



**MERCK KGAA, DARMSTADT,
GERMANY—**

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Investor Relations

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Agenda

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



01

BUSINESS OVERVIEW

Group

Portfolio of three high-tech businesses



Healthcare

Leading in specialty pharma markets

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



Life Science

Leading life science company

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



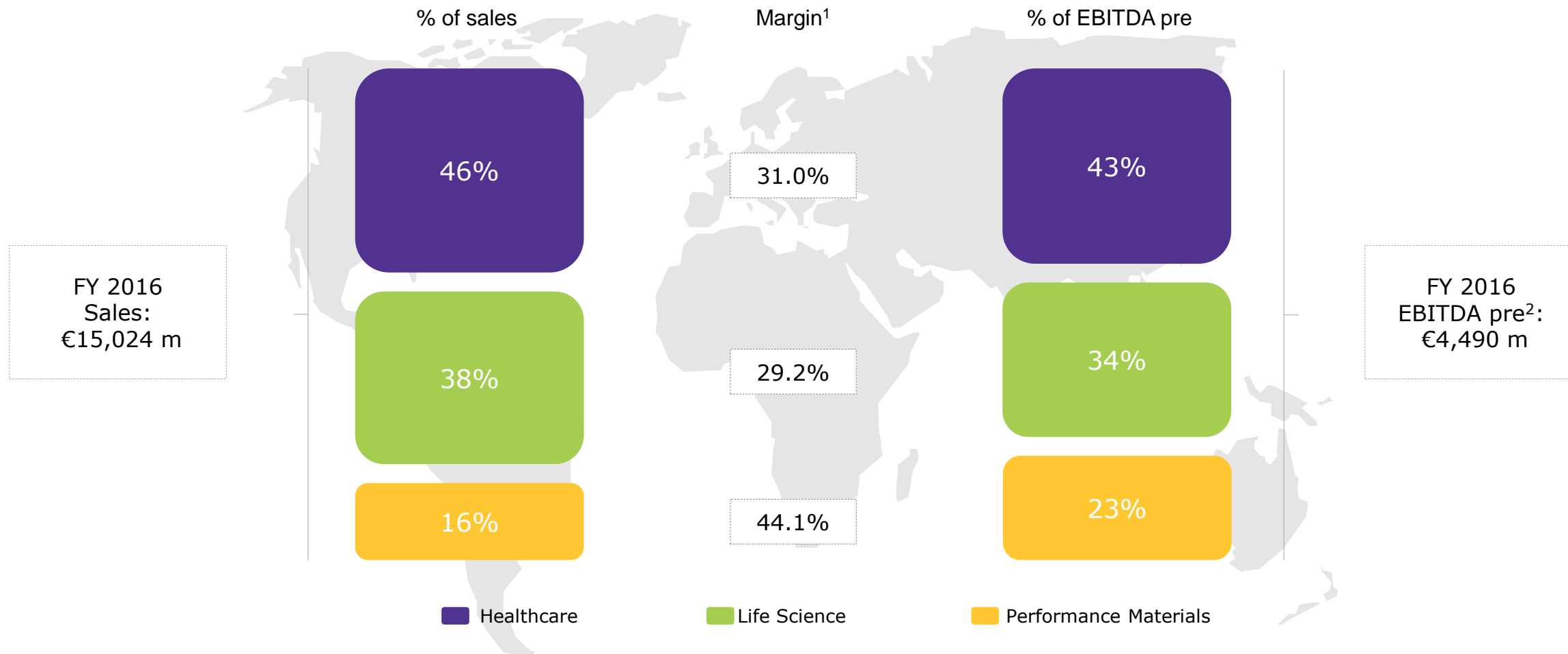
Performance Materials

Market leader in specialty materials

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

Group

Strong businesses with attractive margins

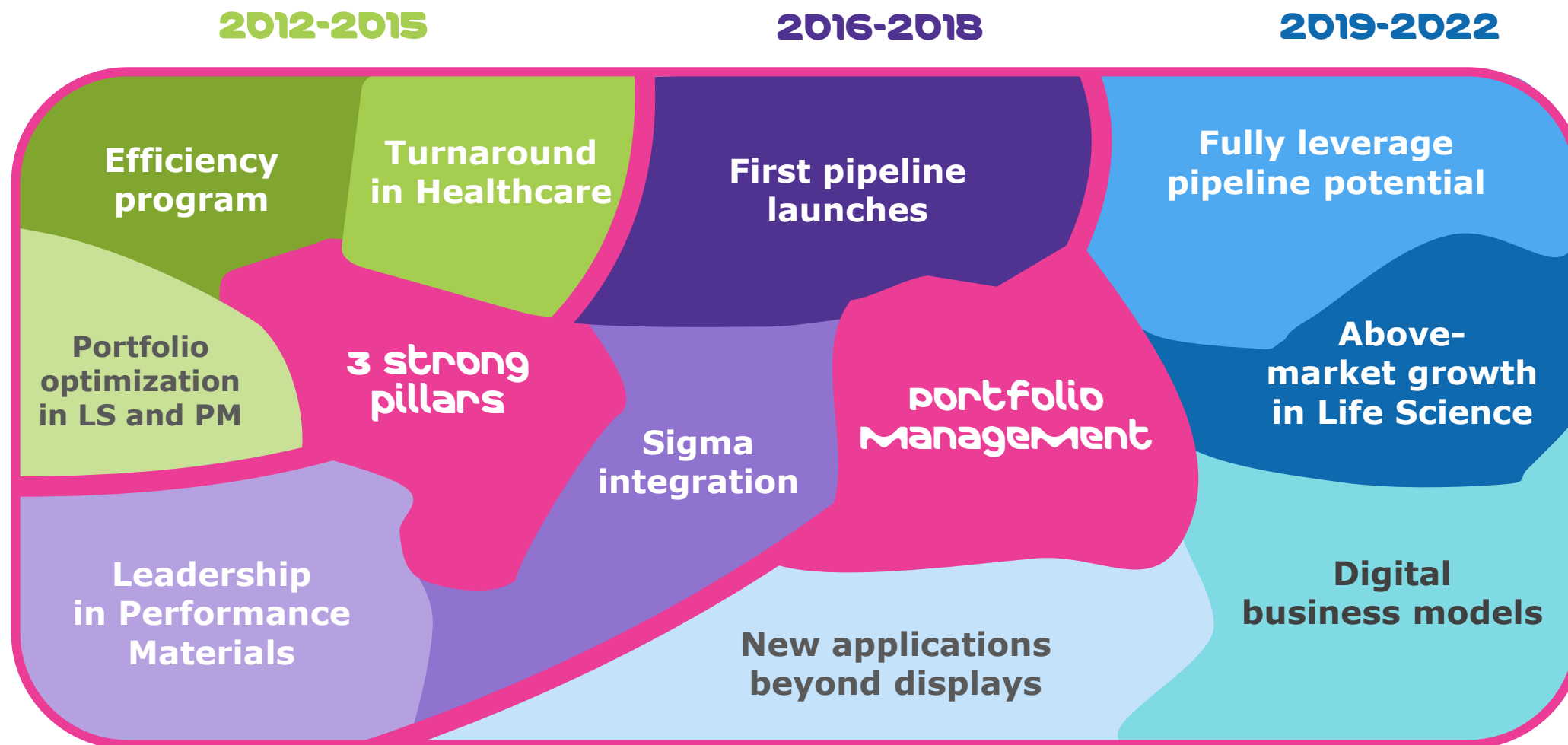


¹EBITDA pre margin in % of net sales; ²Including Corporate/Others (-€396 m)



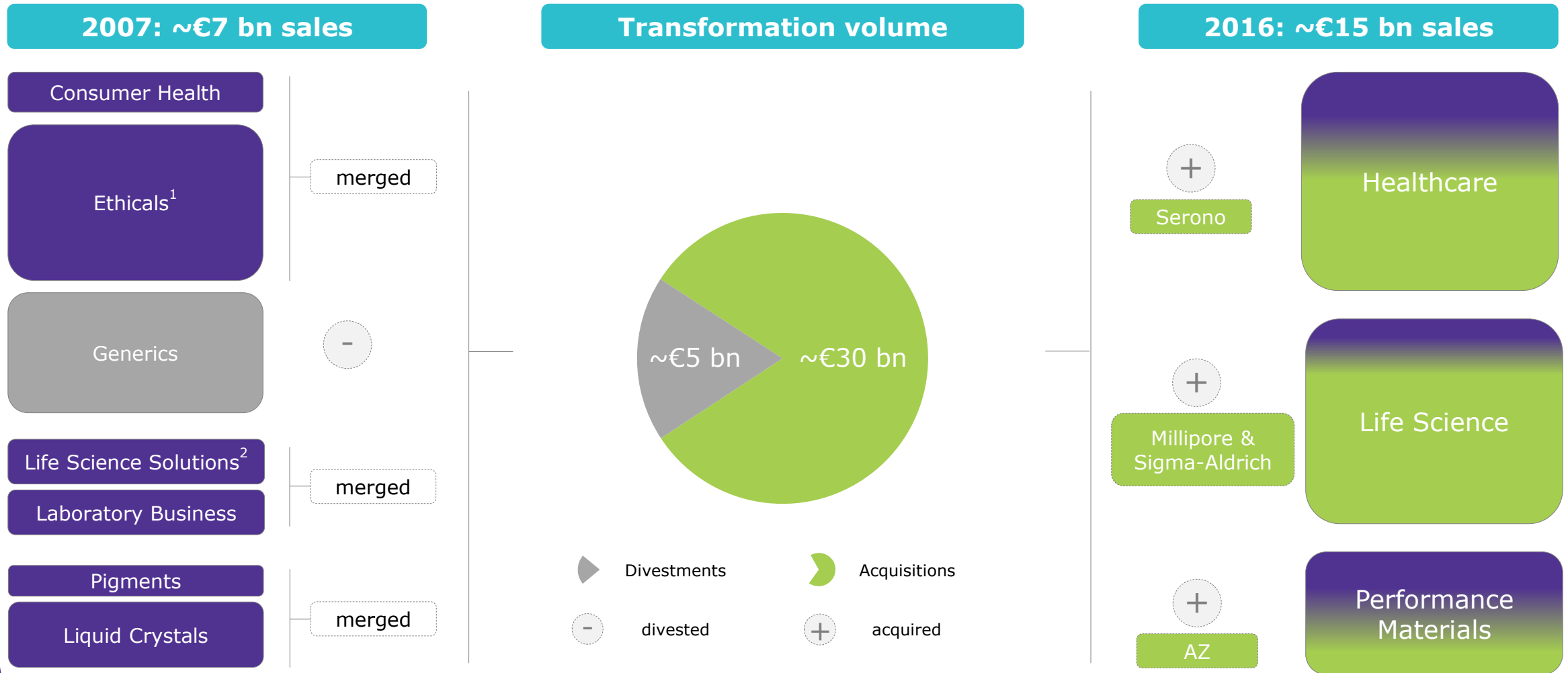
02 TRANSFORMING THE COMPANY

Group Strategic roadmap 2016-2022



Group

We have added scale and strengthened the attractiveness of its portfolio

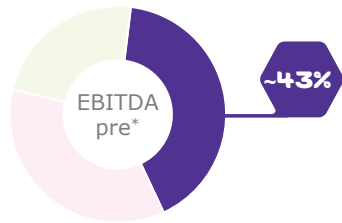


Group

Clear set of priority goals to be realized by 2018



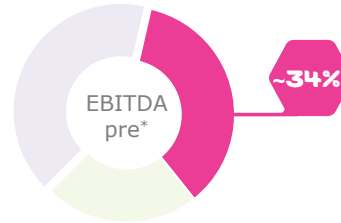
Healthcare



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



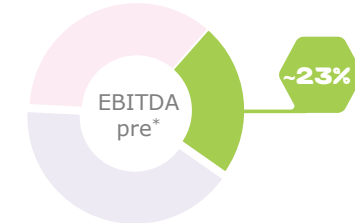
Life science



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



Performance Materials



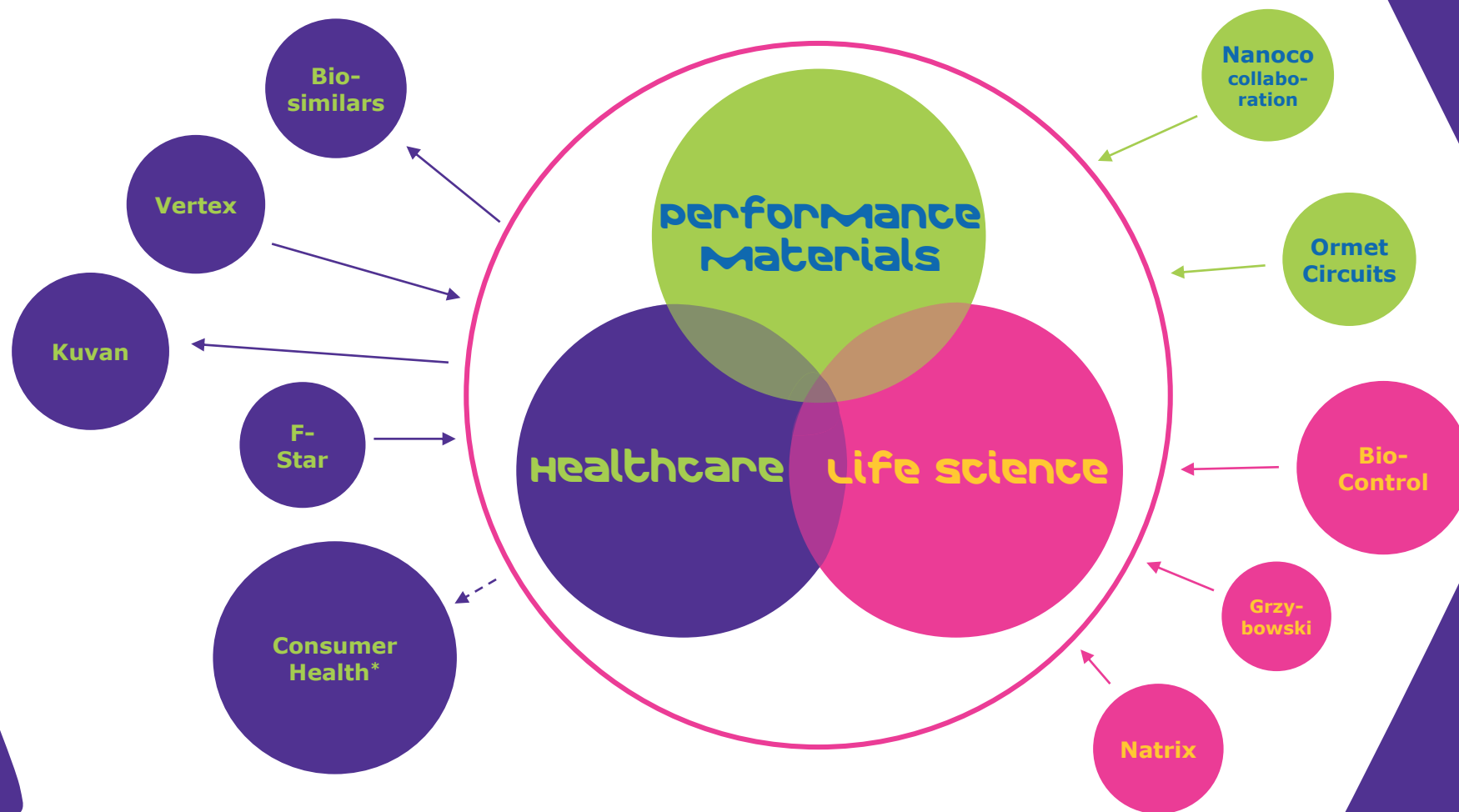
- Drive innovation and technology leadership across all businesses
- Innovate in applications also beyond displays

**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

Group

Stronger portfolio through active management



profitable growth and value creation

- Well-balanced approach to organic and inorganic growth
- Strengthened all three businesses
- Increased resilience of Group



03 **HEALTHCARE**

Funding for success

Healthcare

Healthcare is set to deliver on promising pipeline candidates

Deliver
on organic growth

Focus
on pipeline



Stable existing business



Solid pipeline of oncology, immuno-oncology and immunology molecules



Transformation of R&D operating model ongoing



Competitive R&D funding in our focus areas



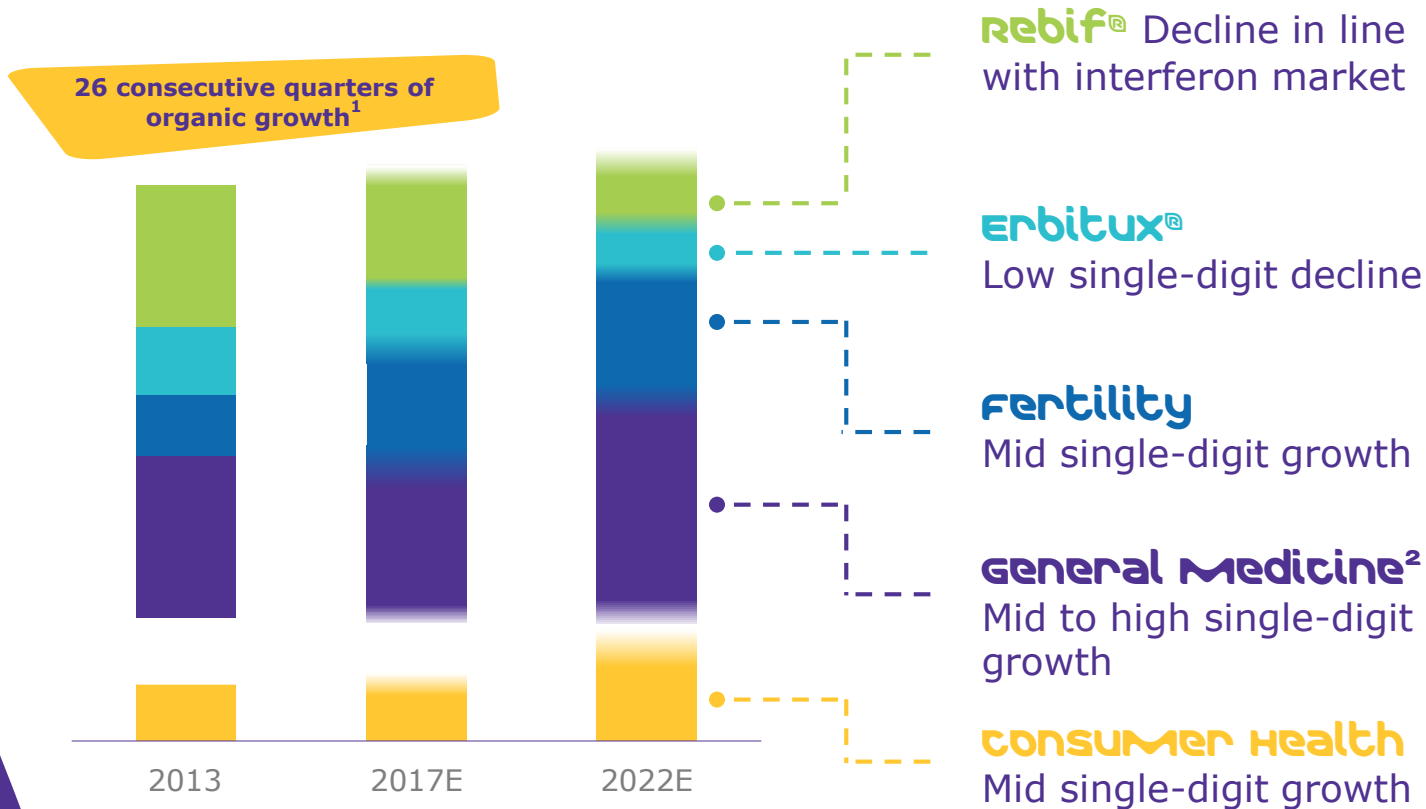
Cost discipline and efficient execution



Healthcare

Ambition to keep base business sales organically stable until 2022

Healthcare base business net sales until 2022



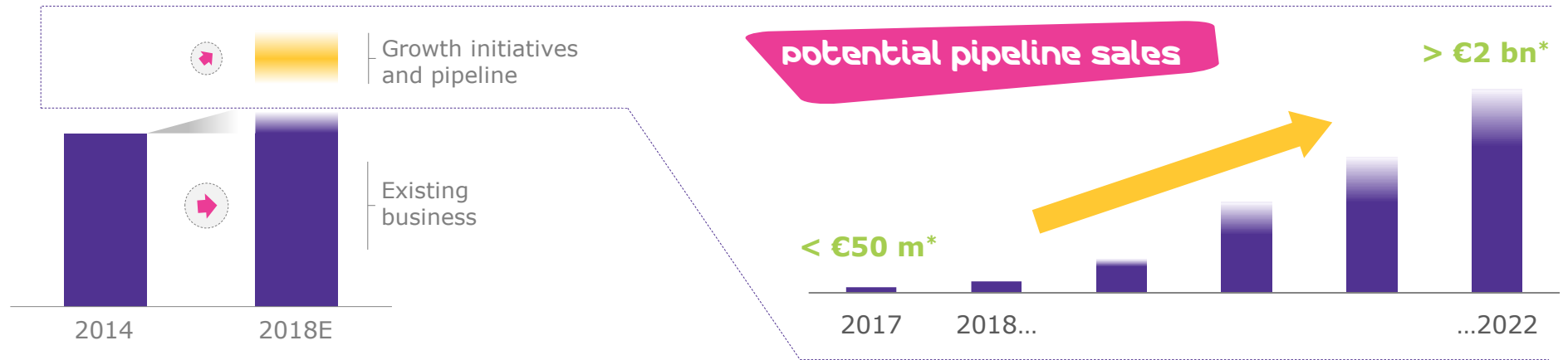
- Maintaining solid track record of patient retention
- Integration into joint franchise strategy with Mavenclad®
- Driving emerging markets growth
- Mitigate price and competitive pressure in EU by clear Erbitux® franchise positioning
- Drug demand driven by emerging markets growth and demographics
- Differentiation versus competition
- Emerging markets demand growth enhanced by new launches, e.g. GlucophageXR® China
- Repatriation measures
- Continuously build emerging markets presence
- Invest in key strategic brands

