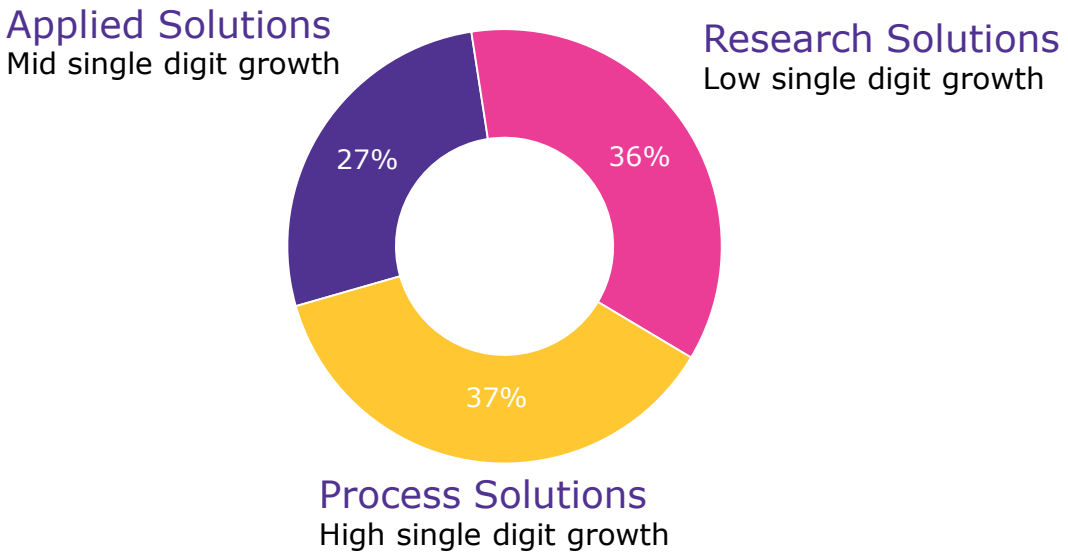
- **faster** implementation of synergy measures in all areas
- **2016** total cost synergies of **~€105 M**
- Integration costs remain unchanged at ~€400 m

Top-line synergies (from 2017)

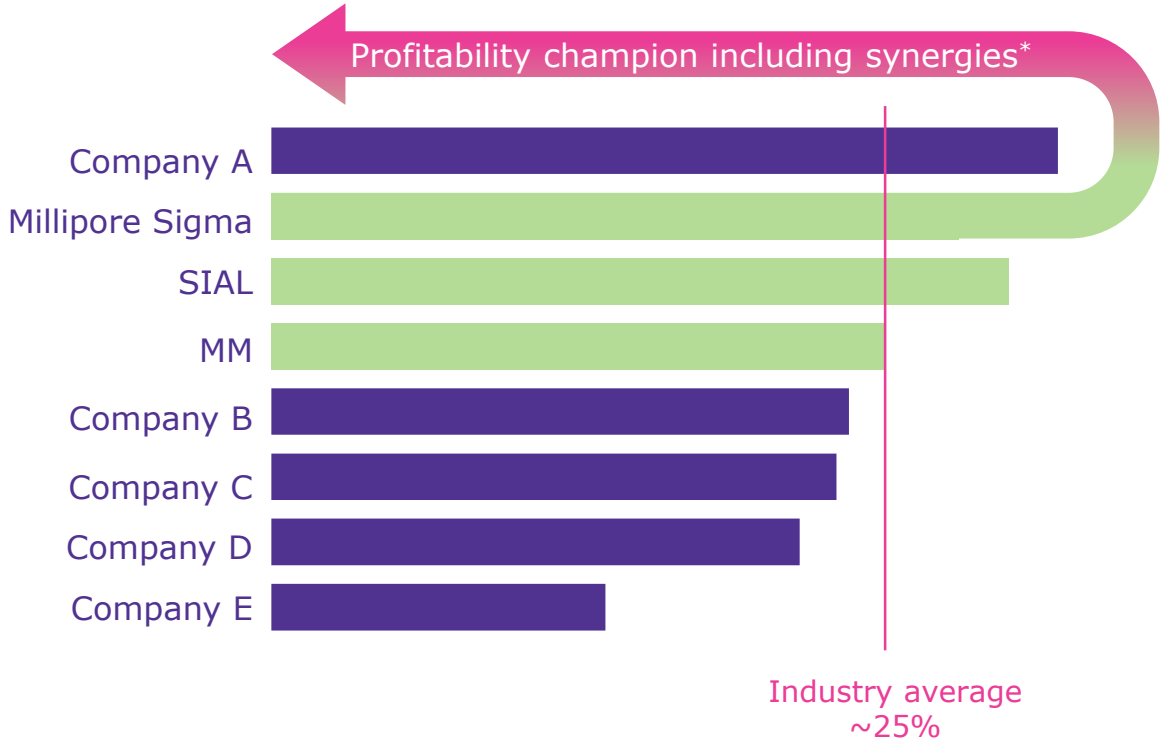
- Strong eCommerce and **IT capabilities** applied to Merck KGaA, Darmstadt, Germany products
- Extensive **portfolio** and **customer** complementarity in Process and Applied Solutions
- Leverage **regional** Merck KGaA, Darmstadt, Germany - Asia and Sigma - North America footprint
- Expecting **~50-100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

Life Science
We aim to be the profitability champion of the sector

Sales breakdown as of FY 2016



Above industry margin levels



Life Science is well set for sustainable growth and profitability

*Pro-forma combination based on 2015 financials including 100% of targeted synergies

Life Science delivers synergies and integrates as planned

synergies

Delivery of 2016 synergy target of €105 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

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

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

Merck KGaA
Darmstadt, Germany

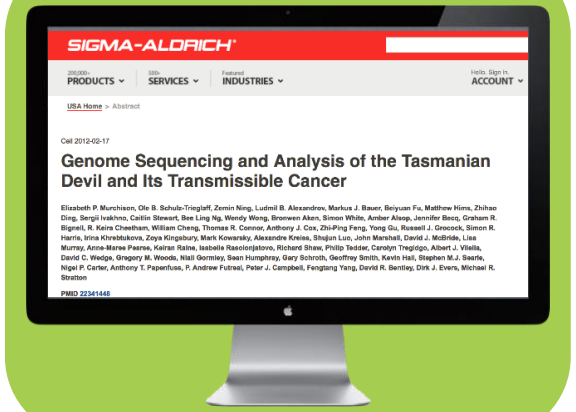
#1 website in research life science industry