Healthcare

Well on track to deliver the pipeline

Deliver the pipeline

Increase R&D spending



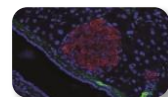
Key investments



Avelumab



BTK – inhibitor



TGF-beta trap

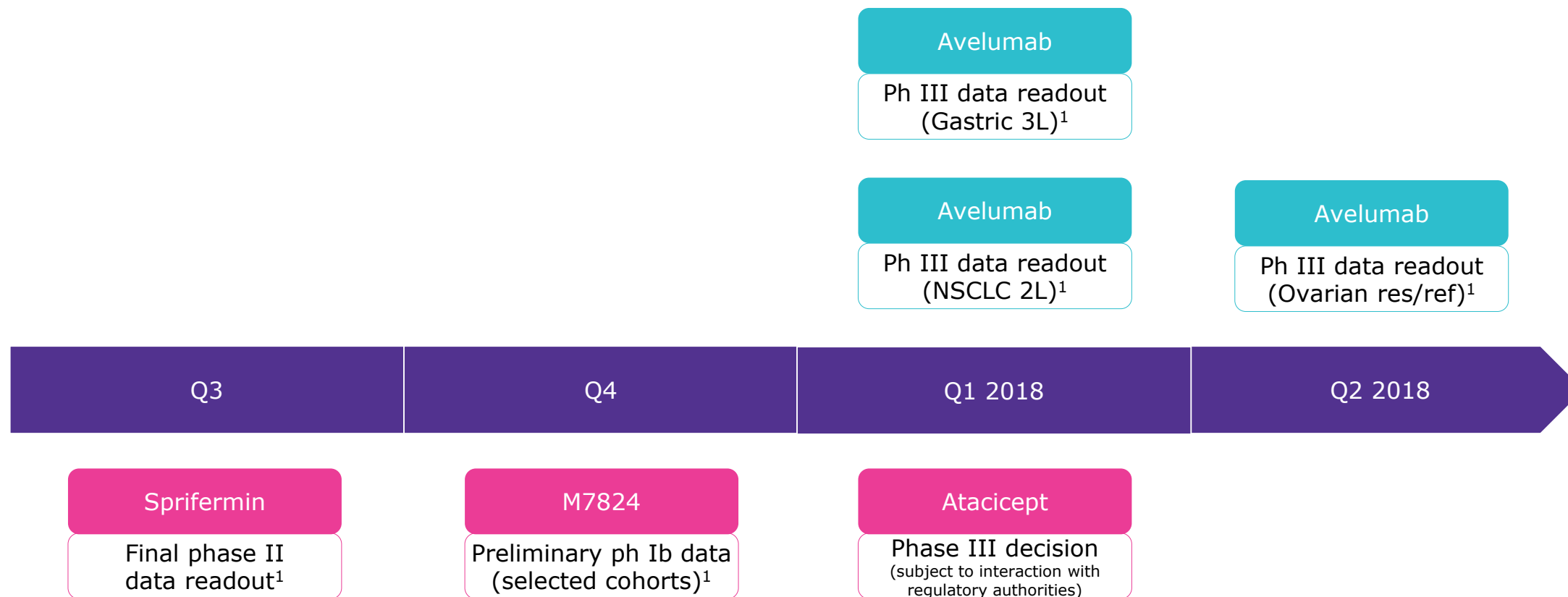
~€150 – 200 m higher R&D costs in 2017 vs. 2016

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

Healthcare

Newsflow timeline



¹ Data-read out is the internal date. Data to be presented at upcoming scientific congress | Acronyms: MCC = Merkel cell carcinoma | RA: Rheumatoid Arthritis | NSCLC: Non small cell lung cancer | RMS = remitting multiple sclerosis | Note: timelines are event-driven and may change



LIFE SCIENCE

Focus on profitable growth

Serving customers across the life science industry

RESEARCH



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

PROCESS



- Pharmaceutical companies
- Small biotech
- Contract manufacturing organizations

APPLIED

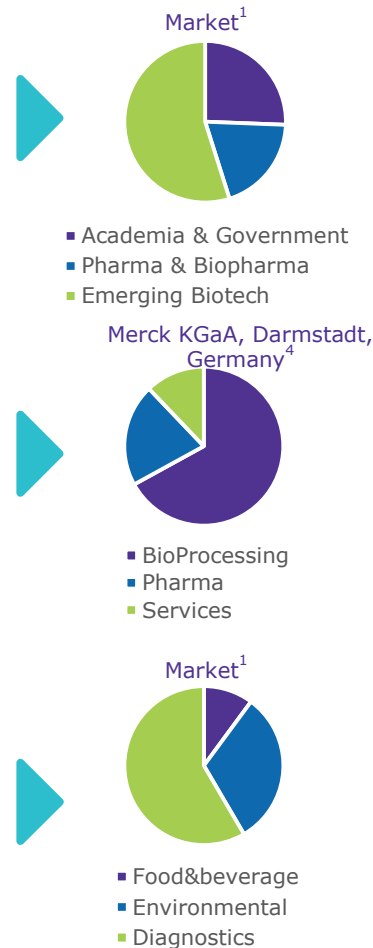
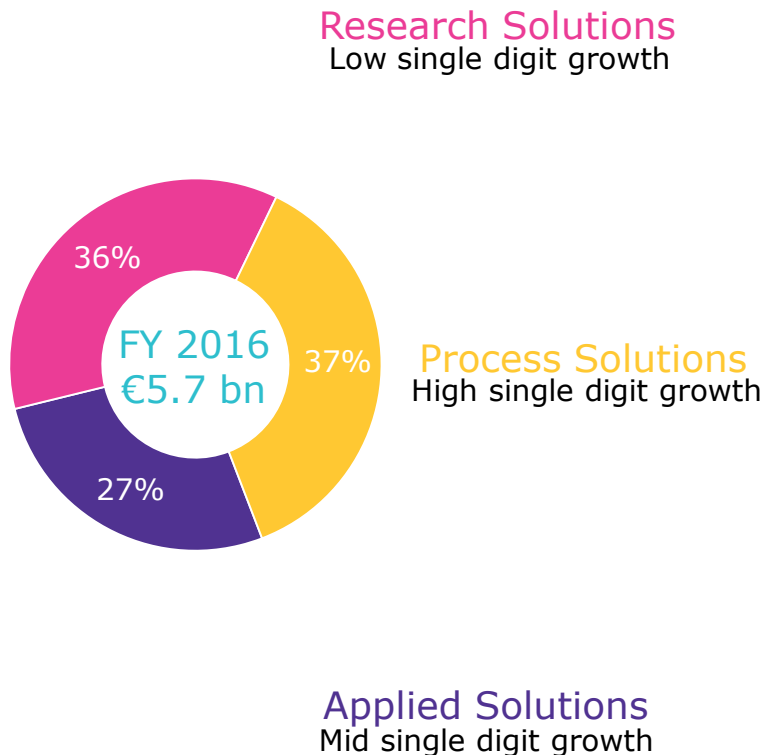


- Diagnostic manufacturers
- Clinical testing labs
- Food & Beverage manufacturers

Life Science

Business is on track to deliver above-market organic growth

Life Science



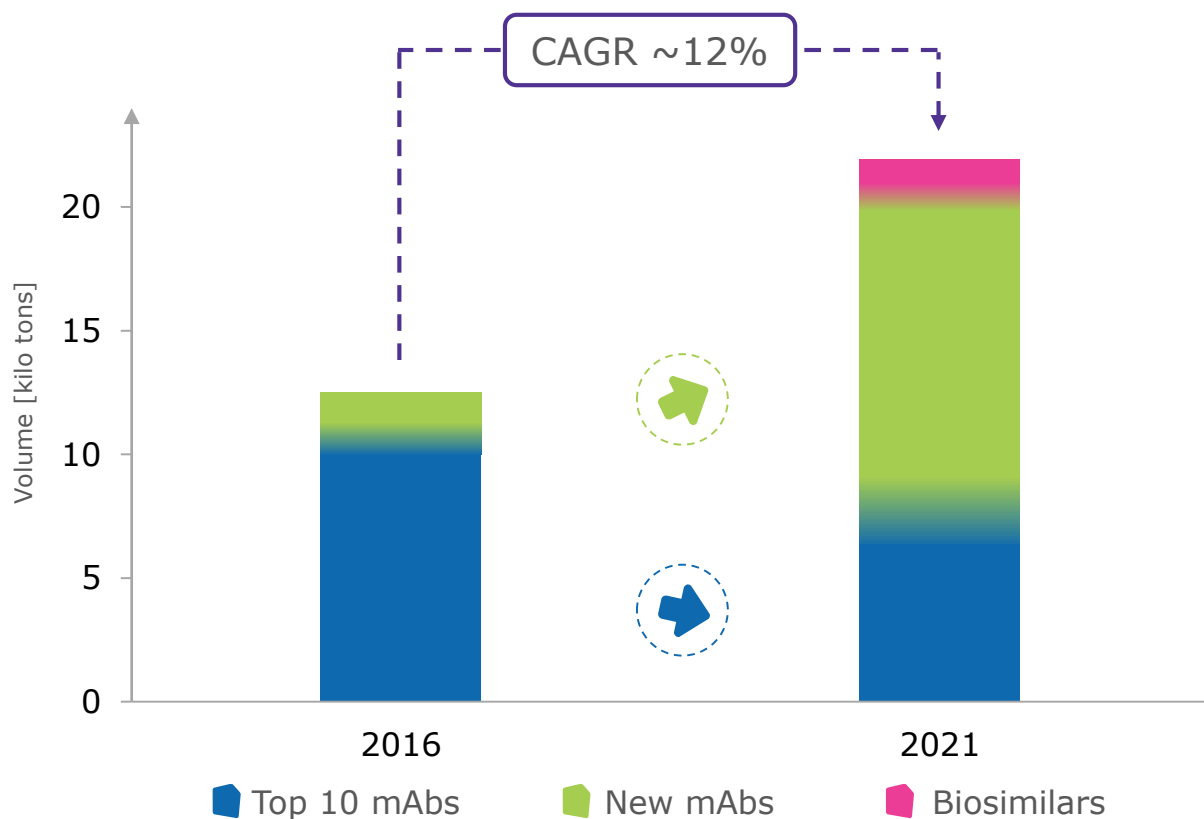
Long-term growth drivers

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

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

Democratization of mAbs market will drive diversification, change, variability

mAb volume projections 2016 to 2021



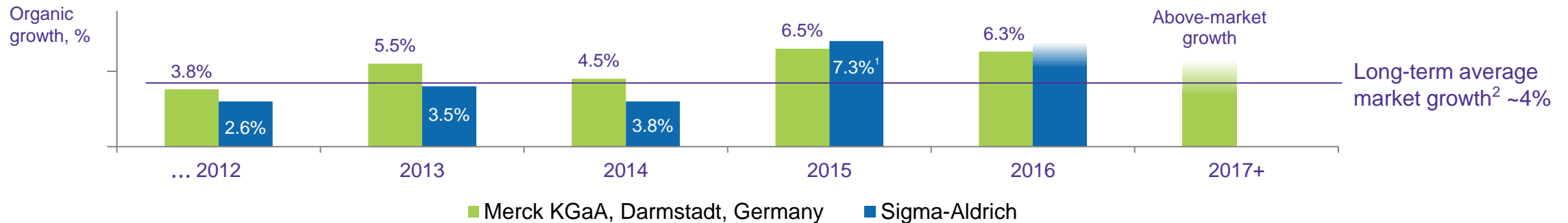
Market development

- Overall mAbs market will grow ~12% CAGR
- Top 10 originator mAbs represent ~80% of market volume
- In 2021 ~90% of the volume will be shared between Top 35 mAbs
- Biosimilars will gain share, but remain a minority mid-term

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

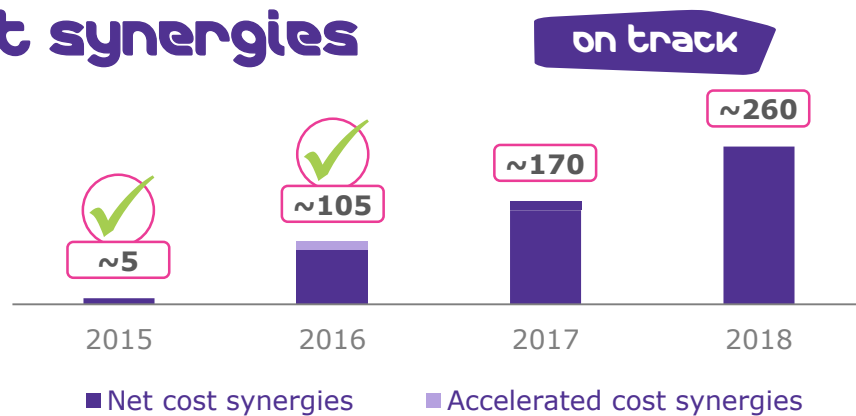
Top-line synergies

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

Integration of Sigma and synergy generation progressing well

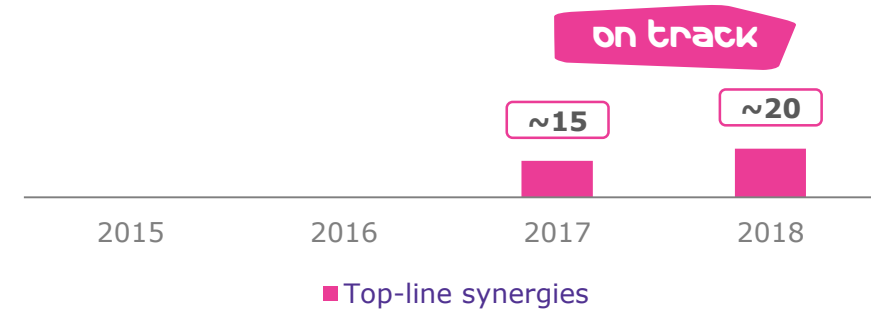
on track to deliver planned synergies of ~ €280 M until 2018

cost synergies



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

topline synergies



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







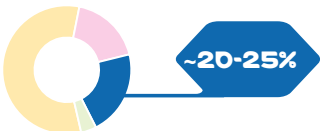







05

PERFORMANCE MATERIALS

Maintaining leadership and innovation

Performance Materials

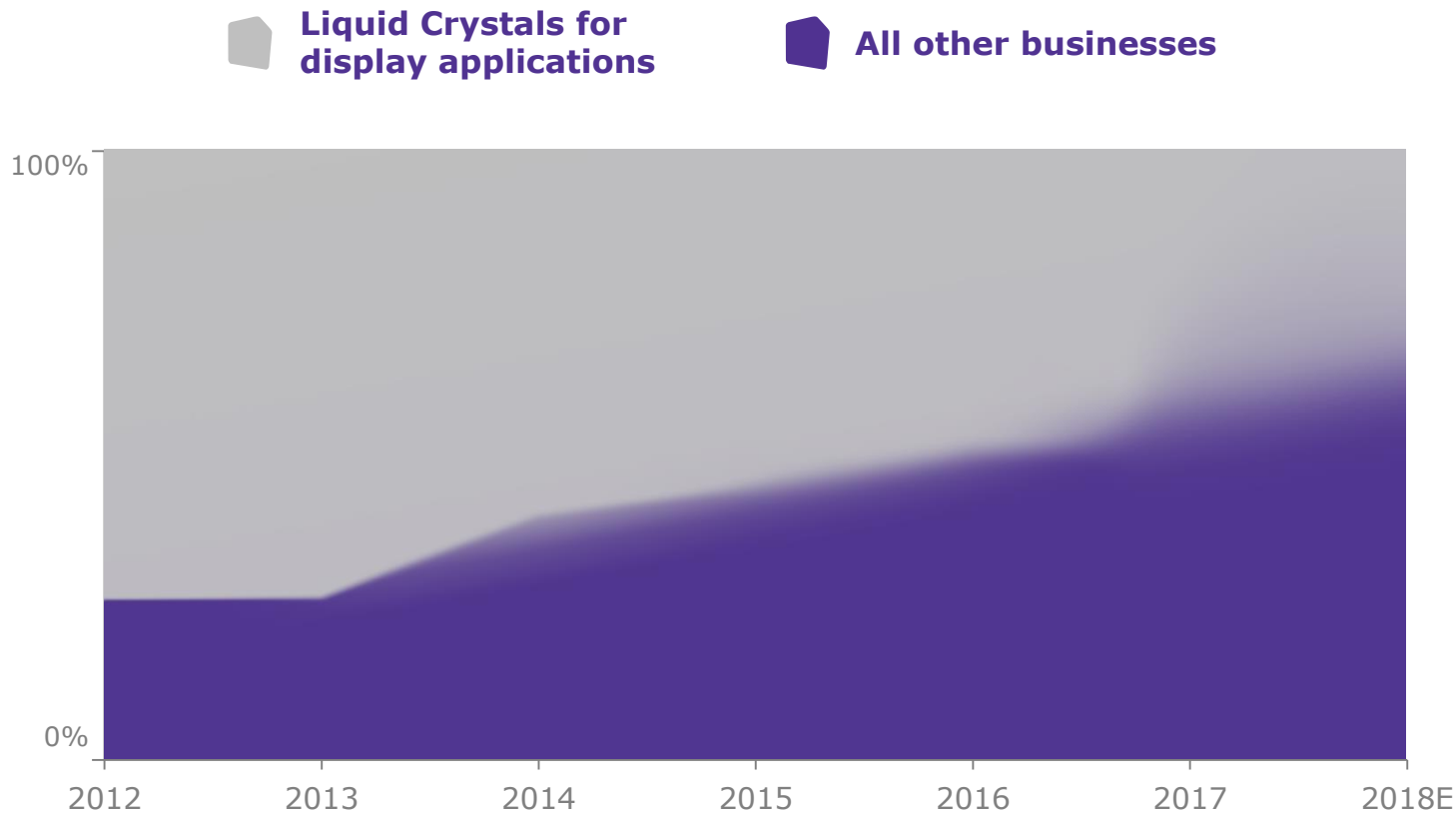
The four pillars are set for future profitable growth

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

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

Four-pillar-strategy drives Performance Materials to a higher level of diversification

Sales share of Liquid Crystals for displays versus all other businesses

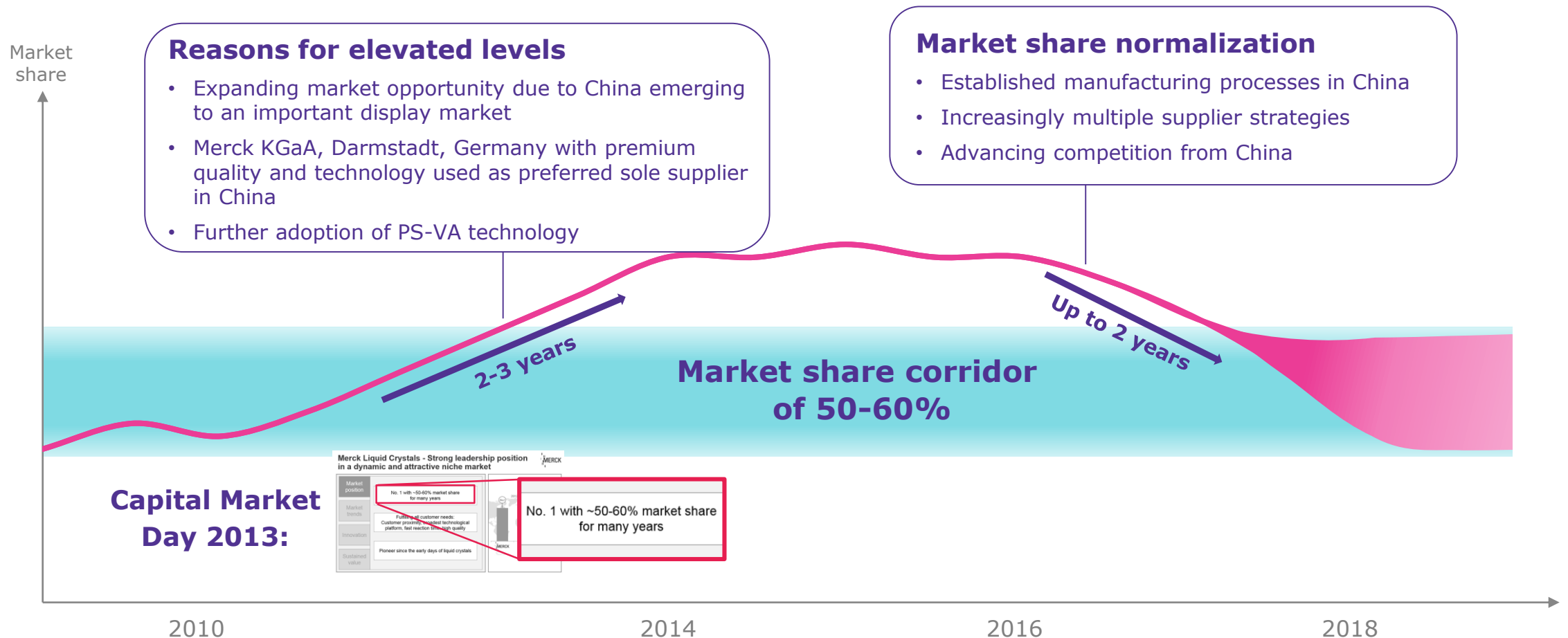


Diversification of Performance Materials increased due to

- AZ acquisition in 2014
- LC market shares returning to more normal levels
- Higher growth of non-LC businesses

Market shares are returning to normal levels

Our global liquid crystal market share development



Market share normalization will have financial implications

sales:

- ~ €200 – 300 m Liquid Crystals sales decline, depending on market share assumptions
- Started end of 2016; expected to last up to end of 2018

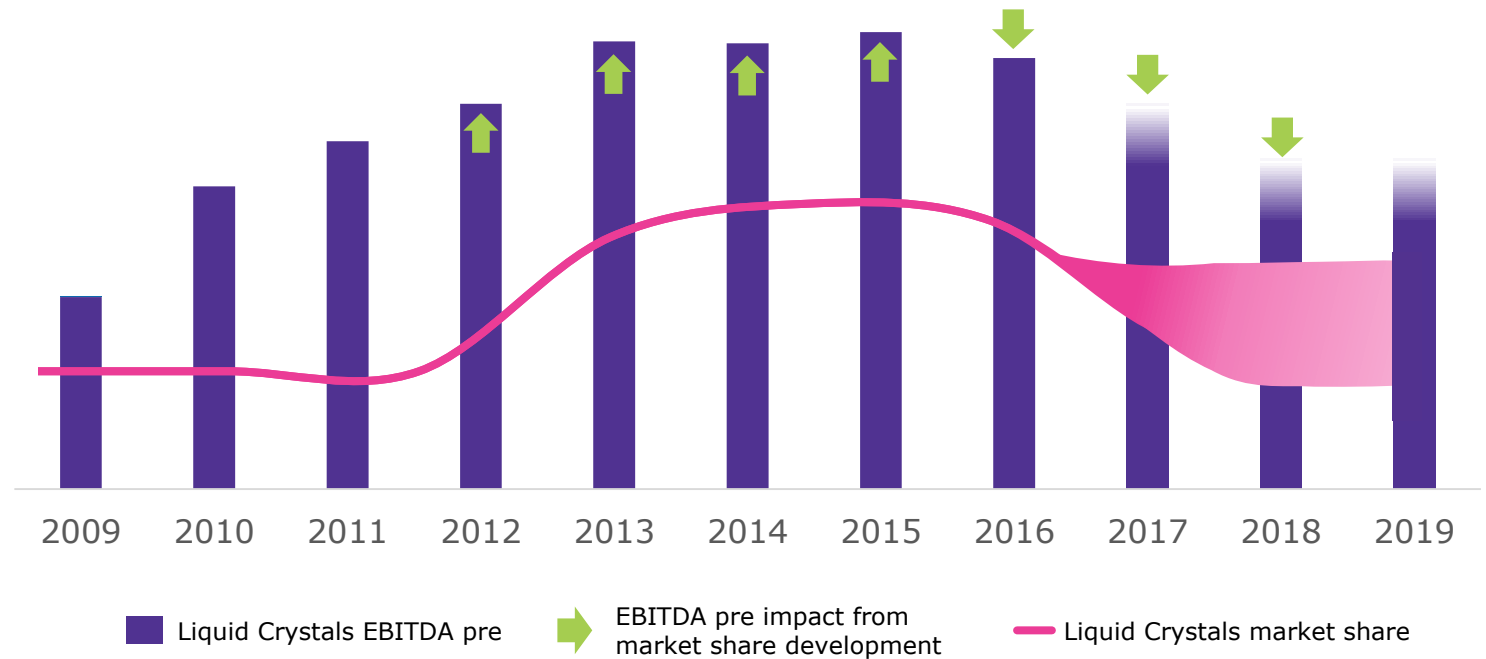
profitability :

- Volume growth temporarily below typical price decline
- Lower volume growth limits operational efficiencies
- Lower share of business with highest profitability causes negative mix

Earnings:

- Significant EBITDA pre impact

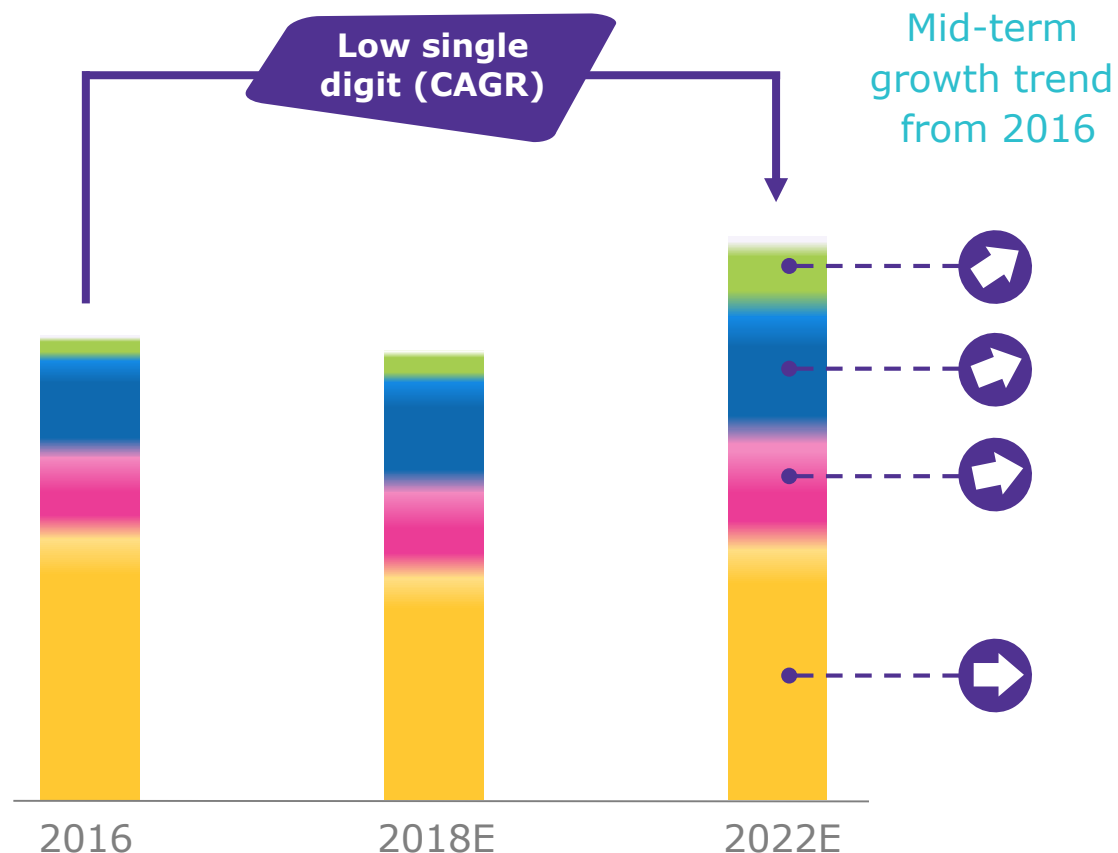
Liquid Crystals: Organic EBITDA pre and market share illustration



Strong sales and EBITDA pre contribution from 2012-2015 to reverse from 2017 onwards

Performance Materials on track to achieve solid growth path

Performance Materials mid-term sales development and drivers



Advanced Technologies

Enhance and exploit leading position in OLED

Integrated Circuit Materials

Outpace market growth with specialty materials assisting miniaturization

Pigments & Functional Materials

Expansion into larger functional material markets

Display Materials

- Assumed market share stabilization after 2018
- Area demand and capacity growth of ~4%
- New modes mitigating price declines (SA-VA, UB-Plus,...)
- Liquid Crystals initiatives beyond displays to contribute from 2018 onwards (windows, antennas, light guiding)



06 EXECUTIVE SUMMARY AND GUIDANCE

Group

We are well on track to deliver on our promises



Group

Net debt reduced by >€2 bn¹
Strict financial discipline supports rating



Healthcare

Base business growing
2 Bavencio indications & Mavenclad launched



Life Science

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



Performance Materials

Market challenges well managed
New technologies in test phase

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

**CMD²
December
2015**

**Q3 2017
Results**

2018

Group

We have clear financial priorities for the next two years



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

- **Strong cash flow** will be used to drive down gearing to <2x net debt / EBITDA pre in 2018
- **Larger acquisitions (>€500 m) 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

Full-year 2017 guidance

▶ Net sales: ~ €15.3 – 15.7 bn ◀

▶ EBITDA pre: ~ €4,400 – 4,600 m ◀

▶ EPS pre: ~ €6.15 – 6.50 ◀





Appendix

01 **Guidance details**

02 **Healthcare**

03 **Life Science**

04 **Performance Materials**

05 **Financial details**



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 – 2,000 m



Net sales

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

EBITDA pre

~ €1,780 – 1,850 m



Net sales

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

EBITDA pre

~ €950 – 1,050 m

Additional financial guidance 2017

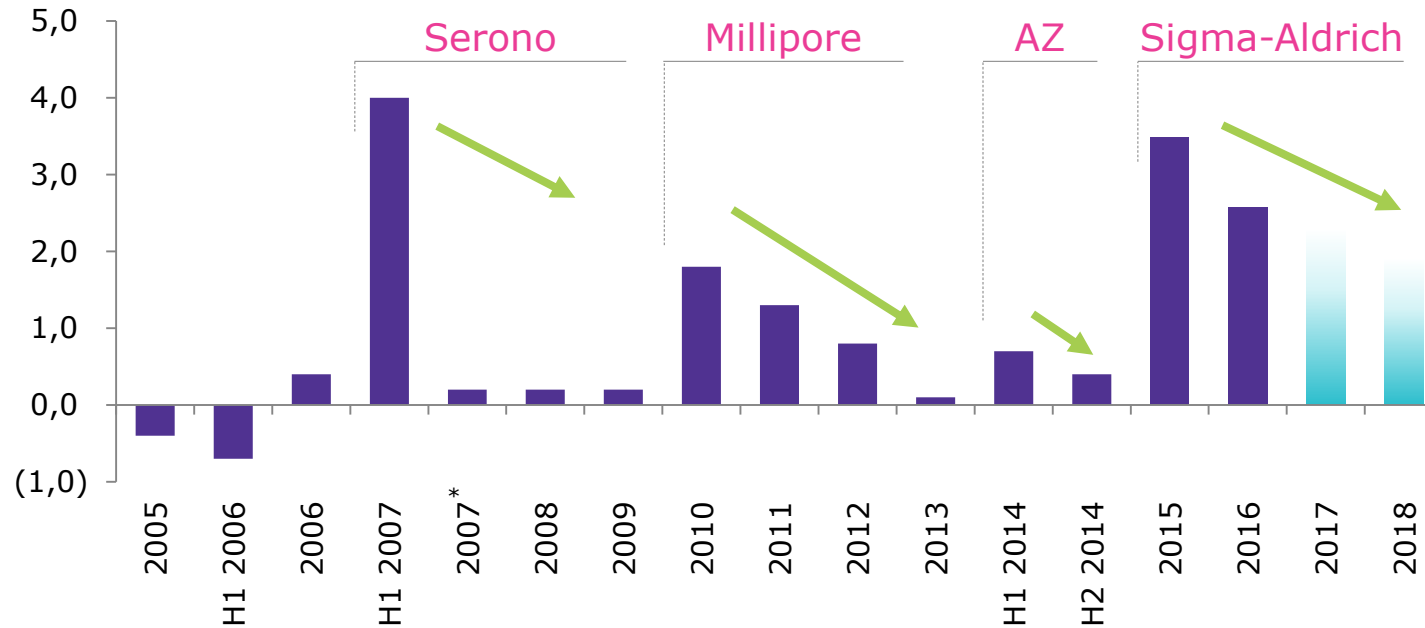
Further financial details

Corporate & Other EBITDA pre	~ -€300– -350 m
Interest result	~ -€250 – -260 m
Effective tax rate	~ 23% to 25%
Capex on PPE	~ €850 – 900 m
Hedging/USD assumption	Q4 2017 - 2018 hedge ratio ~ 60% at EUR/USD ~ 1.17 to 1.19
2017 Ø EUR/USD assumption	~ 1.12 – 1.14

Group

We remain focused on deleveraging

Net debt excl. pensions / EBITDA pre



- We have a strong track record of disciplined deleveraging after large acquisitions
- We stay focused on deleveraging to gain financial flexibility

Merck KGaA,
Darmstadt,
Germany

- **Deleverage to <2x net debt / EBITDA pre in 2018**
- **No large acquisitions (>€500 m) until end of 2018 (unless financed by divestments)**
- **Dividend policy reflects sustainable earnings trend**

FX sensitivity varies across our businesses



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 on EBITDA pre



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 on EBITDA pre



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

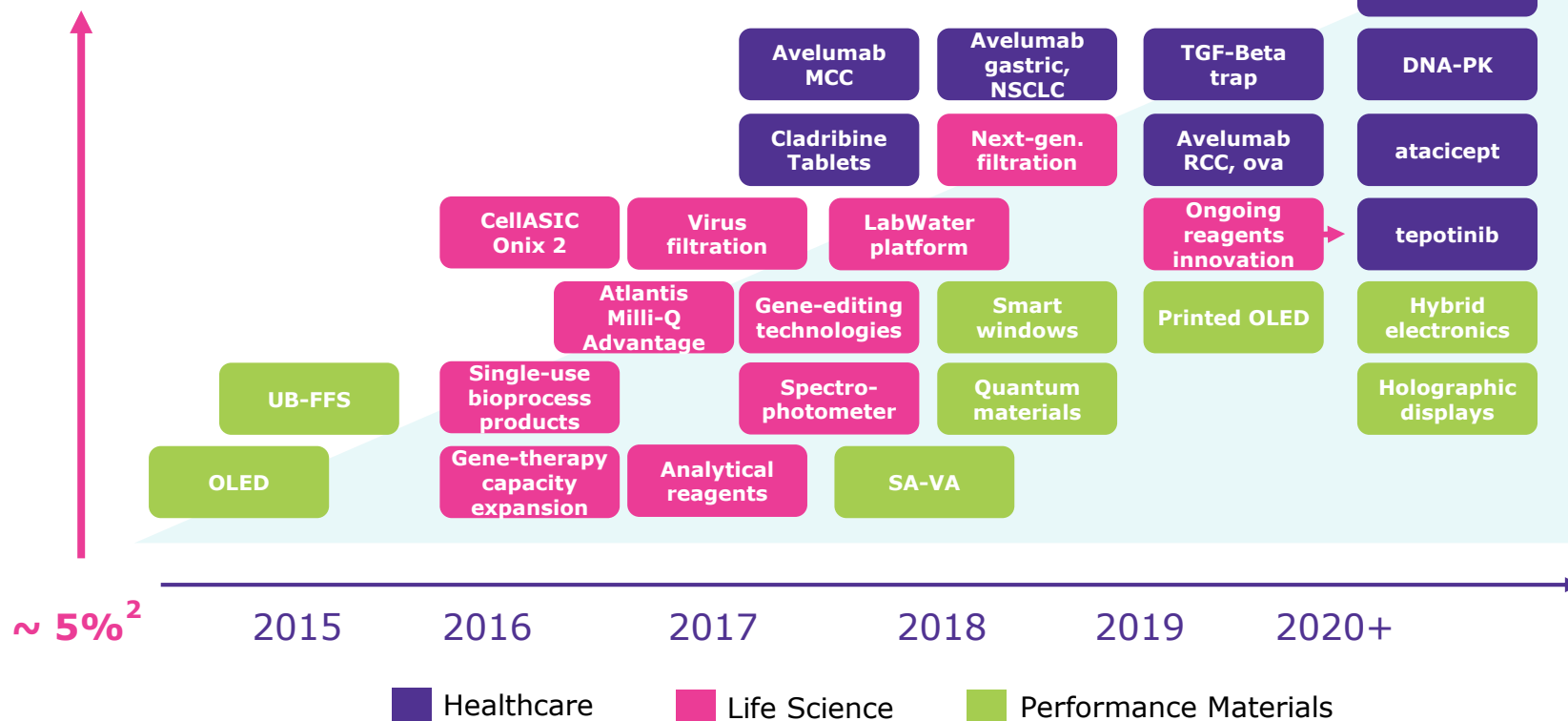
FX impact on EBITDA pre



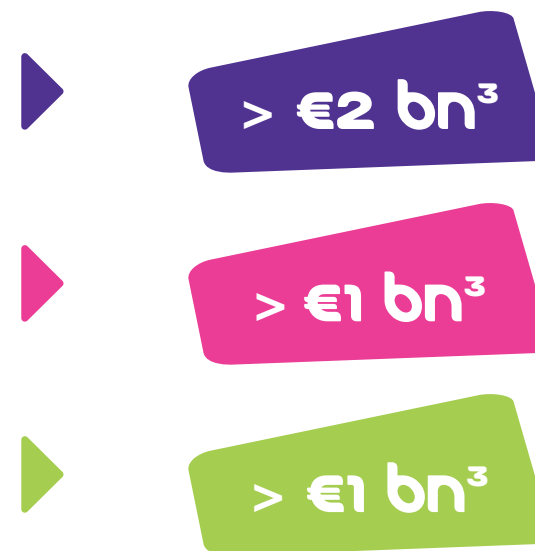
Our strong innovation capabilities will drive growth