Industry leading e-commerce platform and supply chain capability

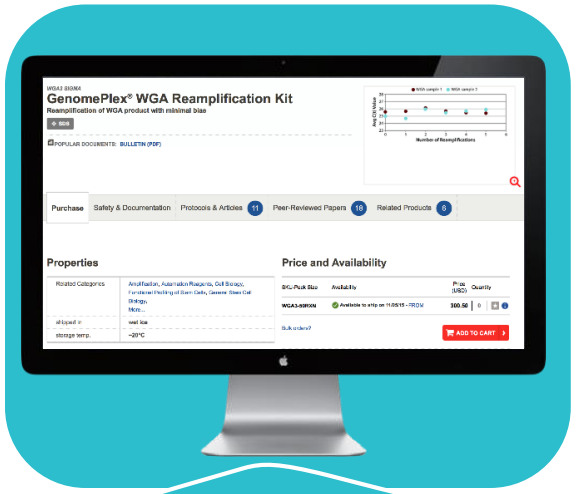
SEARCH

Hundreds of thousands of products at your fingertips

CONTENT



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



Real-time pricing and availability

ORDER

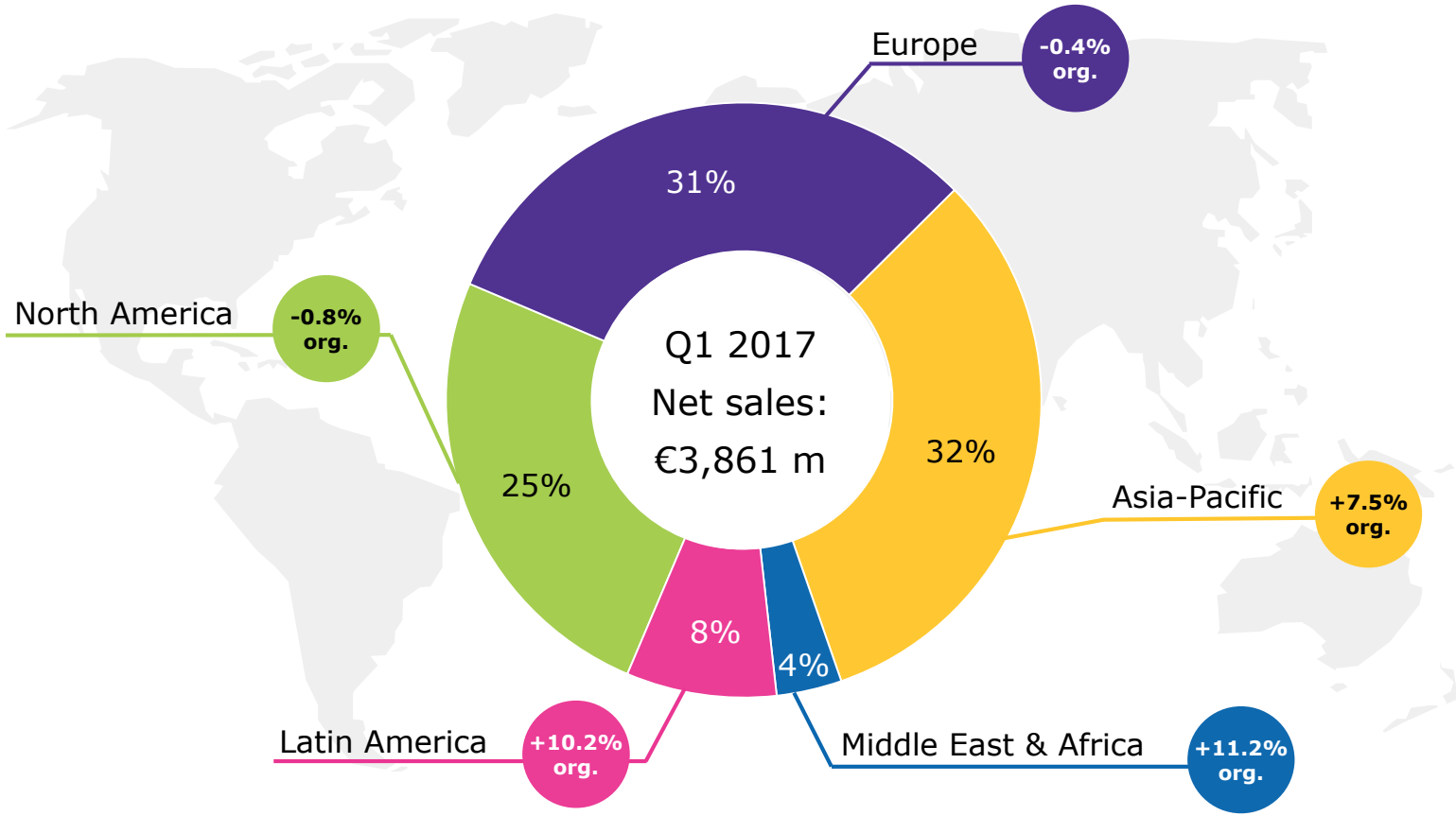
Convenient and simple customer interface: **no more than 2 clicks from shopping cart**

Merck KGaA
Darmstadt, Germany

04 FINANCIAL OVERVIEW

Organic growth driven by APAC, LATAM and MEA

Regional breakdown of net sales [€ m]