New product launch cadence¹ by business sector

~ 20%²



New product sales³ potential 2022



Our rich pipeline will strongly drive sales

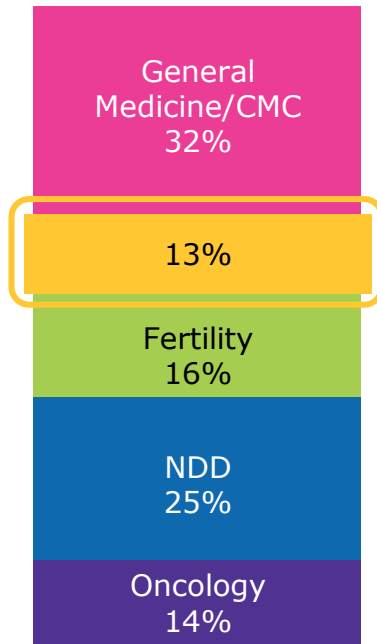


02 HEALTHCARE

Healthcare

Preparing strategic options for Consumer Health

Healthcare - Net sales 2016



CH

- ▶ Consumer Health entering next phase
- ▶ Accelerating successful future development
- ▶ Strategic options include potential full or partial sale or strategic partnerships

high-quality brands

- Well-recognized consumer brands in attractive categories
- Differentiated and compelling consumer brand positioning

diversified presence

- Well-balanced presence in >40 markets
- Strong footprint in emerging markets: >50% of sales from growth markets

high-growth Markets

- Global €100 bn OTC* market seen growing ~5% until 2025
- Strong demand drivers: demographics, emerging markets, self-care demand

attractive financials

- Sales ~€860 m in 2016: organic CAGR 2013-2016 ~6%
- ~3,800 employees globally

Accelerating strategy; fully capturing market opportunities; strong business with leading brands in attractive OTC categories

Healthcare

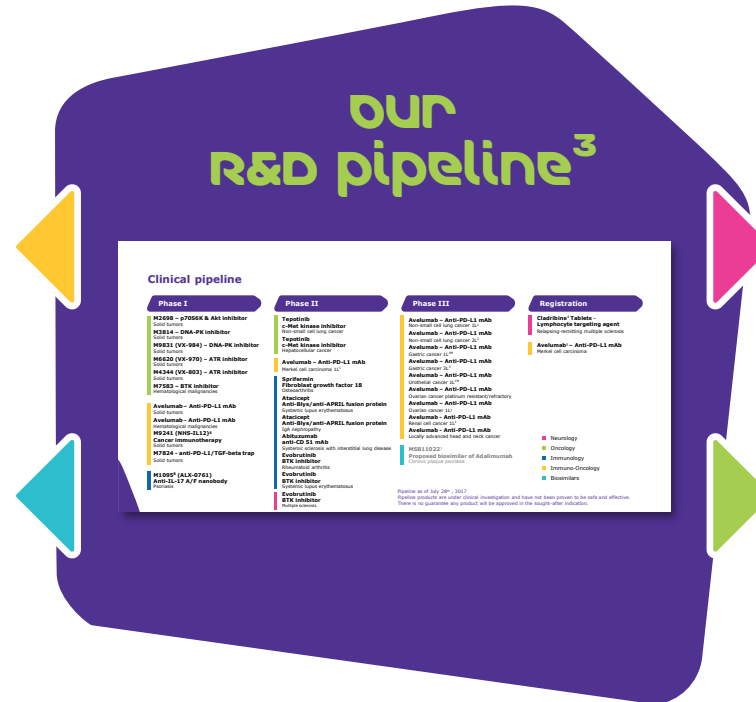
Pipeline optionality turning into launches

First approvals and launches

- 4 approvals for Bavencio®:
U.S. in 2 indications (mMCC, mUC)¹,
Europe² and Japan in 1 indication
(mMCC)
- Mavenclad® approval in Europe
- Mavenclad® U.S. filing: Go/no-go
decision until end of 2017

Encouraging clinical data

- Evobrutinib RA: clear positive signal in pre-specified patient population in Phase IIa; initiated IIb dose-finding
- Sprifermin: encouraging data; regulatory pathway in discussion



Upcoming newsflow

- Avelumab: 3 Phase III readouts in H1 2018
- Atacicept: expected Phase III decision in Q1 2018
- TGF-Beta trap: first preliminary data to be presented in November 2017

Disciplined funding

- 2017 Healthcare R&D costs to increase by ~€150-200 m YoY
- 2018 R&D cost development will be subject to clinical data, partially offset by biosimilars cost savings
- Ongoing prioritization and potential partnering to maximize asset potential

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 (VX-970)
ATR inhibitor
Solid tumors

M4344 (VX-803)
ATR inhibitor
Solid tumors

M3541
ATM inhibitor
Solid tumors

M8891
MetAP2 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)⁴
Cancer immunotherapy
Solid tumors

M7824
anti-PD-L1/TGFbeta trap
Solid tumors

M4112
Cancer immunotherapy
Solid tumors

M1095 (ALX-0761)⁵
anti-IL-17 A/F nanobody
Psoriasis

M6495
anti-ADAMTS-5 nanobody
Osteoarthritis

M5717
PeEF2 inhibitor
Malaria

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 cancer 1L¹

sprifermin
fibroblast growth factor 18
Osteoarthritis

atacept
anti-Blys/anti-APRIL fusion protein
Systemic lupus erythematosus

atacept
anti-Blys/anti-APRIL fusion protein
IgA nephropathy

abrituzumab – anti-CD51 mAb
Systemic sclerosis with interstitial lung disease

evobrutinib
BTK inhibitor
Rheumatoid arthritis

evobrutinib
BTK inhibitor
Systemic lupus erythematosus

evobrutinib
BTK inhibitor
Multiple sclerosis

Phase III

avelumab - anti-PD-L1 mAb
Non-small cell lung cancer 1L¹

avelumab - anti-PD-L1 mAb
Non-small cell lung cancer 2L²

avelumab - anti-PD-L1 mAb
Gastric cancer 1L-M^{1M}

avelumab - anti-PD-L1 mAb
Gastric cancer 3L³

avelumab - anti-PD-L1 mAb
Ovarian cancer platinum resistant/refractory

avelumab - anti-PD-L1 mAb
Ovarian cancer 1L¹

avelumab - anti-PD-L1 mAb
Urothelial cancer 1L-M^{1M}

avelumab - anti-PD-L1 mAb
Renal cell cancer 1L¹

avelumab - anti-PD-L1 mAb
Locally advanced head and neck cancer

Pipeline as of November 1st, 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.

Registration

cladribine tablets
lymphocyte targeting agent
Relapsing multiple sclerosis⁶

- Oncology
- Immuno-Oncology
- Immunology
- Neurology
- General Medicine

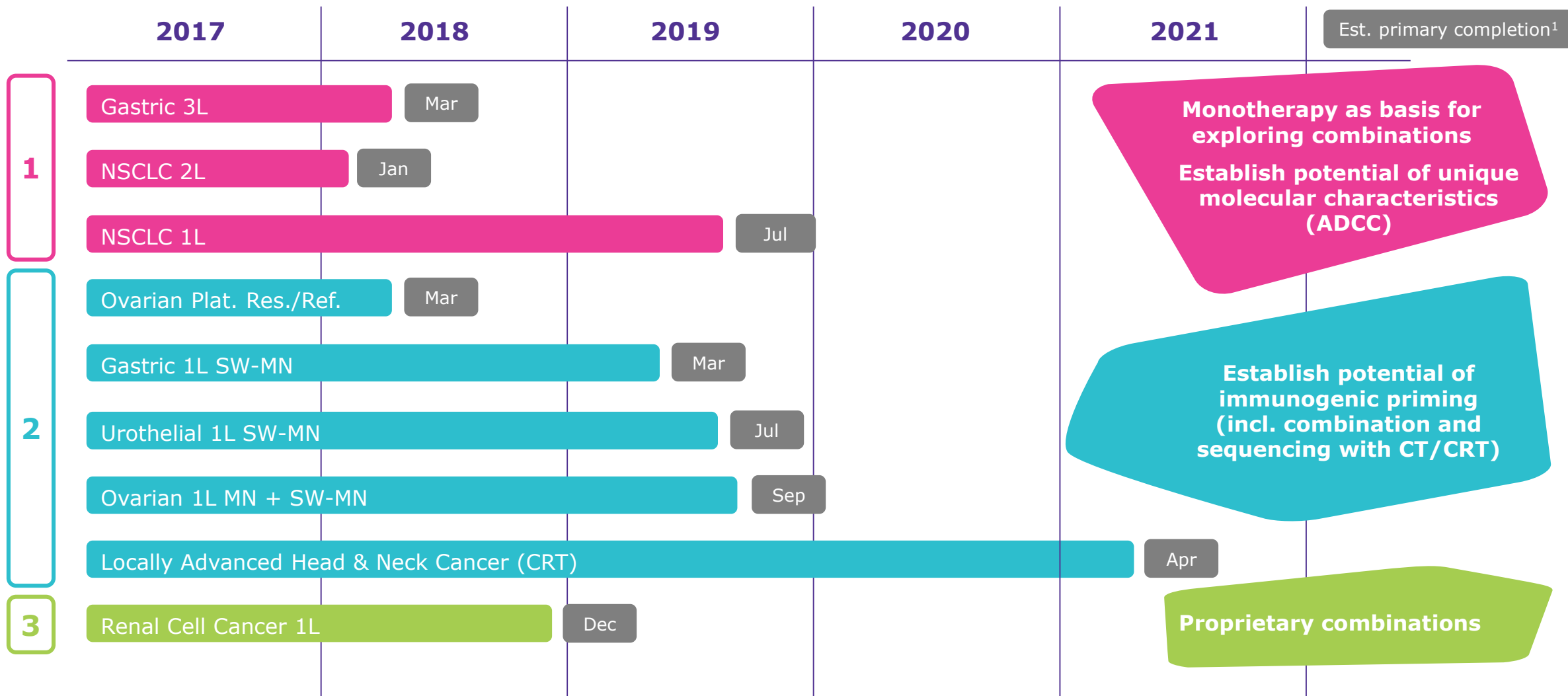
¹ First Line treatment; ^{1M} First Line maintenance treatment; ² Second Line treatment; ³ Third Line treatment; ⁴ Sponsored by the National Cancer Institute (USA);

⁵ As announced on March 30 2017, in an agreement with Avillion, anti-IL-17 A/F nanobody will be developed by Avillion for plaque psoriasis and commercialized by Merck KGaA, Darmstadt, Germany;

⁶ As announced on August 25 2017, the European Commission has granted marketing authorization for cladribine tablets for the treatment of highly active relapsing multiple sclerosis in the 28 countries of the European Union in addition to Norway, Liechtenstein and Iceland.

1 Avelumab

Nine ongoing pivotal studies with differentiation potential



¹ Estimated primary completion date according to Clinicaltrials.gov as of November 08, 2017

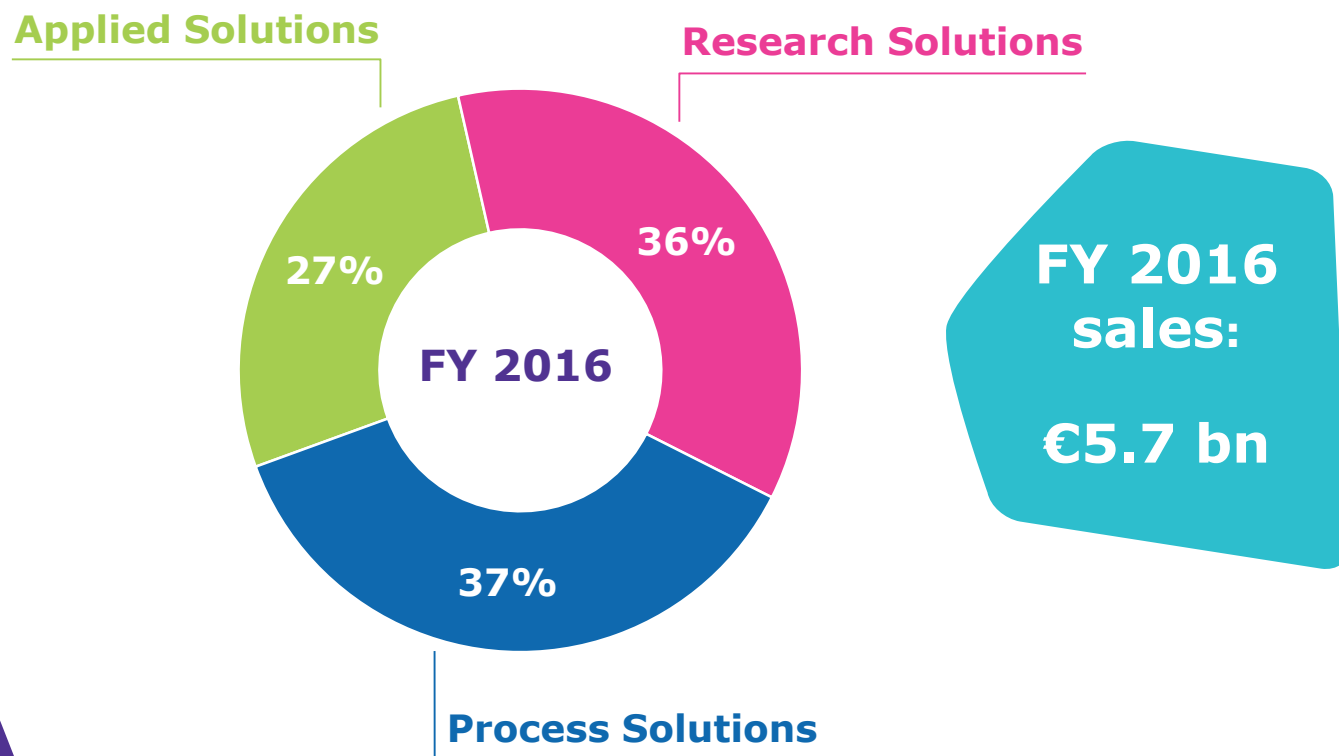
Acronyms: CT: Chemotherapy | CRT: Chemoradiotherapy | Plat. Res./Ref.: Platinum Resistant/Refractory | MN: Maintenance | SW: Switch



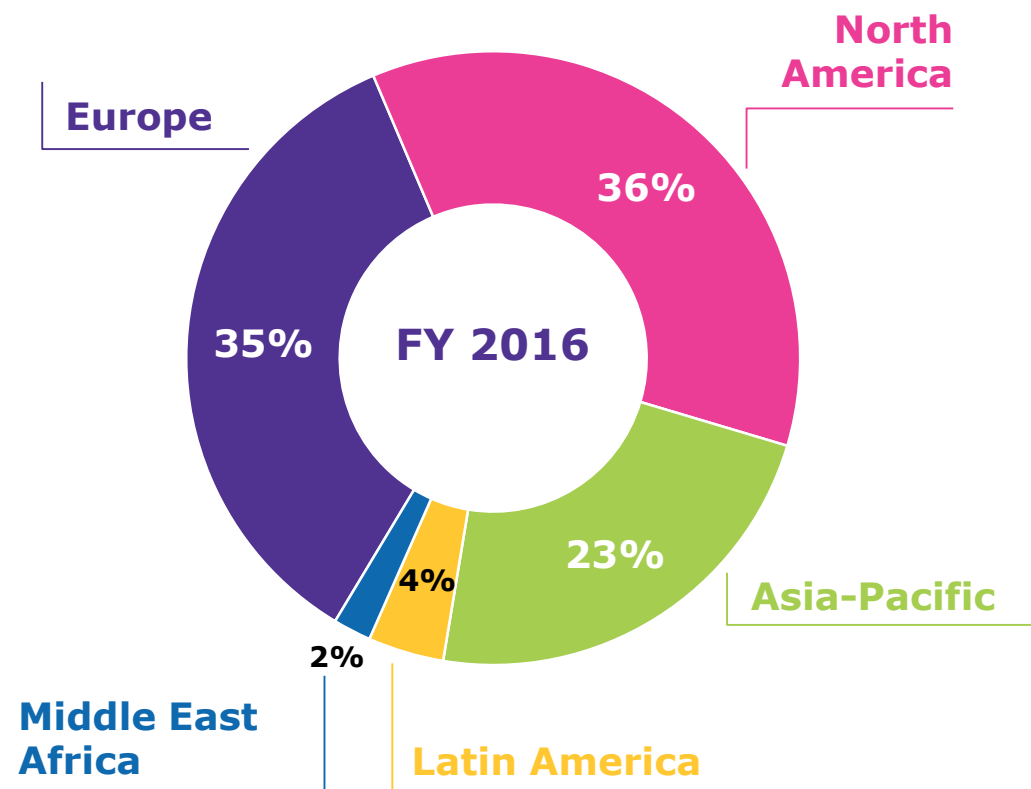
03 LIFE SCIENCE

A balanced portfolio and geographic presence

Sales by business unit



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

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



Hundreds of thousands of products at your fingertips



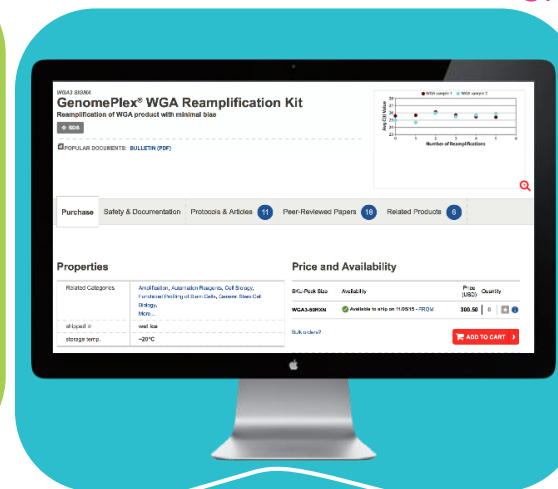
CONTENT



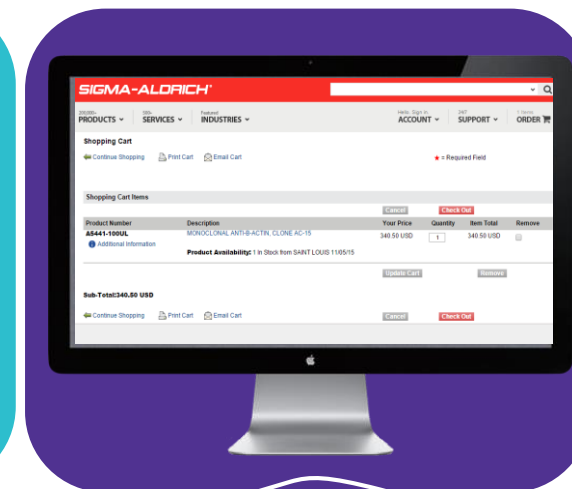
Online leader in scientific content: articles, protocols and peer reviewed papers