Regional organic development

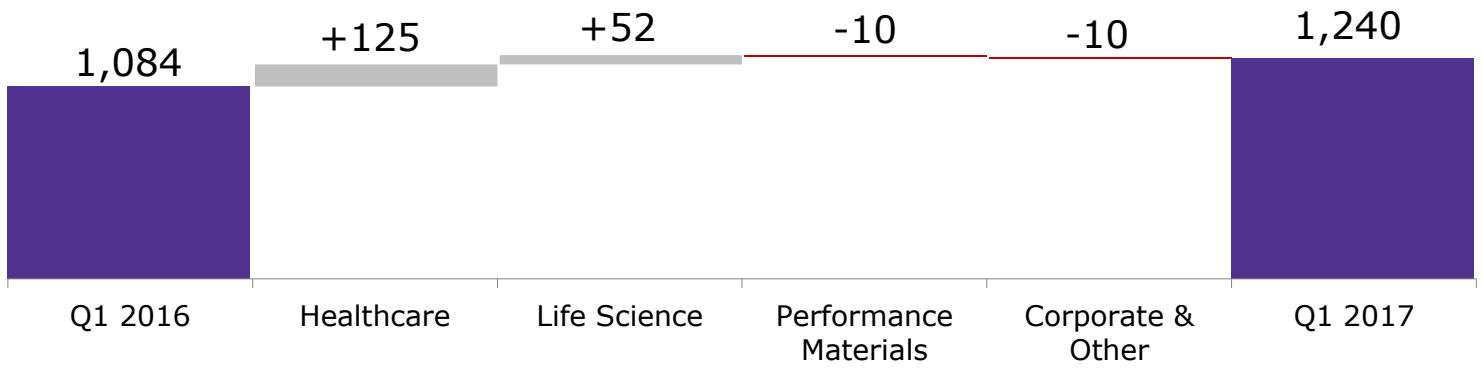
- Slight decline in Europe reflects competition for Rebif, Erbitux and Gonal-f, mitigated by solid demand in Life Science
- North America lower as growth in Life Science is more than offset by Rebif decline and tough Gonal-f comparables
- Good growth in Asia-Pacific mainly driven by Glucophage repatriation in China, strong demand in Process Solutions
- Strong performance in LATAM and MEA across all major businesses

Healthcare and Life Science fuel increase in EBITDA pre

Q1 2017 YoY net sales

	Organic	Currency	Portfolio	Total
Healthcare	4.4%	2.0%	-1.0%	**5.4%**
Life Science	3.3%	2.4%	0.4%	**6.1%**
Performance Materials	-0.9%	4.5%	0.0%	**3.6%**
Group	3.1%	2.6%	-0.3%	**5.3%**

Q1 YoY EBITDA pre contributors [€ m]



- Healthcare reflects strong growth in General Medicine, especially Glucophage China
- Organic performance in Life Science driven by all business units
- Strong growth of Integrated Circuit Materials and Pigments mitigates LC decline

- HC benefits from first approval milestone, net benefit from royalty swap (~€100m) and organic performance
- Life Science driven by organic growth and ongoing synergy realization
- Performance Materials slightly lower due to business mix and higher R&D
- Corporate EBITDA pre contains hedging and investments in corporate initiatives

Totals may not add up due to rounding

Q1 2017: Overview

Key figures

[€m]	Q1 2016	Q1 2017	Δ
Net sales	3,665	**3,861**	5.3%
EBITDA pre	1,084	**1,240**	14.5%
Margin (in % of net sales)	*29.6%*	*32.1%*	
EPS pre	1.54	**1.80**	16.9%
Operating cash flow	352	**777**	120.6%

[€m]	Dec. 31, 2016	March 31, 2017	Δ
Net financial debt	11,513	**11,113**	-3.5%
Working capital	3,486	**3,953**	13.4%
Employees	50,414	**51,480**	2.1%

Comments

- EBITDA pre & margin increase mainly driven by royalty income swap
- Strong EPS pre growth due to higher EBITDA pre
- Operating cash flow reflects high profit and positive tax effects
- Net financial debt reduction driven by strong operating cash flow
- Working capital reflects increased receivables mainly due to Glucophage repatriation
- Higher headcount due to investments in growth markets and takeover of temporary workers

Totals may not add up due to rounding

Healthcare: Solid base business and one-time gains supporting margin

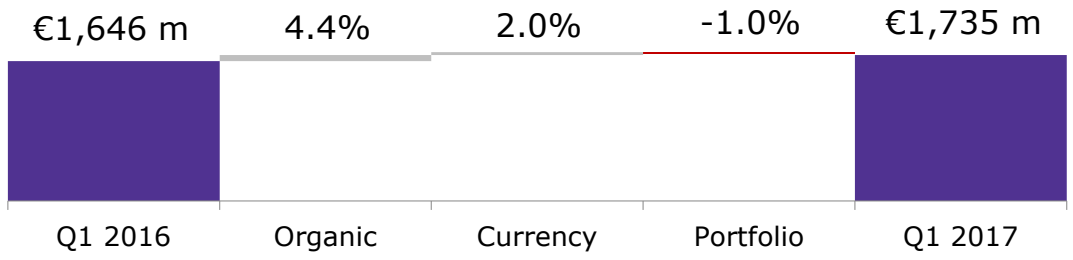
Healthcare P&L

[€m]	Q1 2016	Q1 2017
Net sales	1,646	**1,735**
Marketing and selling	- 613	**-656**
Administration	- 71	**-77**
Research and development	- 378	**-376**
EBIT	641	**445**
EBITDA	829	**629**
EBITDA pre	508	**633**
Margin (in % of net sales)	*30.9 %*	***36.5%***

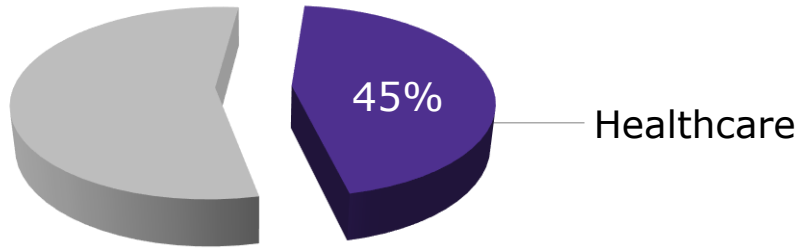
Comments

- Organic growth supported by Glucophage repatriation in China
- Rebif with ongoing volume and price declines in Europe outweighing U.S. pricing and contribution from PDP* in Brazil
- Erbitux shows moderate organic growth benefiting from demand in growth markets; competitive pressure in Europe persists
- Marketing & selling reflects investments for launch preparations and costs for Glucophage repatriation in China
- R&D costs phased – ramp-up towards coming quarters
- EBIT last year contained Kuvan disposal gain of €324 m
- Profitability spike mainly driven by net benefit of royalty income swap (~€100m) and Bavencio milestone, outweighing negative product mix