ORDER



Real-time pricing and availability



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

Focus on strategic growth initiatives will secure long-term growth

Strategic initiative



END TO END



SINGLE-USE



GENE EDITING &
CELL THERAPY

Ambition

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

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

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

Strategic initiatives are key contributors to €1 bn new product sales ambition in 2022



04

PERFORMANCE MATERIALS

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

Market position

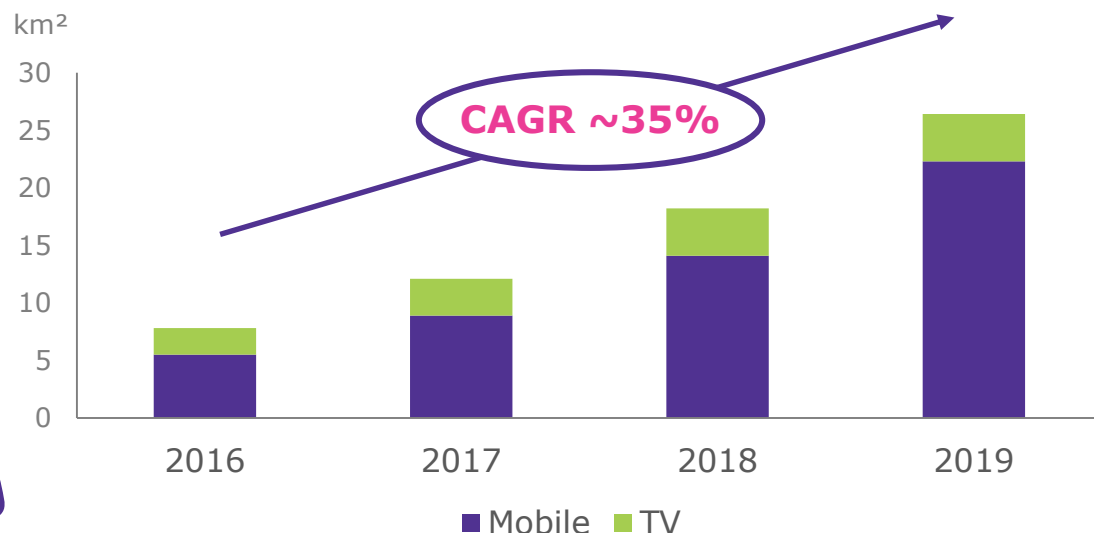
- Among top 3 OLED material provider
- Unrivalled experience and expertise in displays
- Long & intimate relationships with all display producers
- Recent capacity expansion to serve growing demand

our ambition

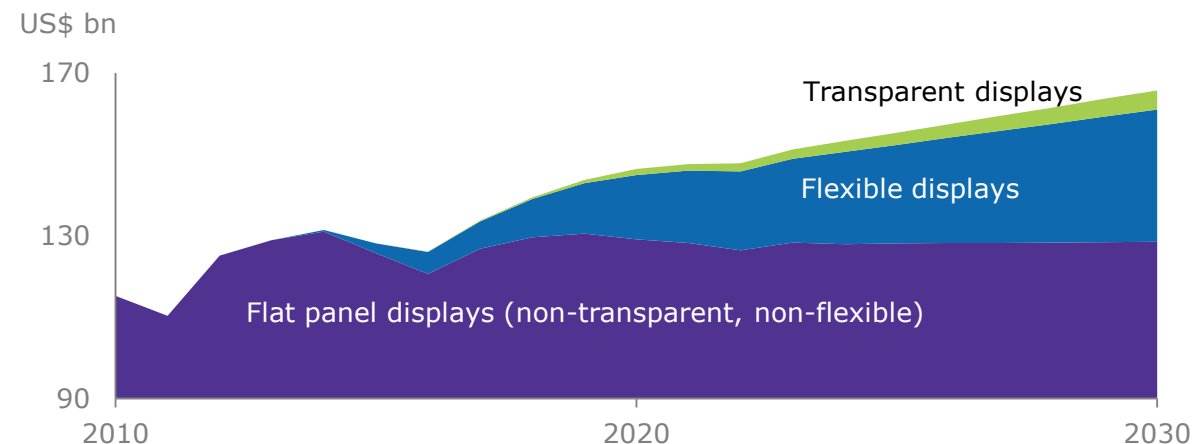
solution provider

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

Announced OLED capacity expansion¹

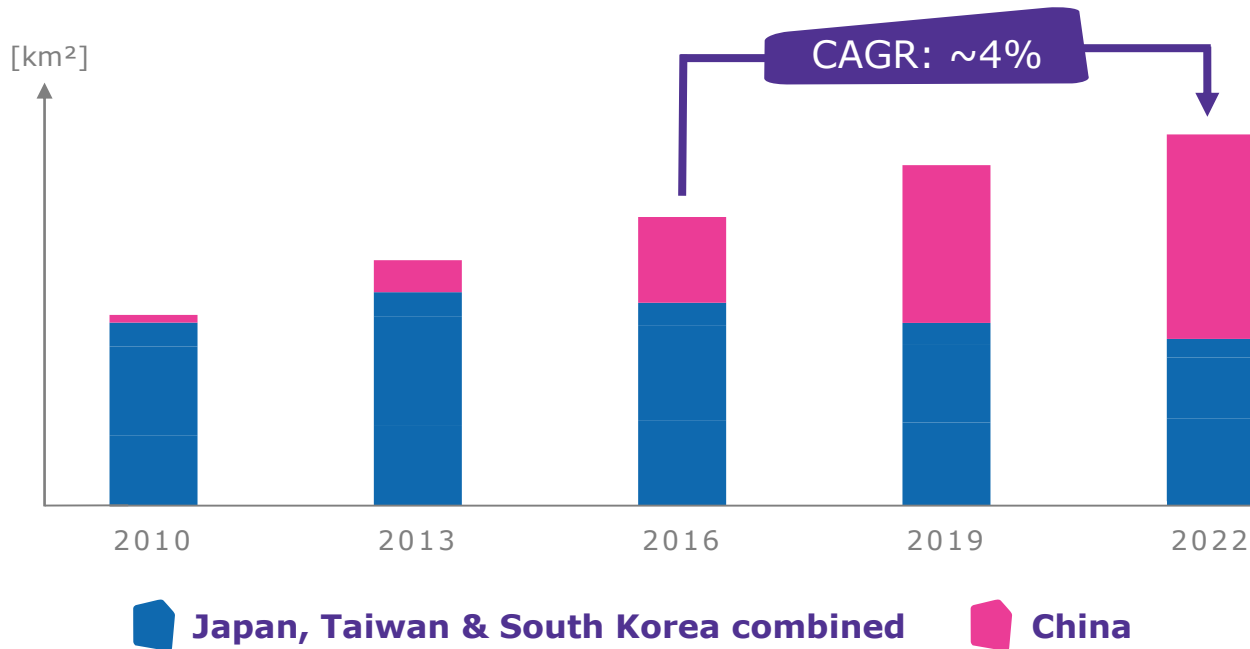


Display market development¹



Merck KGaA, Darmstadt, Germany will leverage its capabilities to address shift towards more dynamic Chinese market

Share of global display production capacities by region [km²]*



Panel market dynamics in China

- Strong capacity build-up since 2012
- Historically main focus on local market supply with low to medium end displays
- Possibility to enter into global and higher-end markets in the future

Leverage Company's competitive advantage

- *Customer proximity:* Reallocate resources to improve specific customer support
- *Application and production know-how:* Develop technologies that translate into commercial value
- *Continuous innovation:* Investments in Shanghai R&D hub to support local customers

Capacity growth will benefit our leading supply capabilities especially from 2019

Challenges in LC displays amid various opportunities for novel applications

LC for display applications



Maintain leadership position in a more challenging environment:



Innovation

Two new modes SA-VA and UB-Plus in tests with several customers



Know-how

Unrivalled understanding of displays to solve customer challenges with new facilities, especially GEN 10



Customer

Presence in all customer locations versus more local focus of competitors



IP protection

>2,000 patents and rigorous enforcement of IP

NOVEL Liquid crystals applications



Drive innovation and create further market demand:



LC Windows

LC-Window production facility to start production in Q4 2017 – first project realizations expected in 2018



LC Antennas

Completed product testing with partner Kymeta – expected launch for special applications in 2018



Lighting guiding

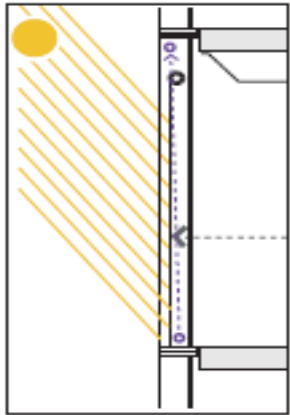
Collaboration with Hella and Porsche progressing well. Market demand for high resolution headlamps increasing.

Smart windows can offer significant added value to the operating cost of modern buildings

Smart windows

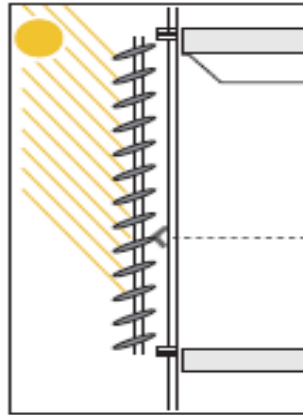
Challenges today

Green performance



Double skin facade

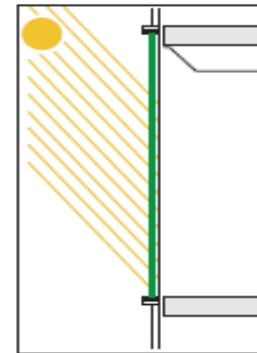
Architectural design



Sun shades, take away real estate

Merck KGaA, Darmstadt, Germany Solution

Smart windows



- Single skin facade with liquid crystal shading:
 - Same performance
- Less material and weight
- More floor area
- No maintenance

Freedom of design for premium architecture

Liquid crystals OFFER a variety of opportunities



1

3

4

5

2

6

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

Integrated Circuit Materials

Leading market positions in profitable niches supported by technology trends

ICM¹ sales by end use



■ Memory ■ Logic
■ Foundry² ■ Packaging
■ Other

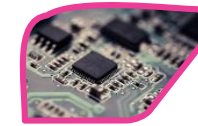
Product portfolio



Lithography materials



Dielectric materials



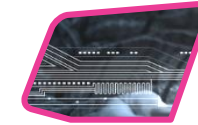
Conductive pastes



Process materials



Silica materials



Deposition materials

Growth drivers and differentiation

- Volume growth is generally driven by wafer starts, estimated to grow with a CAGR of ~5% until 2022
- Merck KGaA, Darmstadt, Germany **outgrowing market** due to:
 - **Innovative** solutions, **broad** portfolio offering and **global** company footprint
 - Benefit from **smaller and more complex** structures (3D chip architecture)
 - Strong **process expertise & application knowhow** enabling cost-efficient production for our customers (improved yield, lower energy, less material)

Enabler of key technology trends



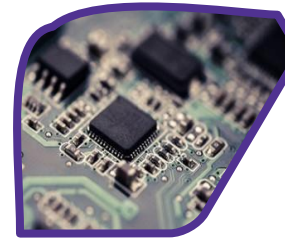
Lithography materials

Innovation focus:
Enabling structures
in nodes smaller
than 14 nm



Dielectric materials

Enabling cost-efficient
production of the
newest memory
generations



Conductive Pastes

Electrically conductive
materials for use in
the manufacture of
advanced electronic
devices

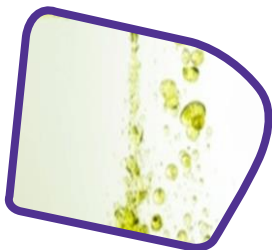
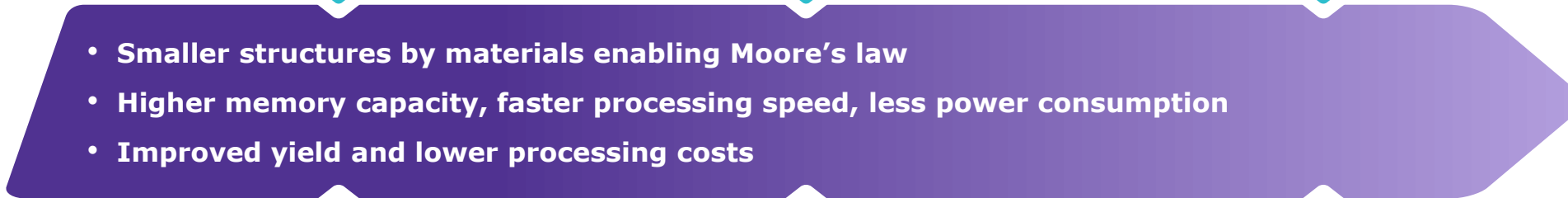
Newest generation of smartphones



Servers enabling Big Data



Wearables and other devices for Internet of Things



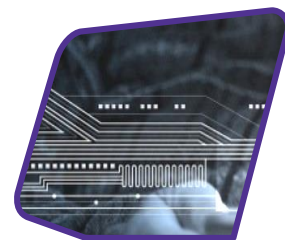
Process materials

Supporting the
manufacturing
process for all kinds
of IC devices,
e.g. IoT



Silica materials

Innovation focus:
High removal rate in
CMP without defects



Deposition Materials

Next Generation
Deposition materials
for ALD and CVD

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

Market drivers and technological trends

Miniaturization: Devices are becoming smaller with better performance

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

Mobility: Everyone is continuously connected without direct power supply

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

Internet of Things: Everything is continuously connected

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

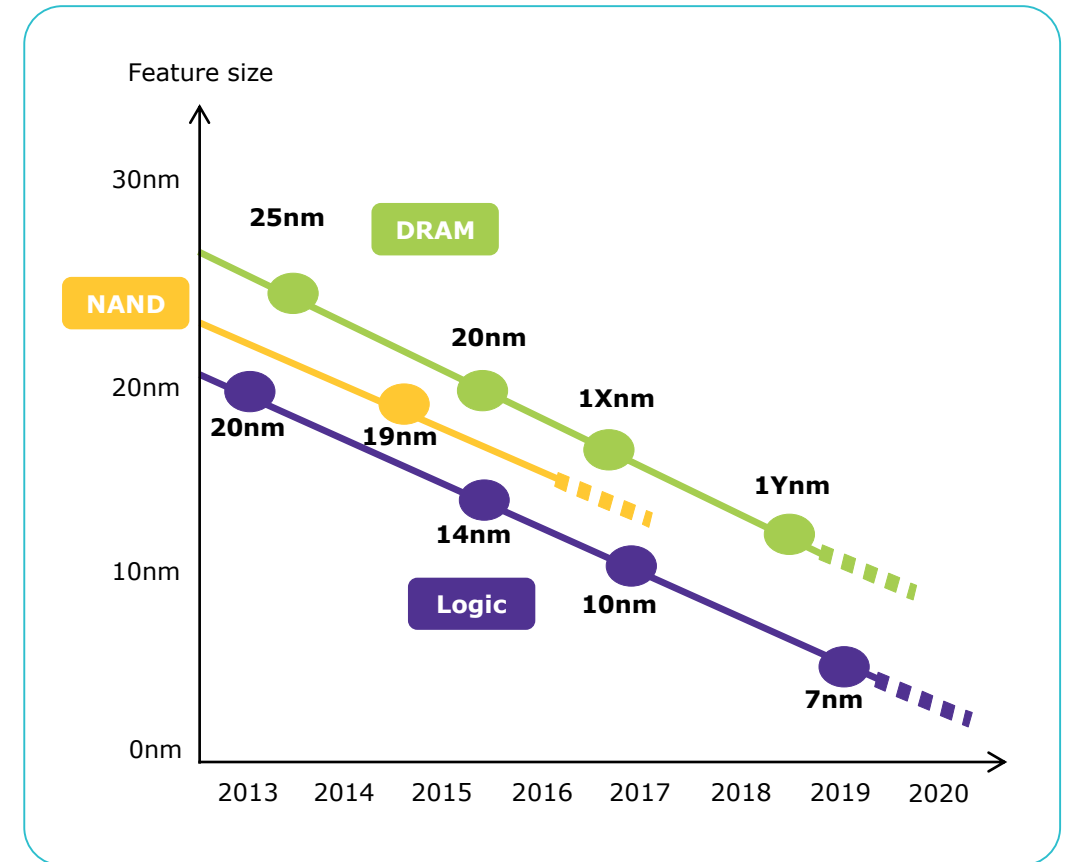
Big Data: Increasing need for intelligent data storage

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

Selected competitors

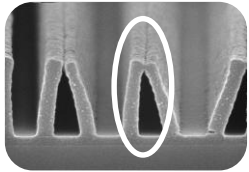
- Tokyo Ohka Kogyo
- Dow Electronic Materials
- Nissan Chemicals
- JSR

Feature sizes develop as predicted by Moore's law

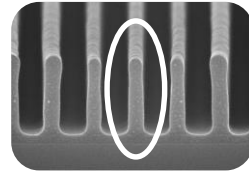


Expanding the limits of how small you can go

Pattern collapse

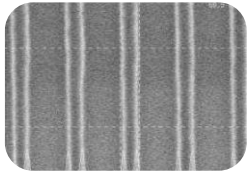


AZ FIRM® rinse materials



As lines get narrower and closer together in advanced chip generation, lines tend to “stick” due to surface tension.

Lithography limitation

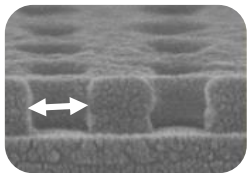


Directed self-assembly (DSA)

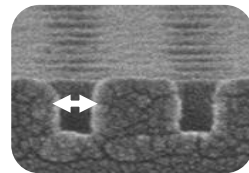


Block copolymer can generate small lines or contact holes by self-assembly. This allows miniaturization without expensive new equipment.

Wide features



AZ Relacs® shrink materials



Shrink materials “shrink” the gap between lines and, hence, allow the manufacture of narrower features otherwise not possible.