Net sales bridge



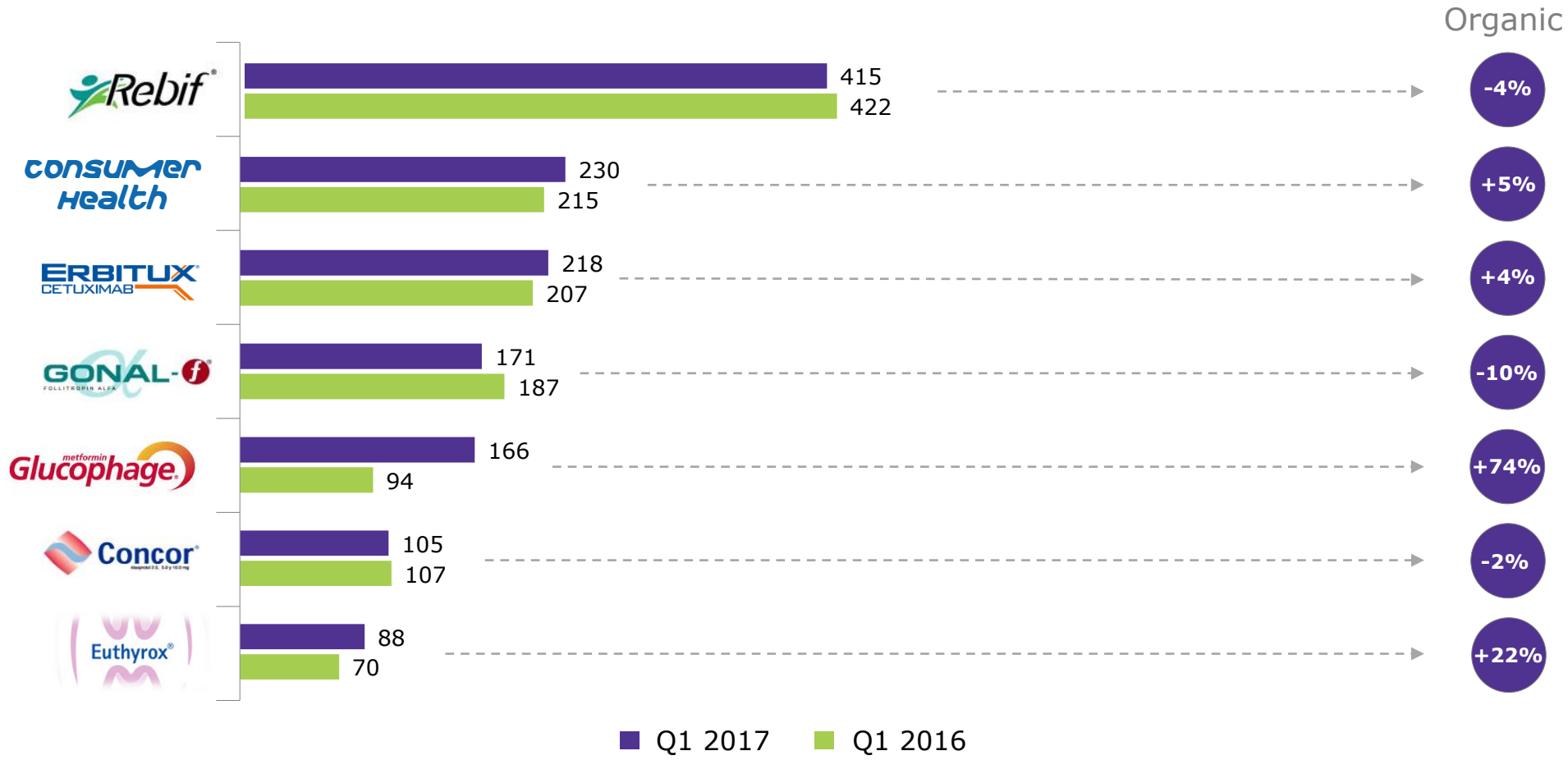
Q1 2017 share of group net sales



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

Healthcare organic growth by franchise/product

Q1 2017 organic sales growth [%] by key franchise/products [€ m]

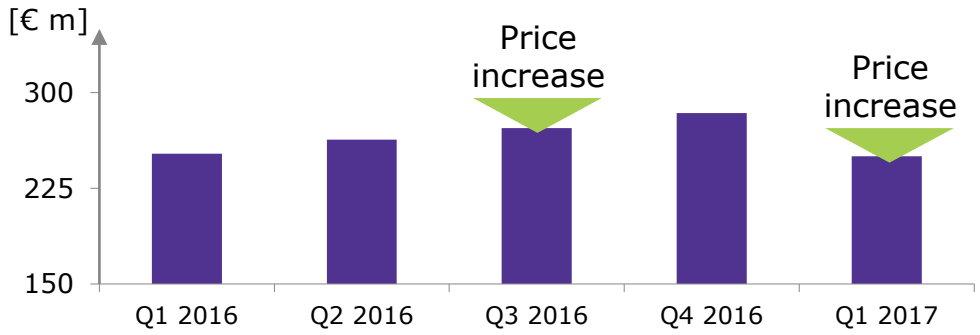


Merck KGaA
Darmstadt, Germany

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

Rebif sales evolution

North America



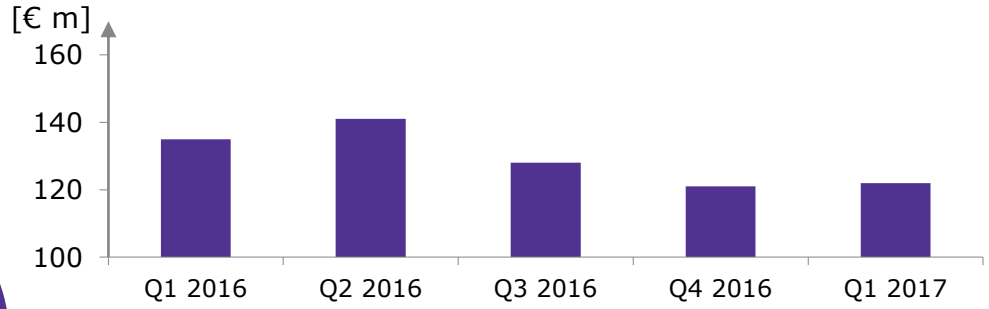
Trend

Q1 drivers

-4.6% org.

- Price
- Volume
- FX

Europe



Trend

Q1 drivers

-9.3% org.

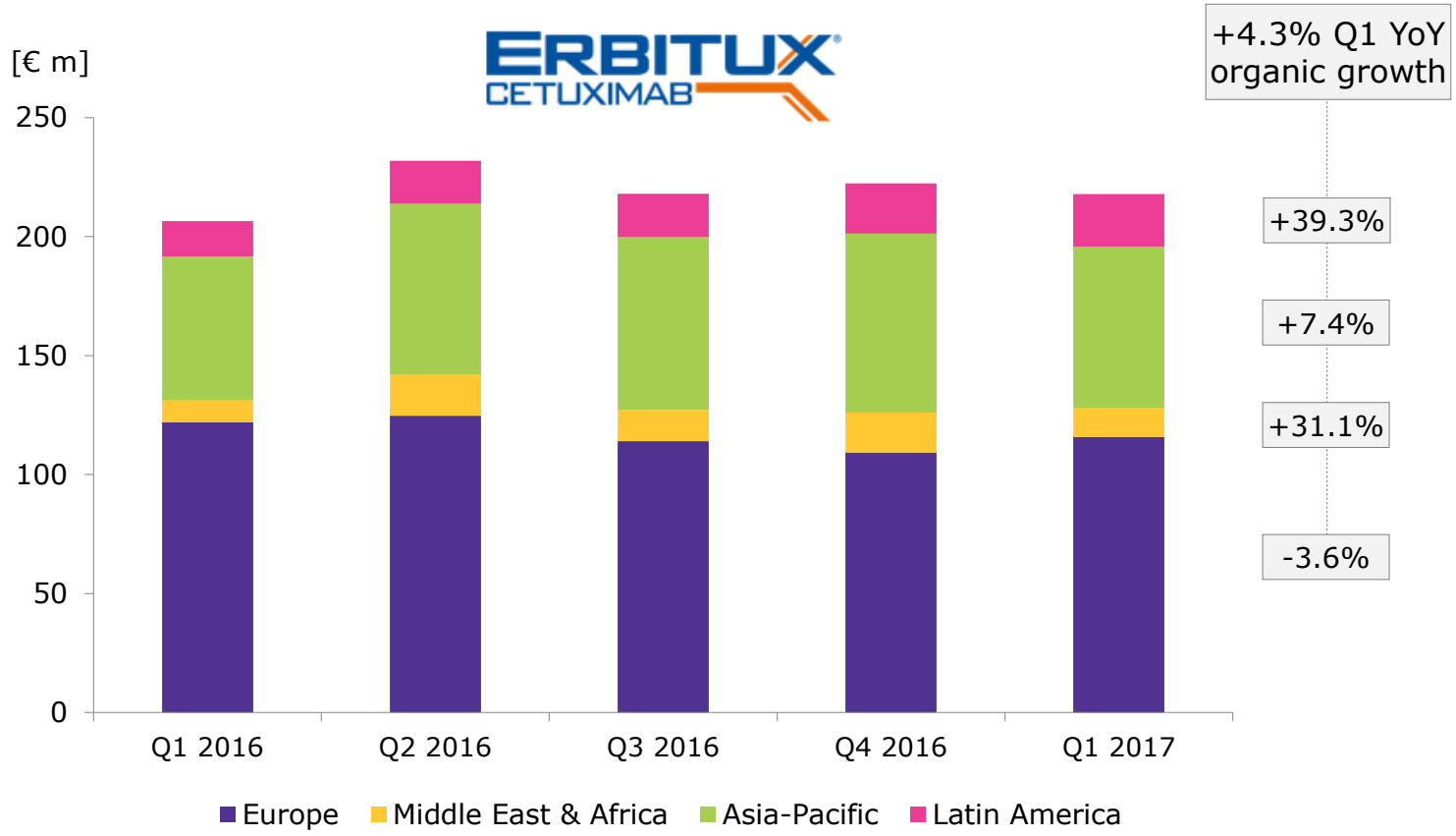
- Price
- Volume

Q1 2017 Rebif performance

- Rebif sales of €415 m in Q1 2017 reflect organic decline of -4.0% and positive FX effects from the U.S.
- U.S. price increase in January, partially offsets U.S. volume erosion
- Market shares within interferons stable due to high retention rates and known long-term track record
- Phased market entry of orals and mandatory price cuts in Europe cause ongoing organic decline
- Productive Development Partnership (PDP) in Brazil supports Rebif growth in LATAM

Erbitux: A challenging market environment

Erbitux sales by region



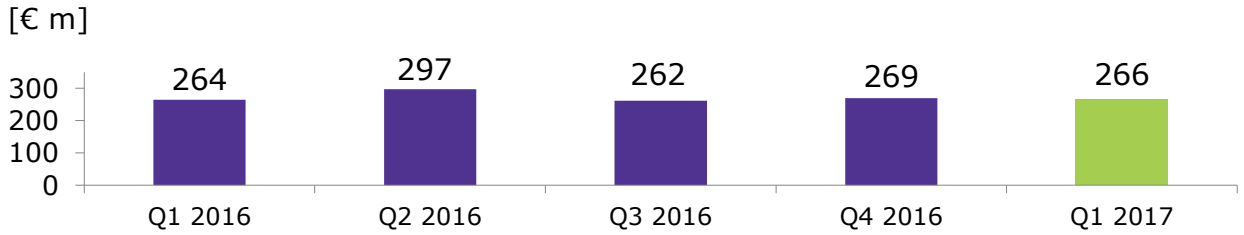
Q1 2017 Erbitux performance

- Sales increase to €218m due to solid volume development in growth markets and slight FX tailwinds
- Europe impacted by competition and shrinking market size due to increasing Immuno-Oncology trials
- APAC with healthy organic growth driven by higher volumes in China
- LATAM and MEA shows strong growth from higher demand, but also benefited from tender phasing