We deliver highly innovative solutions for complex customer problems

Pigments and Functional Materials

Driving innovation by combining color & function

Pigments & Functional Materials sales by end use



■ Decorative Materials

Product portfolio

Decorative



Color cosmetics

Plastics

Printing

Car coatings

Functional



Laser marking

Coating & Printing

Personal care

Security

Growth drivers and differentiation

- Volume growth for established decorative business is generally driven by rising living standards in line with GDP*
- Addressable market increasing from €2 bn to €5 bn due to **further expansion into functional markets** combining color and function
- Factors of differentiation to outperform market growth:
 - Broad product portfolio with **unique high-end products**
 - **Global footprint** and diverse customer base ensuring good market access
 - Strong know-how of end applications of our customers enabling **increase of share-of-wallet** and **expansion into new applications**

Broad portfolio of Decorative Materials to offer new opportunities in enriching customers' products



Applications

Car coatings



Industrial coatings



Printing



Plastics



Architecture



Color cosmetics



Food & pharma



Design



Brands

Cosmetics



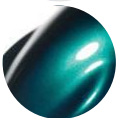
Timiron®
Colorona®
Xirona®
RonaFlair®
Ronastar®



Industrial applications



Colorstream®
Xirallic®
Miraval®
Biflair®
Meoxal®



Iriodin®
Pyrisma®
Thermaval®

Food & pharma



Candurin®



Decorative Materials

- Developing and marketing innovative effect pigments for various application areas
- Most important target markets include the coatings industry focused on automotive application, the plastics industry, printing companies and cosmetics manufacturers
- Continuous effect pigment innovations offer our customers new opportunities to continuously upgrade their product designs with striking hues and effects.

Functional Materials offers a wide portfolio to fulfill very specific industry needs



Functional Materials

- Developing and marketing functional pigments and additives that offer practical advantages and specific additional benefits for coating manufacturers and plastics and printing industries
- Effects include electrical conductivity, solar heat management and counterfeit prevention
- Offers cosmetics manufacturers functional solutions for skin care and protection

Applications

Personal care



Laser marking



Security



Coating & Printing



Brands

Light protection



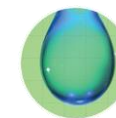
Eusolex®
Oxyhex®

Insect Repellents



IR3535®
IR88®

Surfaces



Tivida®
Durazane®

Security



Colorcrypt®
Colorcode®
Securalic®
Lustrepak®

Skin perfection



RonaCare®
RonaFlair®

Laser marking



Iriotec® 8000

Conductivity/ heat management

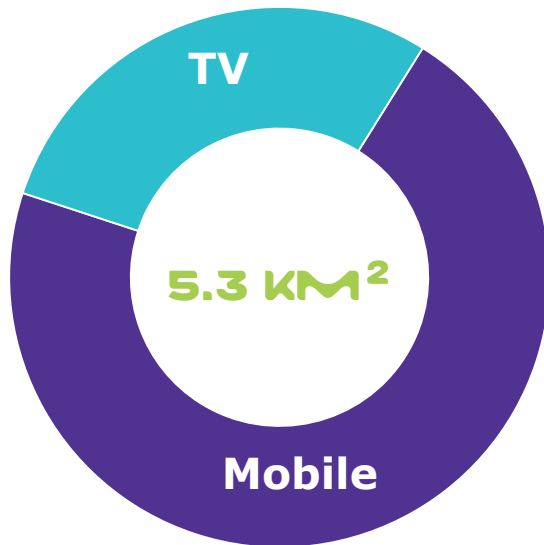


Iriotec® 7000
Iriotec® 9000

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

OLED Shipment Area*

[km²]



Product portfolio

Evaporable OLED Materials



Printable OLED Materials



Growth drivers and differentiation

- Volume growth is driven by large investments of OLED panel manufacturers, especially in the mobile market segment
- Strong **R&D and licensing** activities to strengthen our market share
- Factors of differentiation:
 - Broad product portfolio of **evaporable and printable** high-end materials
 - Intimate **customer relations and application labs** in China, Taiwan & Korea
 - Strong supply chain, production capacity and **superior quality** standards

OLED – Innovative material for self-emitting devices like flexible displays and next generation lighting



OLED at a glance

- Materials for display and lighting
- Small molecules for vacuum processing
- Soluble material systems for printing processes

OLED activities

- Strong IP position with high research output
- Broad R&D cooperation with academia and industry
- Systematic R&D for OLED in vapor and printing

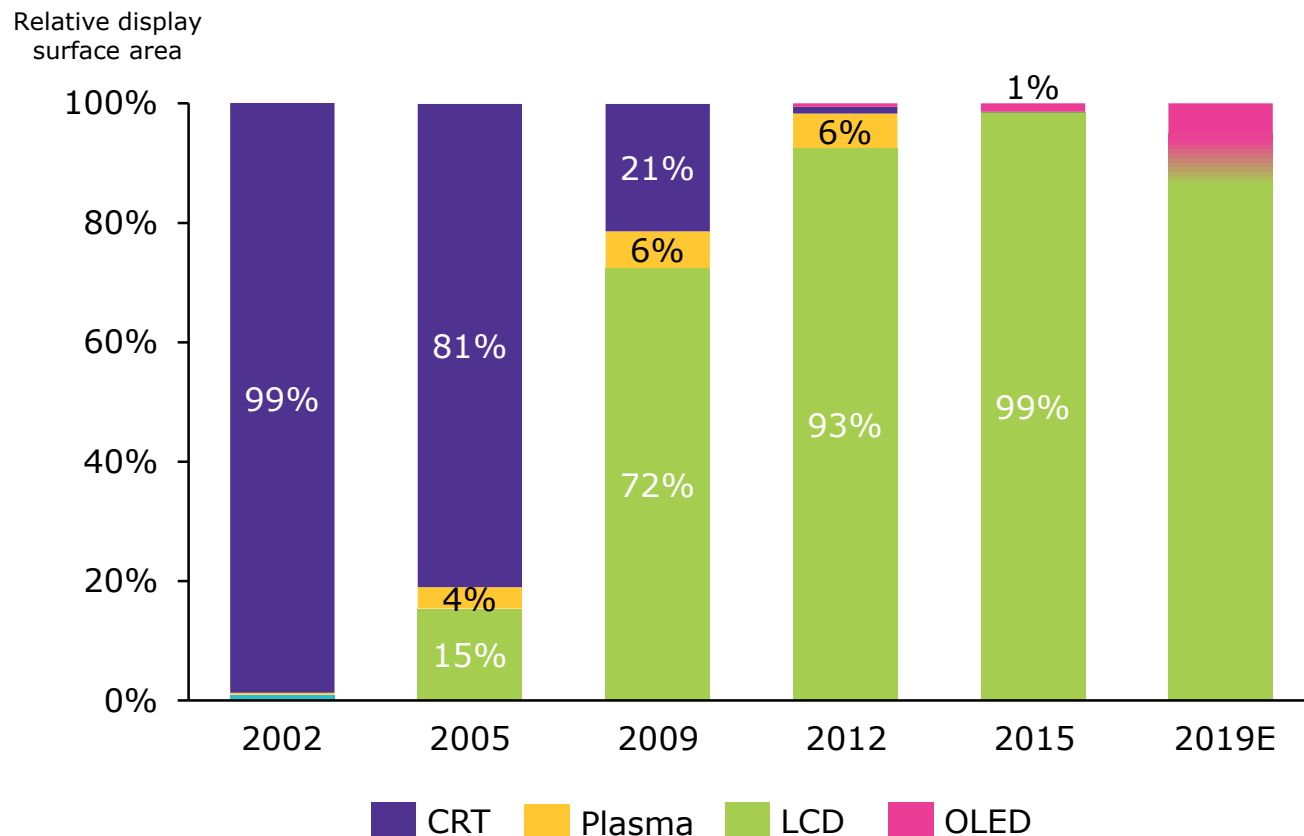


OLED today

- ~300 R&D experts
- M&S experts in all 4 key countries
- Thousands of patents
- Large scale commercial production
- New OLED-plant opened in 2016

Liquid crystals are clearly the dominant display technology

Market share by display technology



Rationale for LCD leadership

For consumers:

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

For manufacturers:

- Price and scalability
- Production costs and capacities

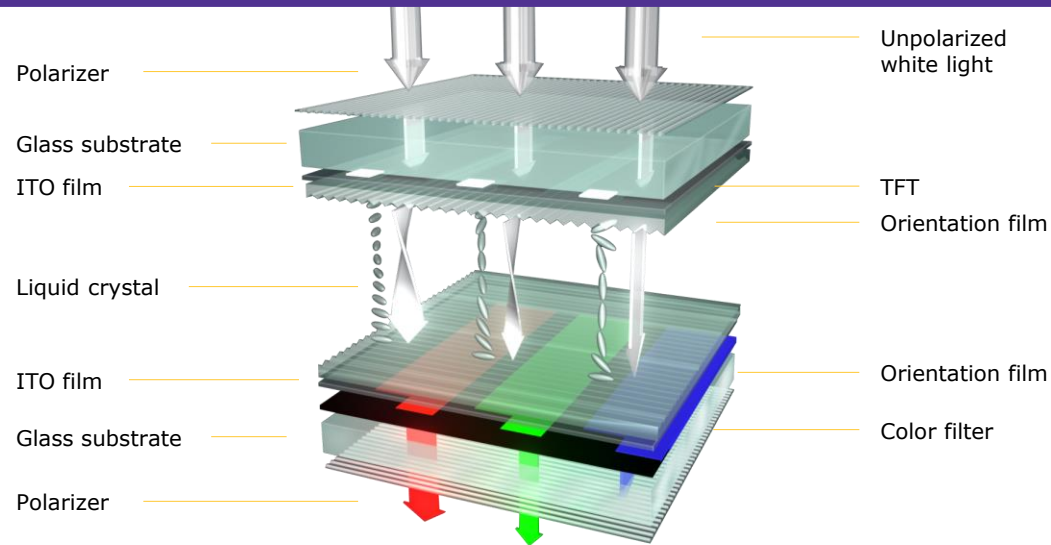
LCD progress creates higher technological and commercial entry barriers

OLED share will increase in mobile applications

Advanced Technologies

LCDs and OLED displays are fundamentally different

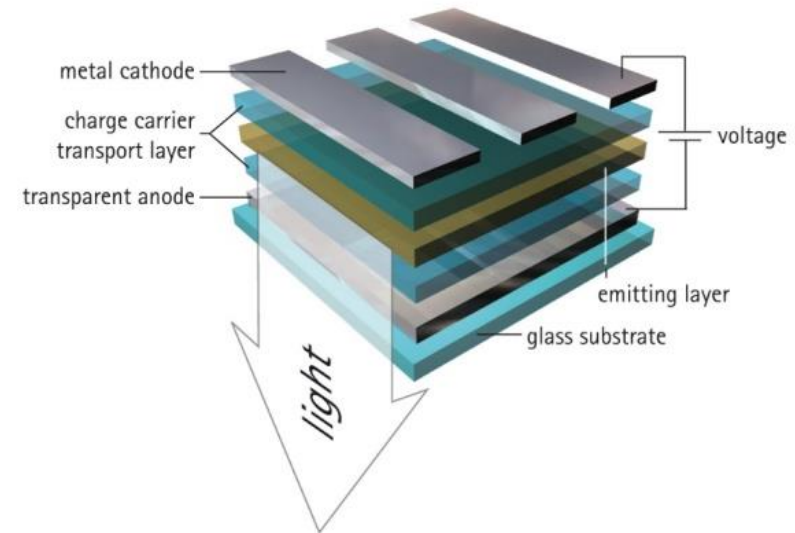
Setup of a Liquid Crystal Display



1. Backlight (CCFL or LED) emits white light
2. Color filters transform white light into RGB colors
3. Liquid crystals block or enable light transmission

Liquid crystals selectively modulate light

Setup of an Organic Light Emitting Diode display

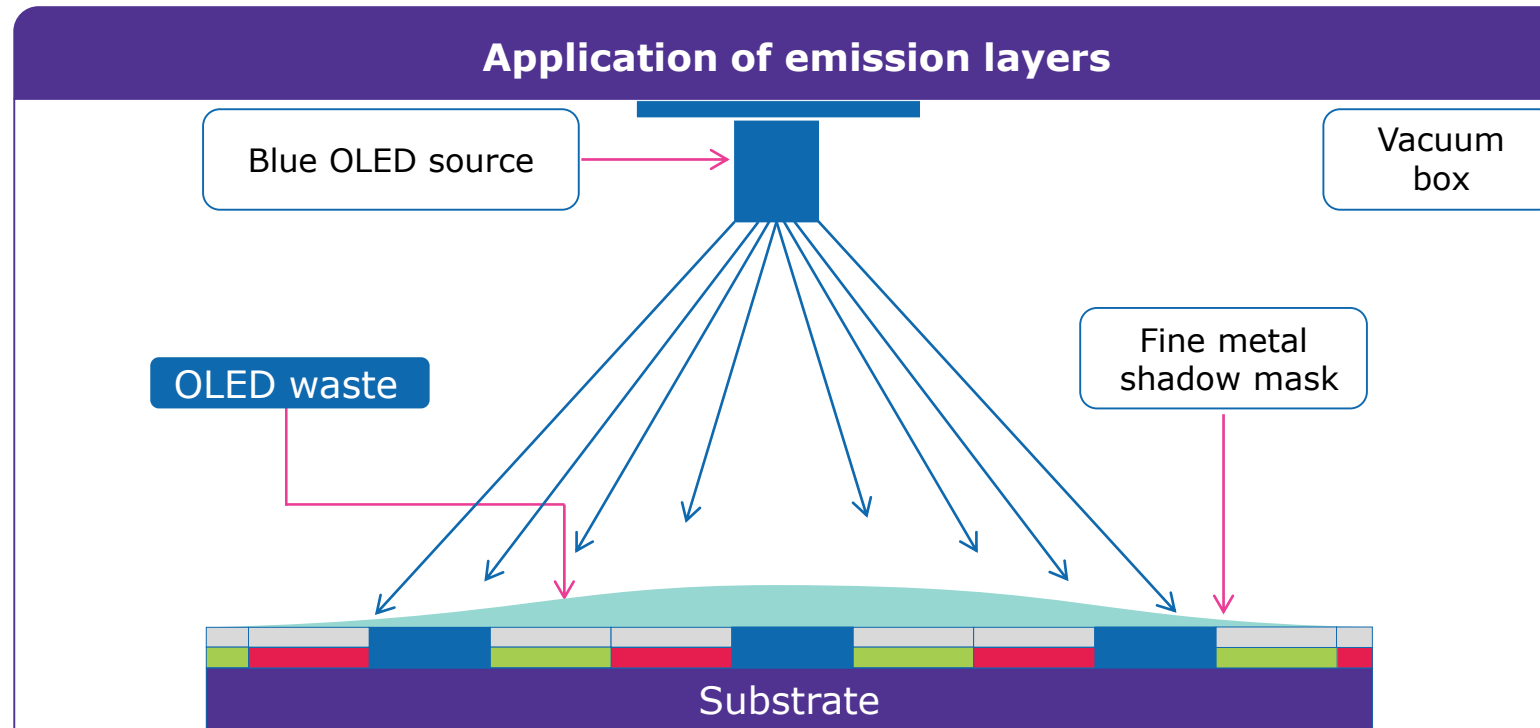


1. OLEDs convert electric energy into RGB light (separate OLED material needed for each color)

OLEDs directly generate light

The vapor process for RGB OLED production has a limited intrinsic yield

Chemical vapor deposition (CVD) process

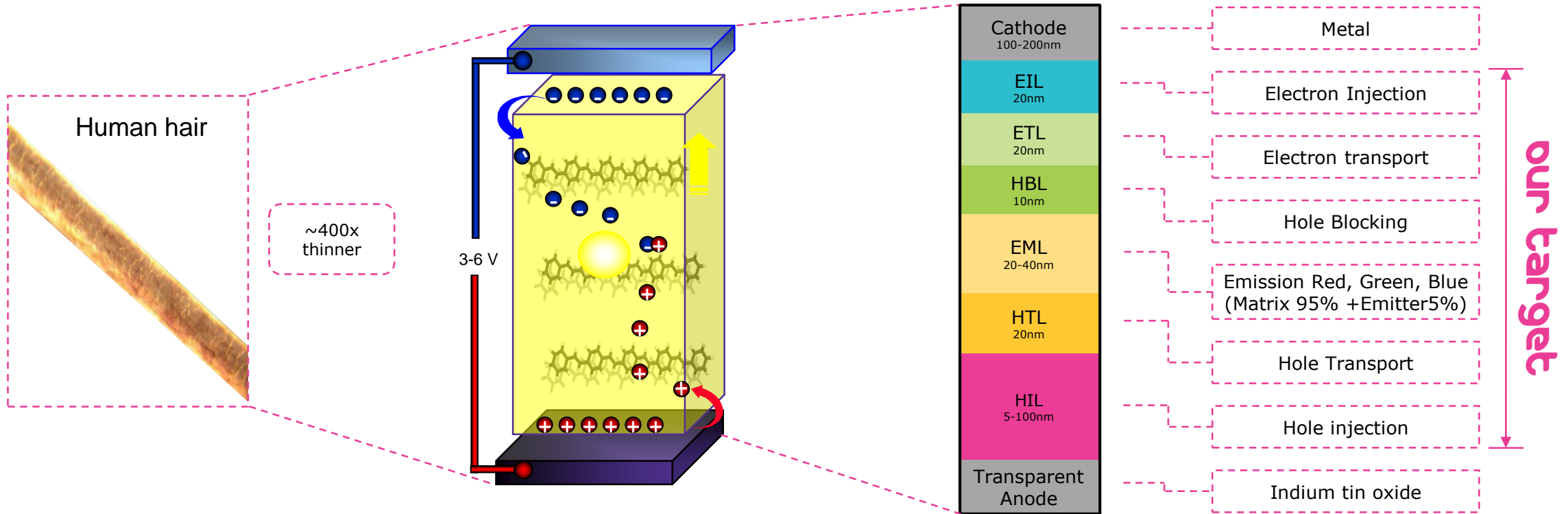


**Deposition
yield:**

<30%

Significant loss of RGB OLED material due to deposition on mask

Setup of a typical OLED stack



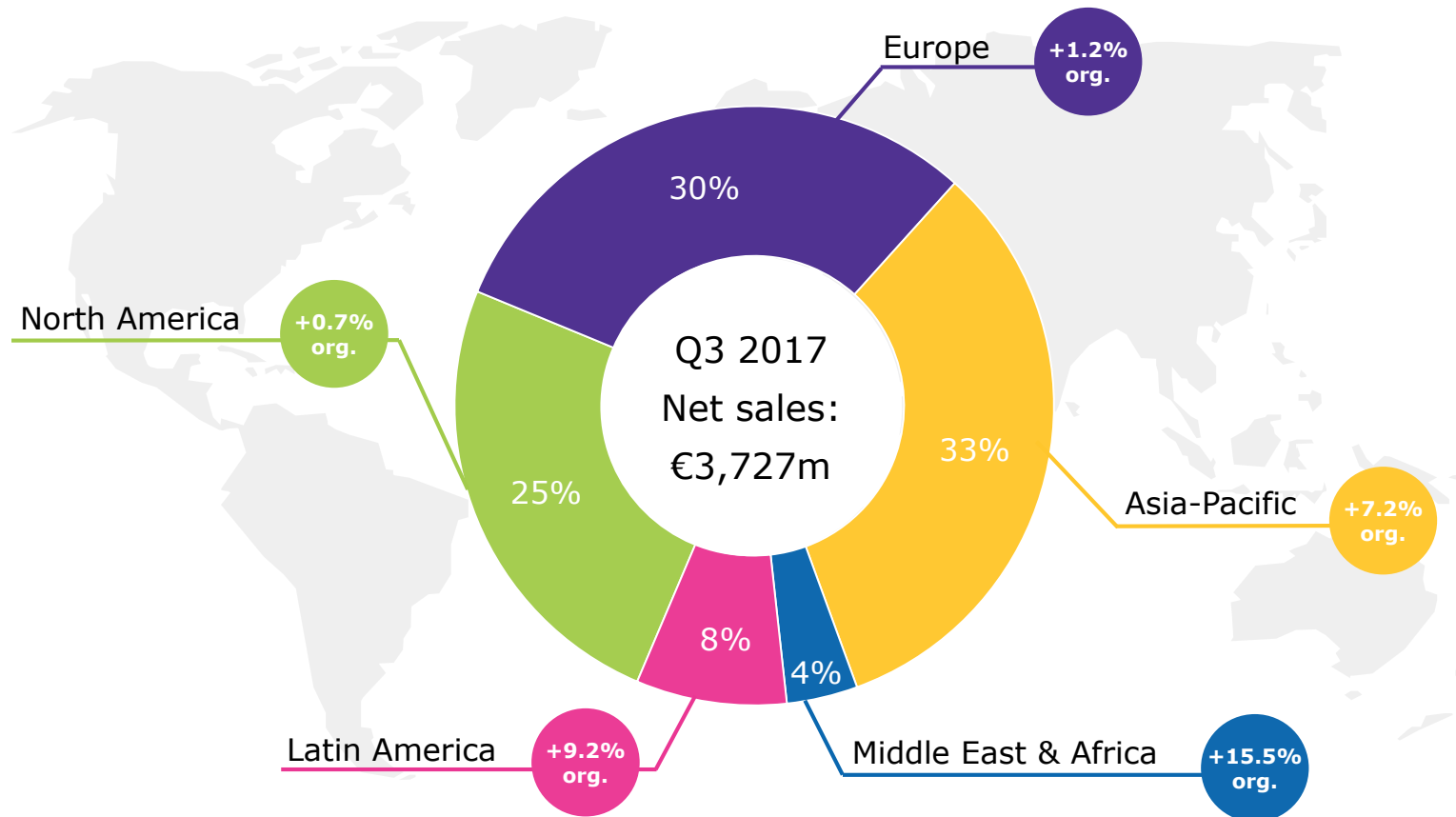
Interaction of layers determine OLED performance