Strong organic growth of General Medicine driven by Glucophage repatriation

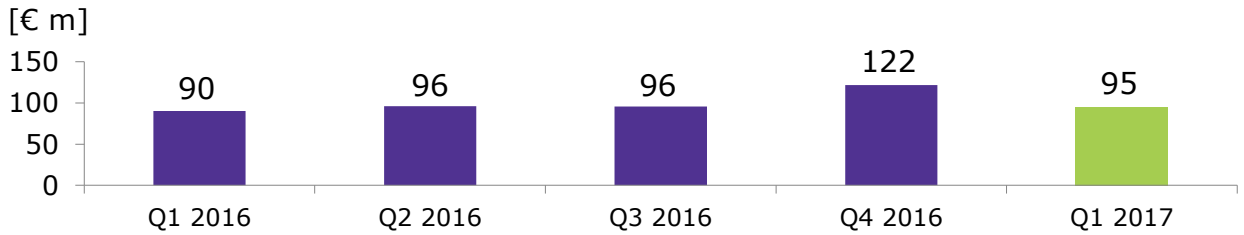
Sales evolution

Fertility



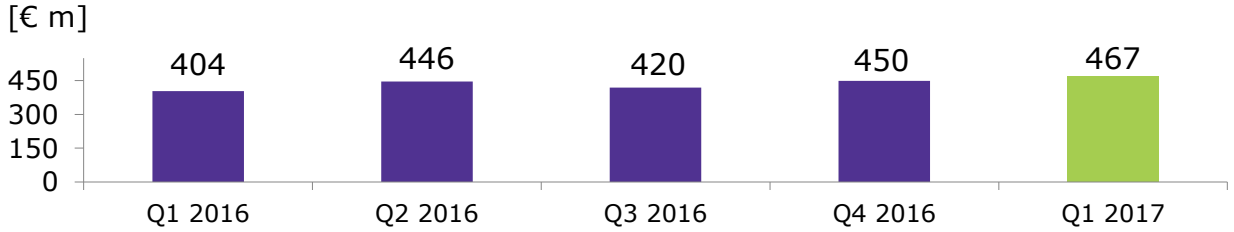
Organic -0.9%

Endocrinology



Organic 5.3%

General Medicine*



Organic 16.6%

Q1 2017 organic drivers

- Fertility slightly lower, mainly due to Gonal-f facing tough comps and competition from biosimilars in Europe
- Other fertility drugs continue to grow across all major regions
- Release of accruals for rebates for Saizen supports Endocrinology growth
- General Medicine growth benefits from Glucophage China repatriation
- Euthyrox posts strong growth driven by ongoing strong demand from China
- Concor slightly negative due to order phasing in Russia

*includes "CardioMetabolic Care & General Medicine and Others"

Life Science: Ongoing synergy realization drives margin progression

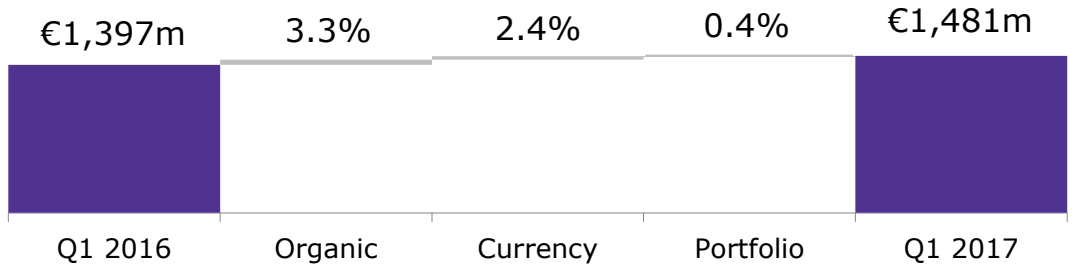
Life Science P&L

[€m]	Q1 2016	Q1 2017
Net sales	1,397	**1,481**
Marketing and selling	- 421	**-449**
Administration	- 63	**-70**
Research and development	- 62	**-62**
EBIT	105	**236**
EBITDA	284	**430**
EBITDA pre	393	**445**
Margin (in % of net sales)	*28.1 %*	***30.1%***

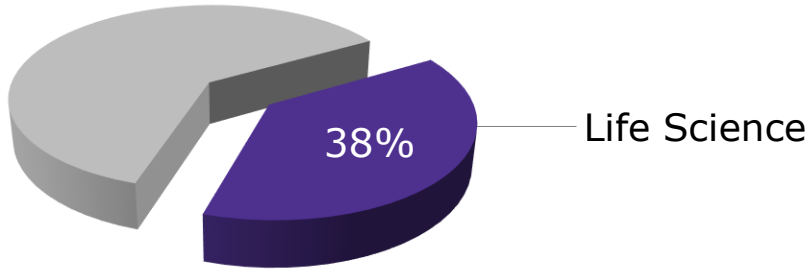
Comments

- Process Solutions benefits from robust demand for single-use and upstream, but against tough comps & soft start at some larger accounts
- Applied Solutions shows solid organic growth, fueled by robust demand for food & beverage testing and lab water platform
- Research Solutions posts slight organic growth from solid demand in growth markets outweighing challenging U.S. market environment
- Marketing & selling increase in line with sales progression
- Q1 2016 EBIT affected by inventory step-up for Sigma-Aldrich
- Profitability reflects ongoing synergy realization and organic growth

Net sales bridge



Q1 2017 share of group net sales



Totals may not add up due to rounding

Performance Materials: Top line recovery despite still declining Liquid Crystals

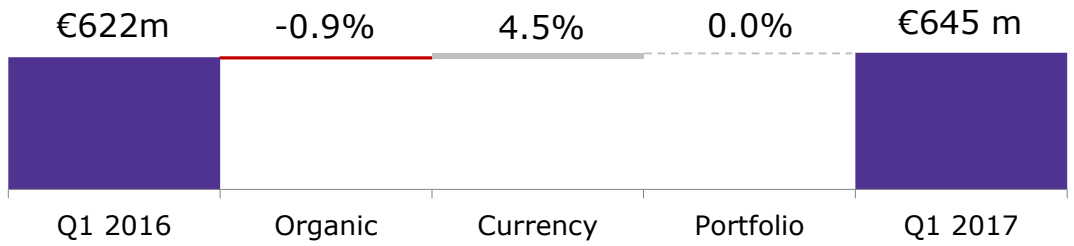
Performance Materials P&L

[€m]	Q1 2016	Q1 2017
Net sales	622	**645**
Marketing and selling	-58	**-62**
Administration	-16	**-18**
Research and development	-48	**-58**
EBIT	207	**195**
EBITDA	267	**257**
EBITDA pre	273	**263**
Margin (in % of net sales)	*43.9 %*	***40.9%***

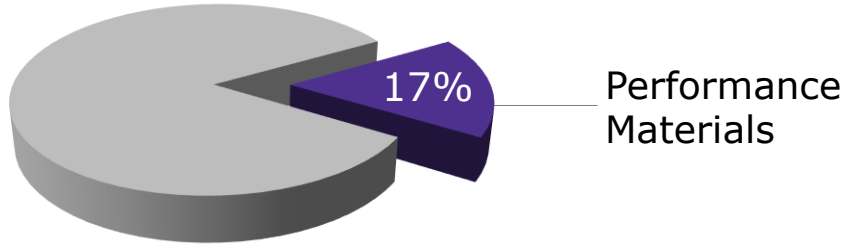
Comments

- Organic growth of Integrated Circuit Materials, Pigments and OLED mitigate LC softness
- Liquid Crystals impacted by further market share normalization
- Integrated Circuit Materials with record quarter and above market growth due to strong demand from key accounts
- Pigments & Functionals post solid organic growth mainly driven by coatings applications especially automotive
- R&D increase reflects investments in LC technologies beyond displays
- Sound profitability despite negative business mix & higher R&D

Net sales bridge



Q1 2017 share of group net sales



Totals may not add up due to rounding

Reported figures reflect solid business and royalty income swap

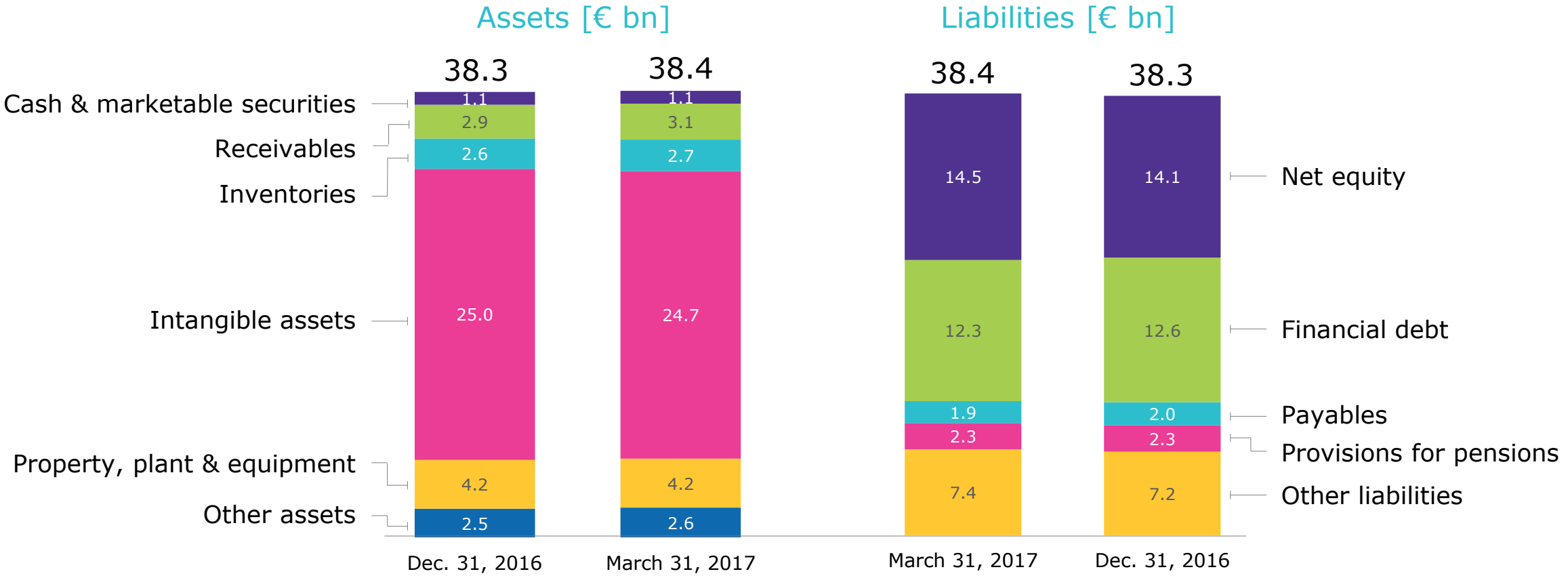
Reported results

[€m]	Q1 2016	Q1 2017	Δ
EBIT	849	**755**	-11.1%
Financial result	-68	**-71**	3.6%
Profit before tax	780	**684**	-12.4%
Income tax	-187	**-161**	-14.1%
Effective tax rate (%)	*24.0 %*	***23.5%***	
Net income	591	**521**	-11.8%
EPS (€)	1.36	**1.20**	-11.8%

Comments

- EBIT decline reflects income from Kuvan sale LY
- Stable financial result – deleveraging compensated by higher interest rates and positive LTIP effect LY
- Effective tax rate within guidance range of ~23-25%