05 FINANCIAL OVERVIEW

Organic growth in all regions

Regional breakdown of net sales [€ m]



Regional organic development

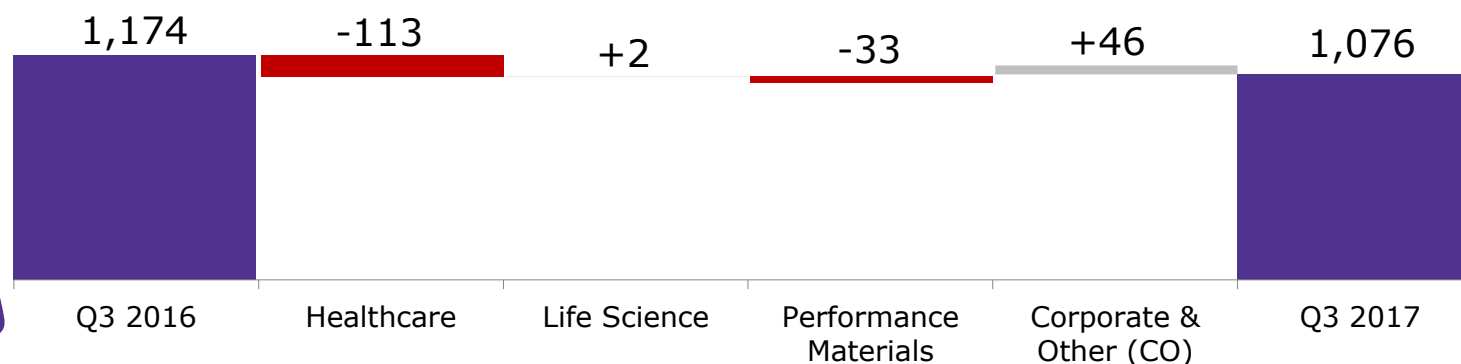
- Growth in Europe reflects solid demand in Life Science, almost offset by competition for Rebif, Erbitux and Gonal-f
- North America benefits from Life Science growth and Bavencio more than offsetting ongoing Rebif decline
- Strong growth in APAC driven by General Medicine, Fertility and Life Science outweighing LC normalization
- Very strong performance in LATAM and MEA across all major businesses

Investments in Healthcare and softness in Liquid Crystals burden EBITDA pre

Q3 2017 YoY net sales

	Organic	Currency	Portfolio	Total
Healthcare	5.8%	-3.4%	-1.2%	1.2%
Life Science	4.8%	-3.9%	0.4%	1.3%
Performance Materials	-1.5%	-3.8%	0.0%	-5.3%
Group	4.2%	-3.7%	-0.4%	0.1%

Q3 YoY EBITDA pre contributors [€ m]



¹Integrated Circuit Materials; ²Long Term Incentive Plan
Totals may not add up due to rounding

- Healthcare reflects strong growth in General Medicine, Consumer Health and Fertility
- Solid organic growth in Life Science driven by all businesses
- Organic growth of ICM¹, Pigments and OLED is outweighed by ongoing market share normalization in Liquid Crystals
- FX headwinds across all businesses
- Healthcare contains investments in M&S and R&D, partially offset by milestone payments for Bavencio
- Life Science reflects organic growth offset by negative business mix and FX
- Performance Materials lower due to LC normalization, usual price declines and FX
- CO contains FX hedging gains and LTIP² benefits

Q3 2017: Overview of key figures

Key figures

[€m]	Q3 2016	Q3 2017	Δ
Net sales	3,724	3,727	0.1%
EBITDA pre	1.174	1,076	-8.3%
Margin (in % of net sales)	31.5%	28.9%	
EPS pre	1.70	1.51	-11.2%
Operating cash flow	1,067	758	-29.0%

[€m]	Dec. 31, 2016	Sept. 30, 2017	Δ
Net financial debt	11,513	10,483	-8.9%
Working capital	3,486	3,755	7.7%
Employees	50,414	52,843	4.8%

Comments

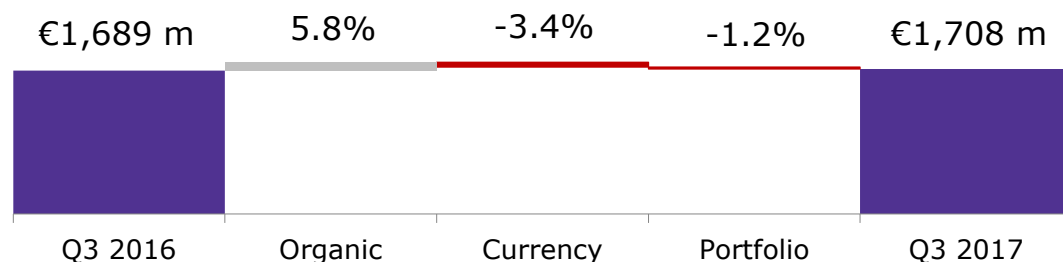
- EBITDA pre decline reflects investments in Healthcare and ongoing LC market share normalization
- EPS pre down due to lower EBITDA pre
- Lower operating cash flow driven by lower profit & changes in working capital
- Net financial debt benefits from healthy cash flow and Biosimilars divestment
- Working capital reflects increased receivables in Healthcare, higher inventories in all businesses
- Higher headcount related to growth initiatives in Healthcare and Life Science

Healthcare: Investments in future growth weigh on profitability

Healthcare P&L

[€m]	Q3 2016	Q3 2017
Net sales	1,689	1,708
Marketing and selling	-623	-666
Administration	-65	-71
Research and development	-322	-423
EBIT	375	581
EBITDA	560	752
EBITDA pre	565	453
Margin (in % of net sales)	33.5%	26.5%

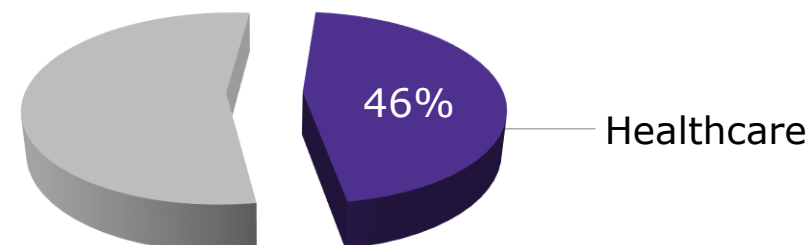
Net sales bridge



Comments

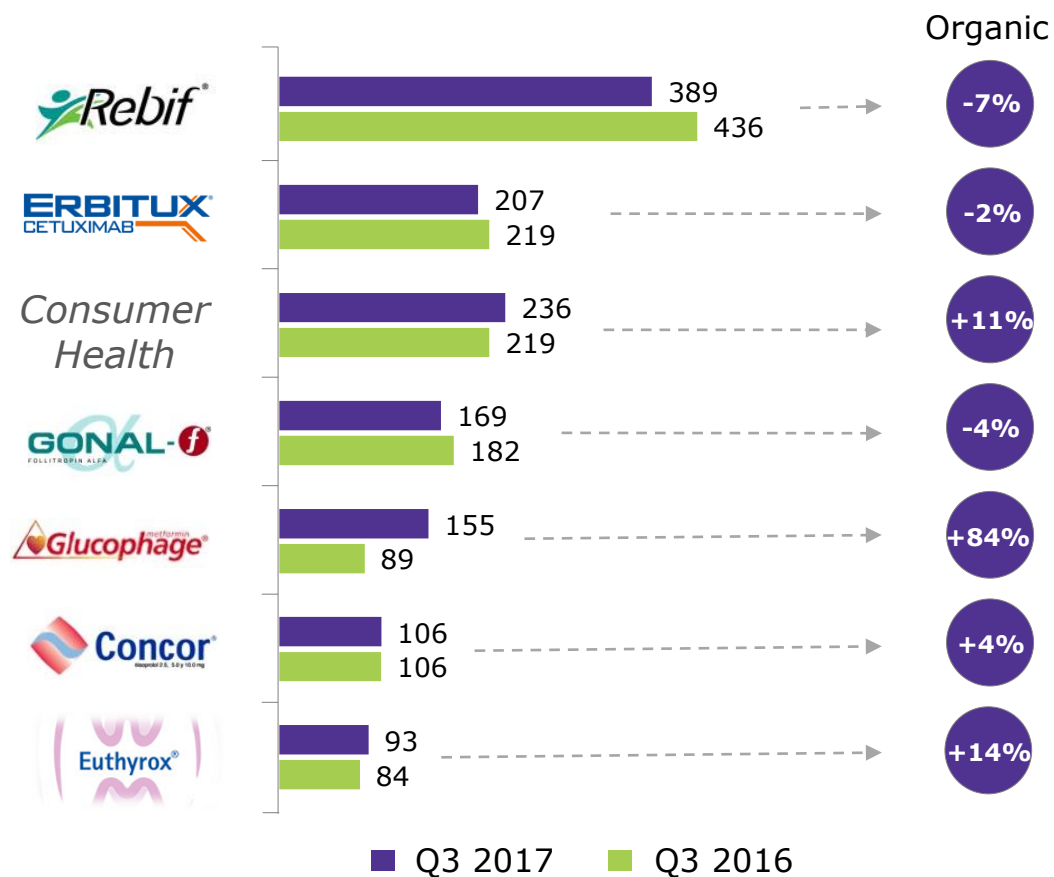
- Rebif declines due to competition in U.S. & EU, partially offset by U.S. pricing
- Organic decline of Erbitux due to competition and price pressure in EU
- Fertility portfolio back to growth, despite Gonal-f still facing tough base LY
- Consumer Health with double-digit growth driven by strategic brands in all growth markets
- Marketing & selling reflects Bavencio and Mavenclad launches
- R&D costs visibly ramping up, LY contained ~€40 m provision releases
- EBITDA pre reflects higher R&D and launch costs, exceeding income from milestone payments for Bavencio and organic growth

Q3 2017 share of group net sales

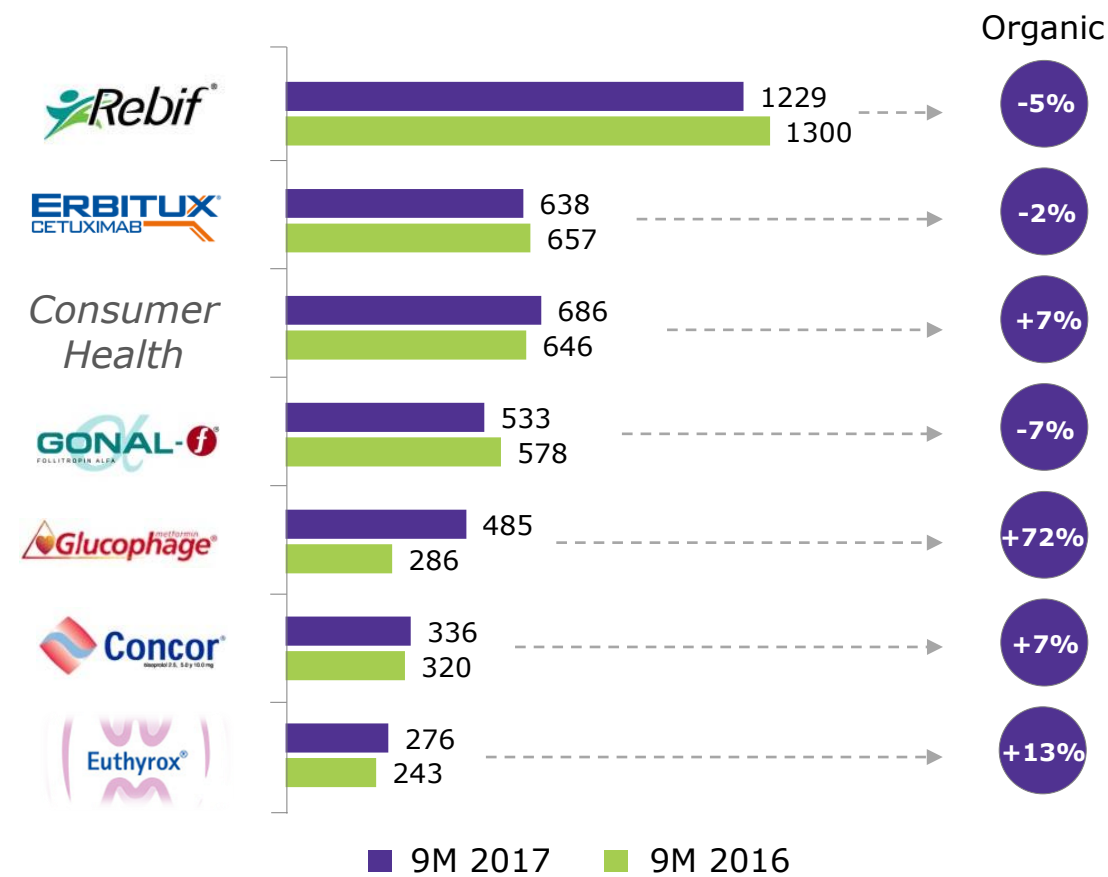


Healthcare organic growth by franchise/product

Q3 2017 organic sales growth [%]
by key product [€ m]



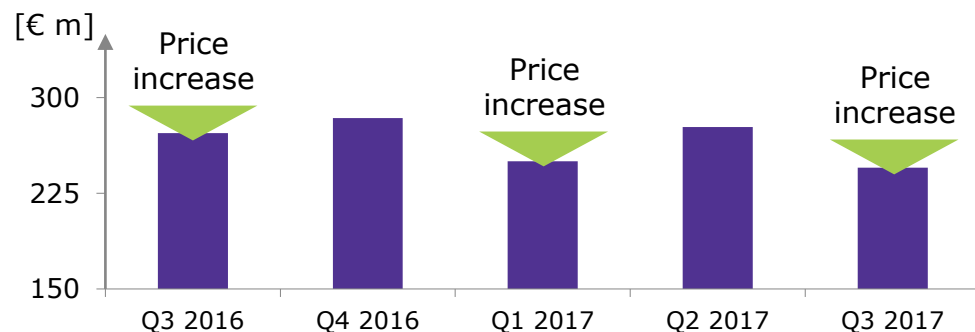
9M 2017 organic sales growth [%]
by key product [€ m]



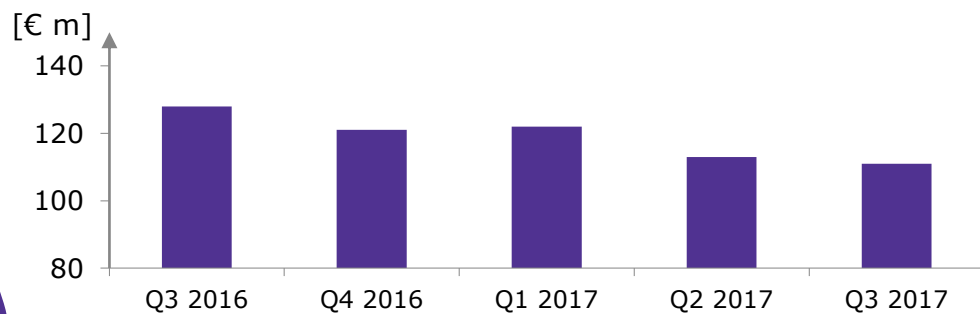
Rebif: Competitive landscape in U.S. and Europe

Rebif sales evolution

North America



Europe



Q3 drivers

-5.1% org.

- Price
- Volume
- FX

Q3 drivers

-12.1% org.