Balance sheet – focus on rapid deleveraging



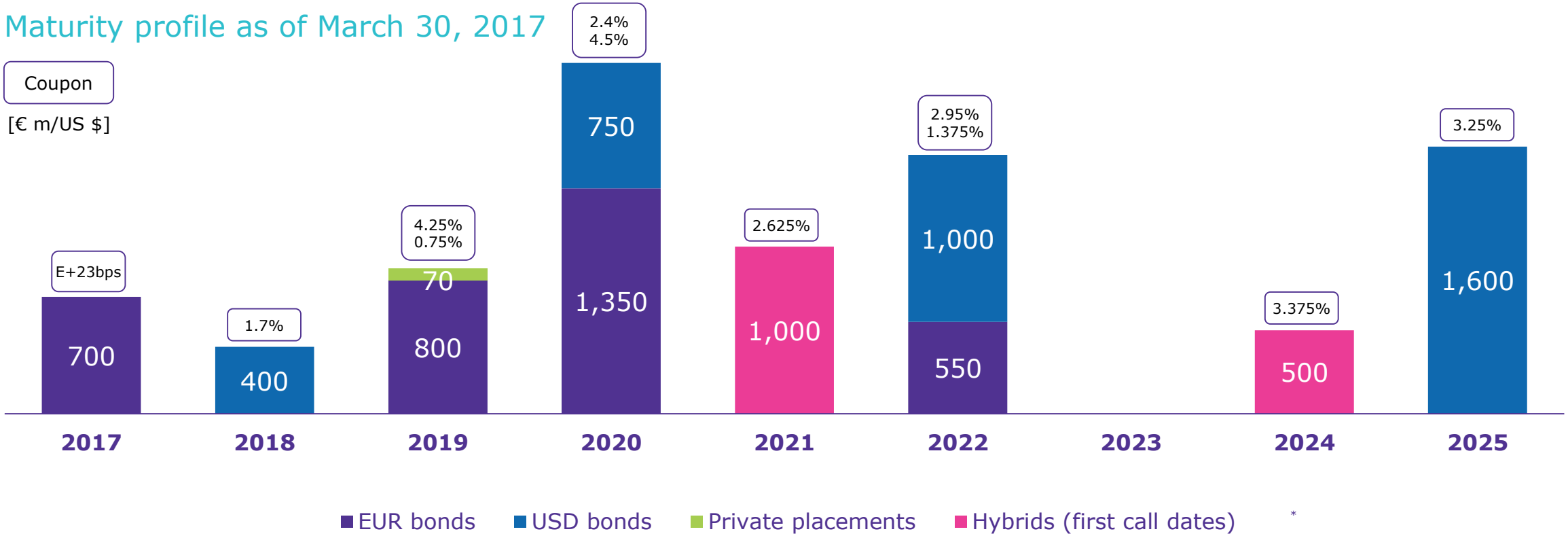
- Total assets about stable, while equity ratio increases to 37.8%
- Reduction of intangible assets reflects D&A and FX, more than offsetting new assets from Vertex licensing deal

- Net equity increase driven by profit after tax
- USD250 m bond repayment reduces financial debt

Totals may not add up due to rounding

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

Maturity profile as of March 30, 2017



Financing structure enables flexible and swift deleveraging

*No decision on call rights taken yet

Strong operating cash flow benefits from royalty swap and tax effects

Q1 2017 – cash flow statement

[€m]	Q1 2016	Q1 2017	Δ
Profit after tax	593	**523**	-70
D&A	433	**448**	15
Changes in provisions	21	**51**	30
Changes in other assets/liabilities	-34	**134**	168
Other operating activities	-394	**-11**	383
Changes in working capital	-266	**-368**	-102
Operating cash flow	352	**777**	425
Investing cash flow	284	**-402**	-686
thereof Capex on PPE	-160	**-201**	-41
Financing cash flow	-572	**-290**	282

Cash flow drivers

- LY profit after tax includes gain from Kuvan sale, which is neutralized in other operating activities
- Changes in other assets/liabilities benefit from positive tax effects
- Changes in working capital reflect new Glucophage China business and higher R&D receivables from Pfizer
- Investing cash flow contains increased Capex and Vertex licensing deal; LY included sale of Kuvan
- Financing cash flow reflects repayment of USD250 m bond

Totals may not add up due to rounding

Exceptionals in Q1 2017

Exceptionals in EBIT

[€m]	Q1 2016		Q1 2017	
	Exceptionals	thereof D&A	Exceptionals	thereof D&A
Healthcare	-321	0	4	1
Life Science	109	0	16	0
Performance Materials	6	0	7	0
Corporate & Other	7	0	15	3
Total	-198	0	41	4

Totals may not add up due to rounding

Financial calendar

Date	Event
June 12, 2017	R&D Update Call
August 3, 2017	Q2 2017 Earnings release
November 9, 2017	Q3 2017 Earnings release
March 8, 2018	Q4 2017 Earnings release
April 27, 2018	Annual General Meeting
May 15, 2018	Q1 2018 Earnings release

Merck KGaA
Darmstadt, Germany

Constantin Fest

Head of Investor Relations
+49 6151 72-5271
constantin.fest@emdgroup.com

Svenja Bundschuh

Assistant Investor Relations
+49 6151 72-3744
svenja.bundschuh@emdgroup.com

Alessandra Heinz

Assistant Investor Relations
+49 6151 72-3321
alessandra.heinz@emdgroup.com

Annett Weber

Institutional Investors / Analysts
+49 6151 72-63723
annett.weber@emdgroup.com

Nils von Both

Institutional Investors / Analysts
+49 6151 72-7434
nils.von.both@emdgroup.com

Eva Sterzel

Private Investors / AGM / CMDs / IR Media
+49 6151 72-5355
eva.sterzel@emdgroup.com

Olliver Lettau

Institutional Investors / Analysts
+49 6151 72-34409
olliver.lettau@emdgroup.com

Email: investor.relations@emdgroup.com
Web: www.emdgroup.com/investors
Fax: +49 6151 72-913321