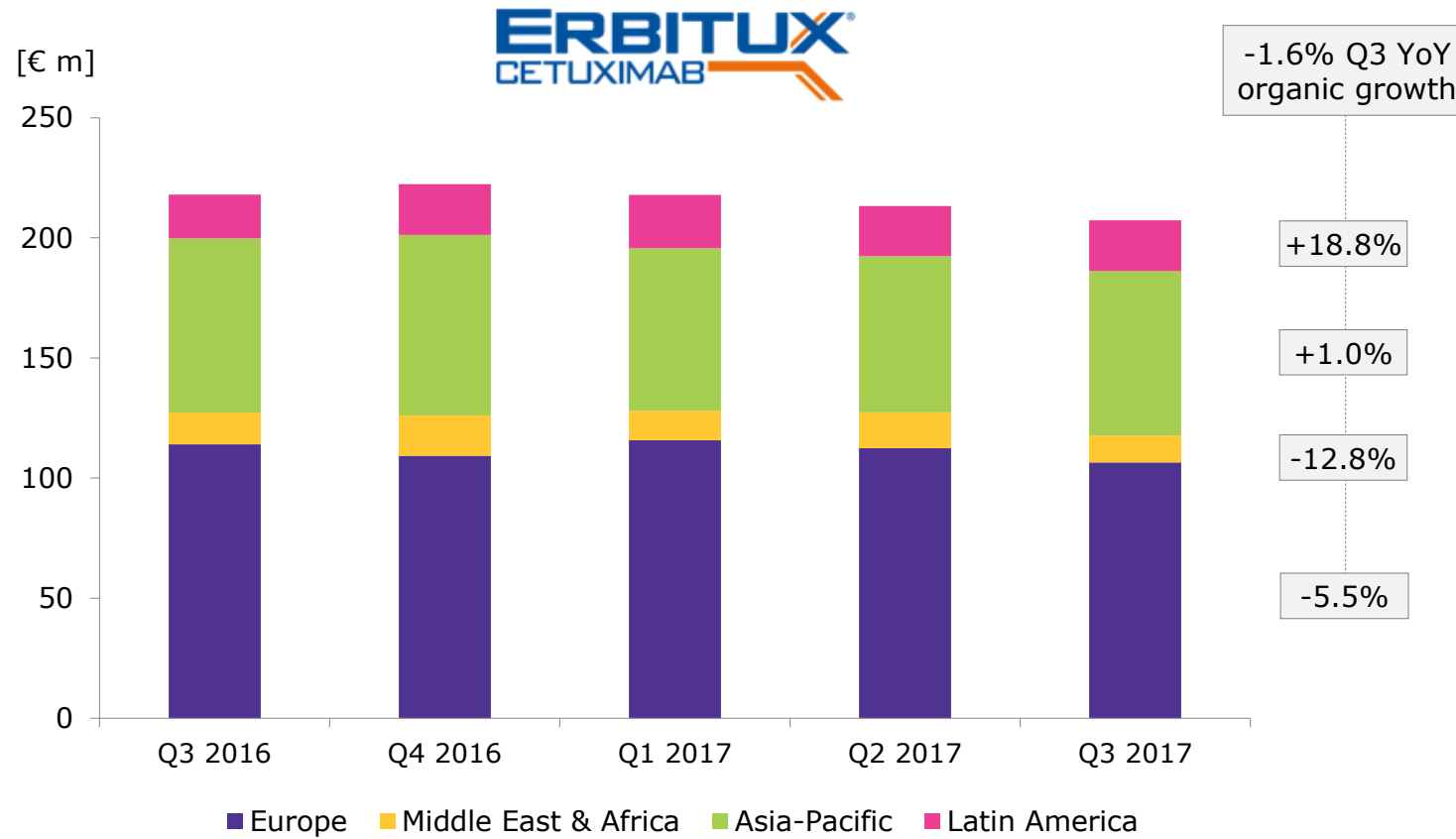
- Price
- Volume

Q3 2017 Rebif performance

- Rebif sales of €389 m in Q3 2017 reflect organic decline of -6.9% & FX headwinds
- Competition-driven U.S. volume erosion mitigated by price increases
- Market shares within interferons stable due to high retention rates and long-term track record
- Competition from orals and occasional price adjustments cause ongoing organic decline in Europe

Erbitux: A challenging market environment

Erbitux sales by region



Q3 2017 Erbitux performance

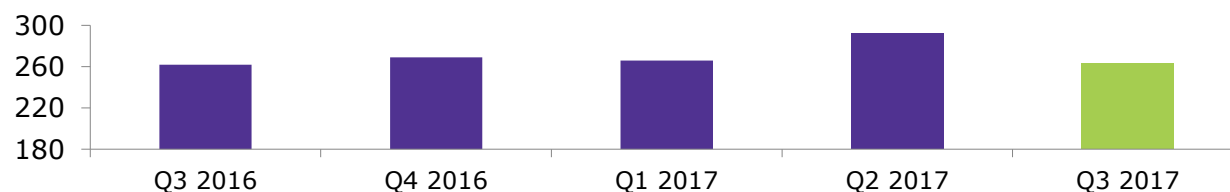
- Sales decline to €207 m driven by slight organic decline and FX headwinds
- Europe impacted by competition, price reductions and shrinking market size due to increasing immuno-oncology trials
- APAC with slight growth driven by new reimbursement uptake in Taiwan
- LATAM strong especially in Brazil; MEA affected by tender phasing

Strong organic growth of General Medicine driven by all major products

Sales evolution

Fertility

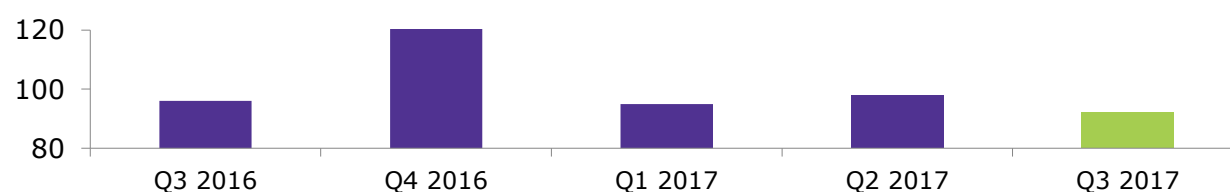
[€ m]



Organic
+4.4% org.

Endocrinology

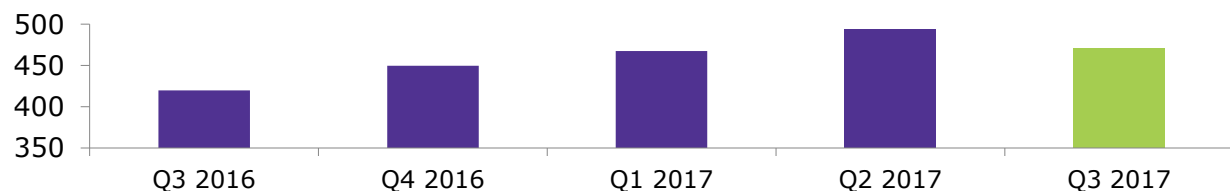
[€ m]



Organic
0.5% org.

General Medicine*

[€ m]



Organic
17.1% org.

Q3 2017 organic drivers

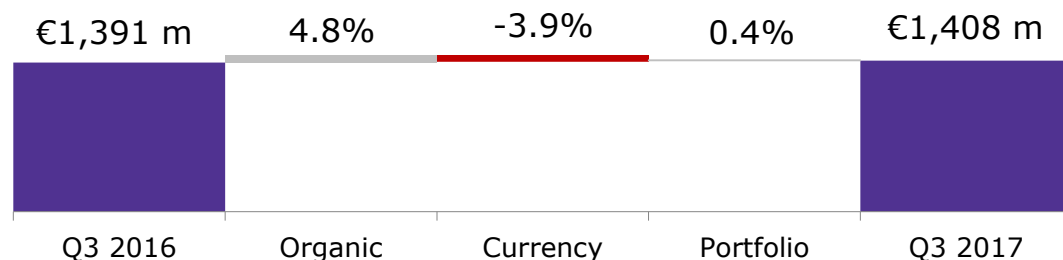
- Gonal-f still negative against high base LY and competition from biosimilars in Europe more than offsetting growth in China
- Rest of Fertility portfolio continues to grow double-digit, all regions contributing
- Endocrinology flat as growth in LATAM and EU is offset by lower demand in U.S.
- General Medicine benefits from Glucophage repatriation in China
- Euthyrox and Concor post healthy growth mainly driven by higher volumes in EU

Life Science: Solid organic growth amid negative mix and FX headwinds

Life Science P&L

[€m]	Q3 2016	Q3 2017
Net sales	1,391	1,408
Marketing and selling	-414	-412
Administration	-56	-59
Research and development	-63	-60
EBIT	216	220
EBITDA	399	401
EBITDA pre	424	426
Margin (in % of net sales)	30.5%	30.2%

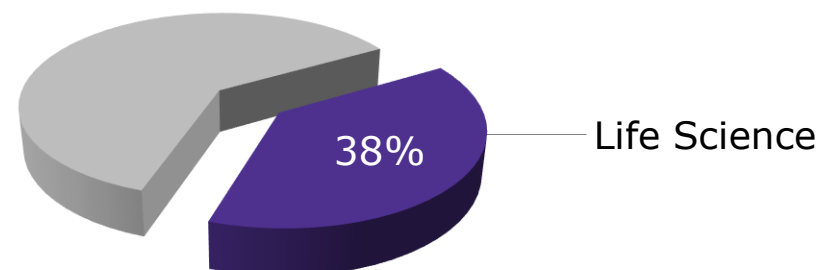
Net sales bridge



Comments

- Process Solutions posts solid organic growth due to strong demand for single-use products & services, while key accounts remain soft
- Applied Solutions shows good organic growth, driven by strong demand in Biomonitoring and Lab Water
- Research Solutions benefits from strong demand for specialty lab chemicals across all regions partially fueled by eCommerce
- Profitability reflects organic growth, offset by negative business mix and FX headwinds

Q3 2017 share of group net sales

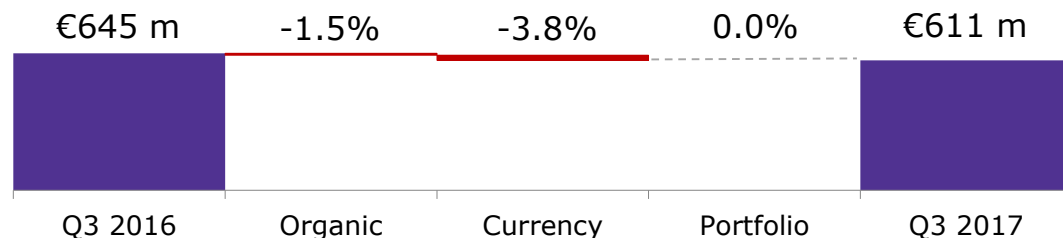


Performance Materials: LC market share normalization impacts profitability

Performance Materials P&L

[€m]	Q3 2016	Q3 2017
Net sales	645	611
Marketing and selling	-59	-56
Administration	-14	-18
Research and development	-55	-57
EBIT	213	191
EBITDA	274	246
EBITDA pre	282	249
Margin (in % of net sales)	43.7%	40.7%

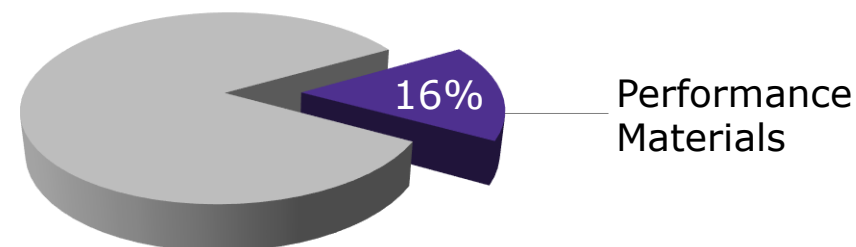
Net sales bridge



Comments

- Organic growth of Integrated Circuit Materials, Pigments and OLED not fully offsetting Liquid Crystals market share normalization
- Liquid Crystals facing usual price reductions without volume growth, only innovative UB-FFS technology continues to see strong demand
- OLED continues to grow on industry capacity expansion & investments
- Strong growth in ICM mainly driven by demand for dielectrics
- Growth of Pigments due to strong demand for decorative pigments in cosmetic and coating applications
- Profitability reflects business mix, usual Liquid Crystals price decline & FX

Q3 2017 share of group net sales



Reported figures reflect divestment of Biosimilars business

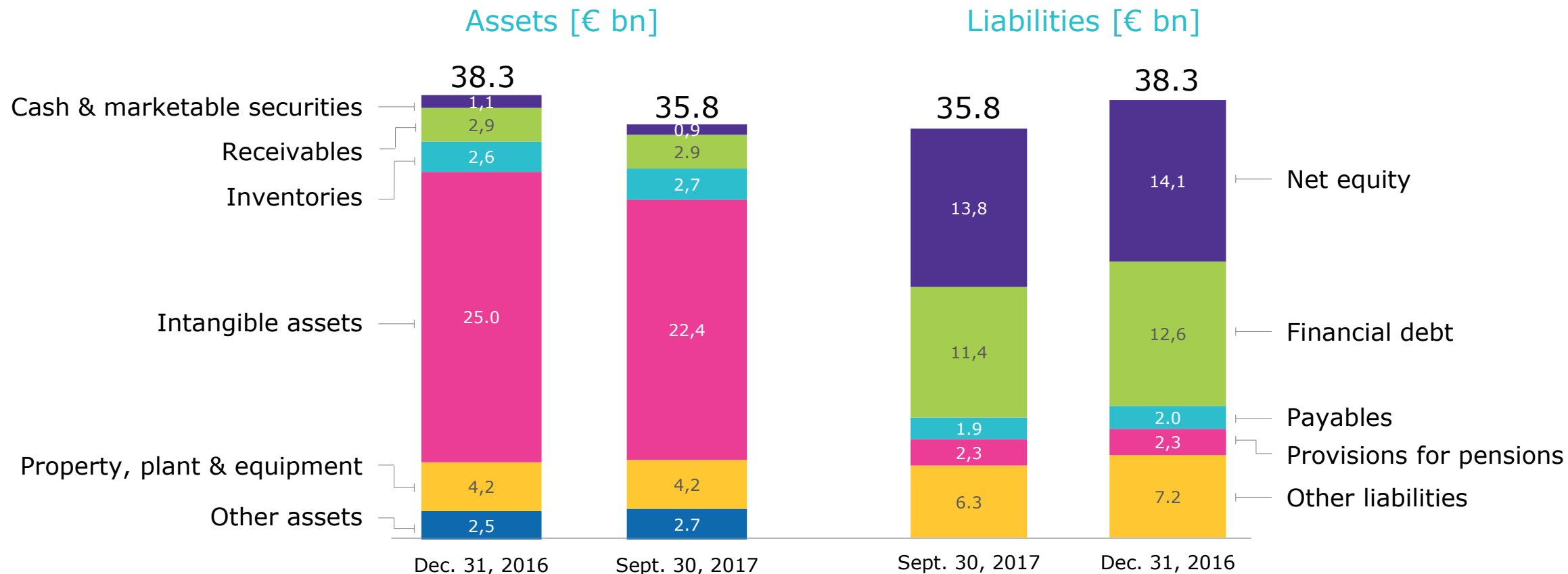
Reported results

[€m]	Q3 2016	Q3 2017	Δ
EBIT	676	901	33.3%
Financial result	-67	-65	-2.1%
Profit before tax	609	836	37.2%
Income tax	-149	-187	25.6%
<i>Effective tax rate (%)</i>	24.4%	22.4%	
Net income	457	645	41.1%
EPS (€)	1.05	1.48	41.0%

Comments

- EBIT up due to Biosimilars divestment, despite lower EBITDA pre
- Lower effective tax rate reflects divestment of Biosimilars business

Balance sheet: Deleveraging in progress after Sigma acquisition



- Total assets decrease, while equity ratio increases to 38.5%
- Reduction in intangible assets mainly reflects FX (-€2 bn)
- Lower net equity reflects negative FX mitigated by 9M profit

- Lower financial debt due to bond repayments and FX
- Other liabilities decrease driven by profit transfer to E. Merck KG, Darmstadt, Germany

Cash flow: Strong focus on cash generation

Q3 2017 – cash flow statement

[€m]	Q3 2016	Q3 2017	Δ
Profit after tax	460	649	189
D&A	434	419	-15
Changes in provisions	4	-50	-54
Changes in other assets/liabilities	36	99	63
Other operating activities	1	-328	-329
Changes in working capital	131	-31	-162
Operating cash flow	1,067	758	-309
Investing cash flow	-223	-90	133
thereof Capex on PPE	-171	-197	-26
Financing cash flow	-702	-844	-142

Cash flow drivers

- Profit after tax includes gain from Biosimilars divestment, which is neutralized in other operating activities
- Changes in provisions reflects swing in LTIP provision adjustment
- Changes in working capital include higher receivables from Glucophage repatriation & higher inventories; LY contained factoring
- Investing cash flow contains higher Capex and Biosimilars cash proceeds ~€150 m
- Financing cash flow reflects €700 m euro-bond repayment in September and bank loan reduction LY

Exceptionals in Q3 2017

Exceptionals in EBIT

[€m]	Q3 2016		Q3 2017	
	Exceptionals	thereof D&A	Exceptionals	thereof D&A
Healthcare	6	0	-317	-17
Life Science	25	0	24	0
Performance Materials	8	0	2	0
Corporate & Other	25	0	29	0
Total	63	0	-261	-17

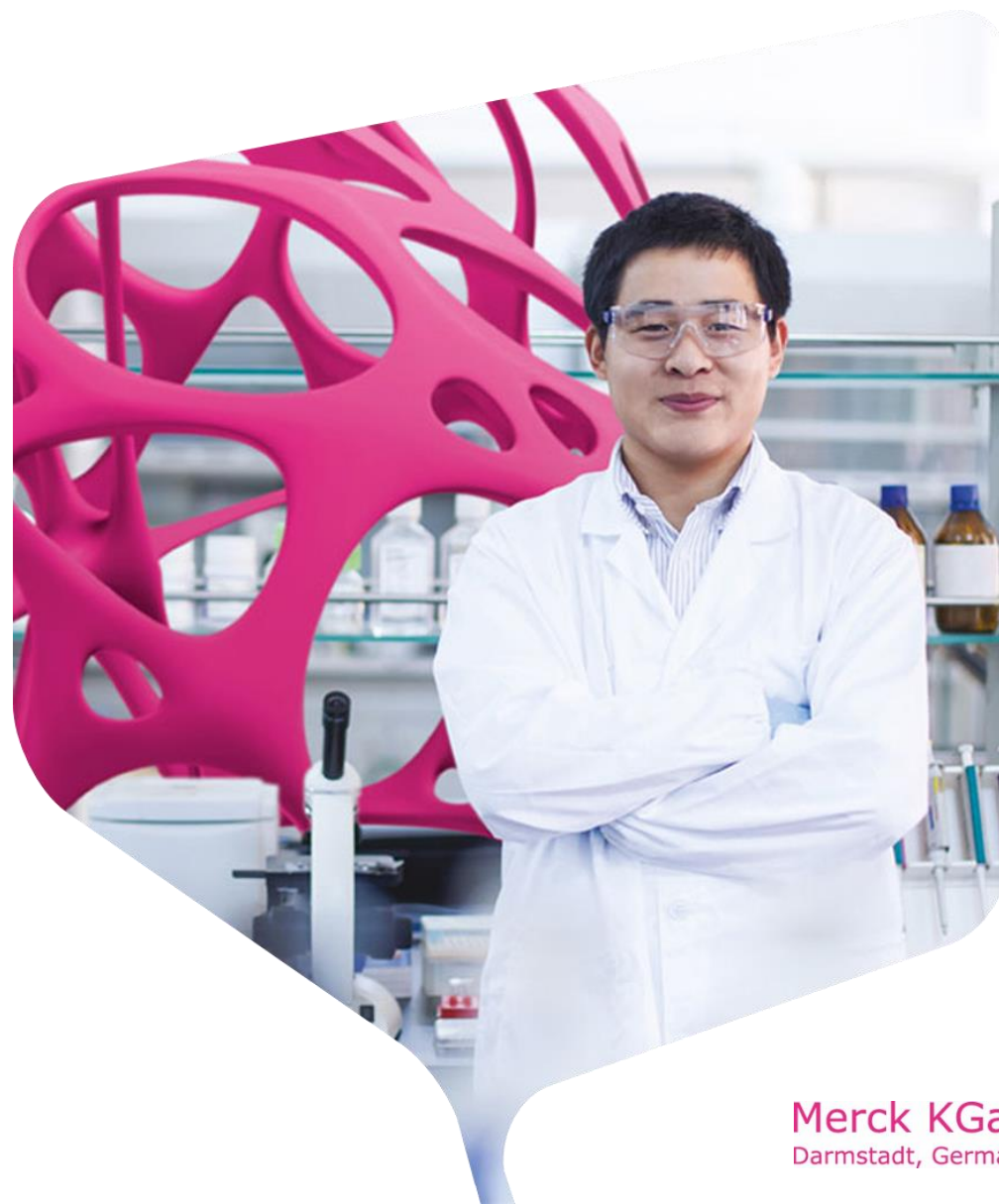
Exceptionals in 9M 2017

Exceptionals in EBIT

[€m]	9M 2016		9M 2017	
	Exceptionals	thereof D&A	Exceptionals	thereof D&A
Healthcare	-245	71	-366	-84
Life Science	207	0	86	3
Performance Materials	21	0	25	7
Corporate & Other	42	0	60	0
Total	25	71	-195	-74

Financial calendar

Date	Event
March 8, 2018	Q4 2017 Earnings release
April 27, 2018	Annual General Meeting
May 15, 2018	Q1 2018 Earnings release
August 9, 2018	Q2 2018 Earnings release



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



Retail 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

