# MERCK KGAA, DARMSTADT, GERMANY 03 2016 ROADSHOW

**Investor Relations** 

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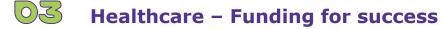
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### Agenda

### **Business overview**

**02** Transforming the company



- **Life Science Focusing on profitable growth**
- **D5** Performance Materials Maintaining superior profitability
- **DS** Executive Summary and guidance





# 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

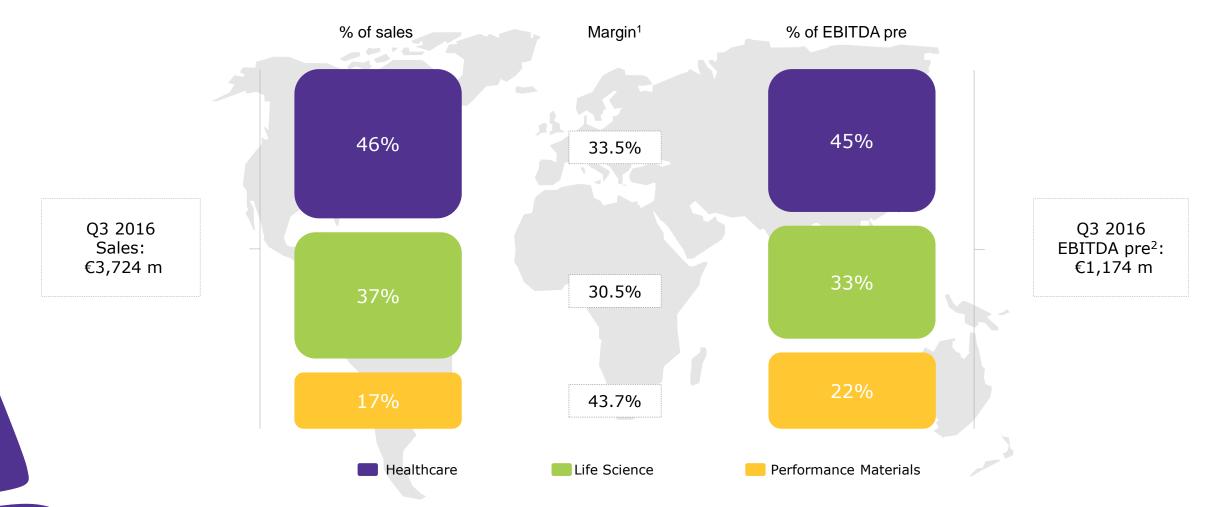
- Tools and services for biotech
   research & production
- Tools and laboratory supply for the academic research and industrial testing



# Market leader in specialty materials

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

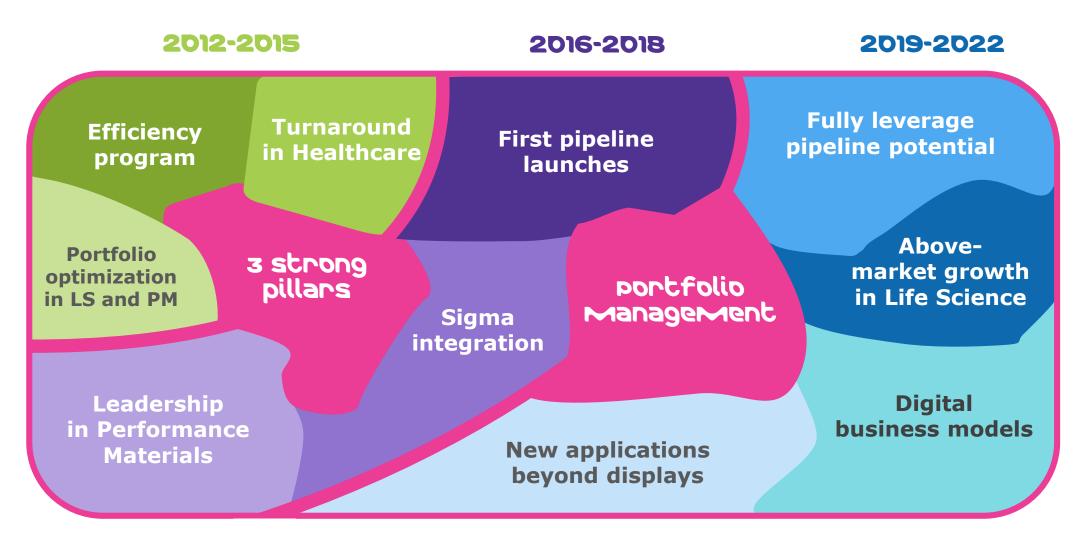
# Group Strong businesses with attractive margins



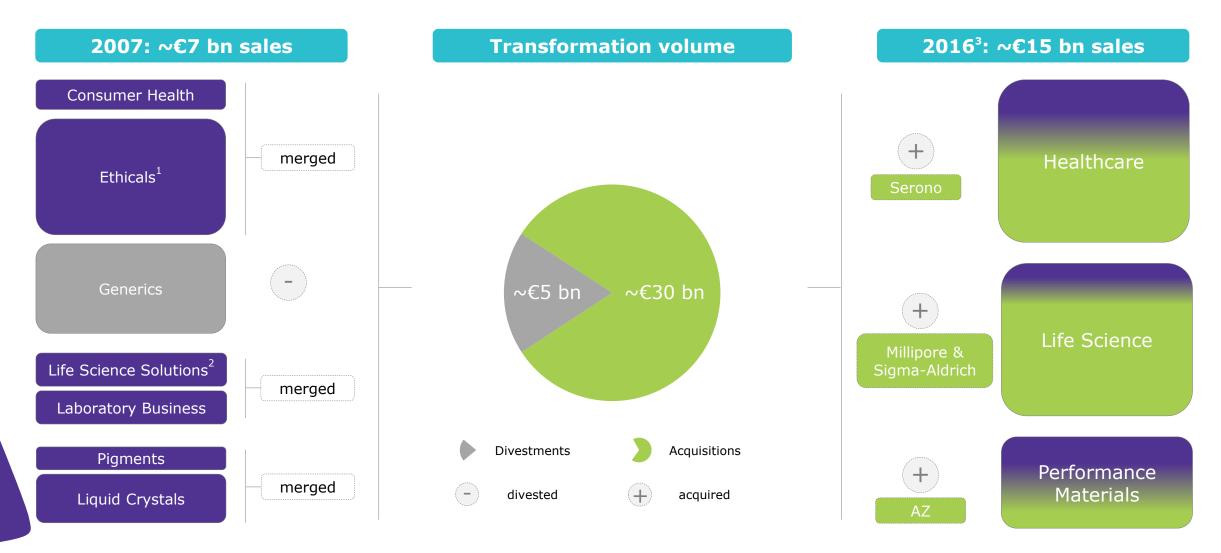




# Group Strategic roadmap 2016-2022



# Group We have added scale and strengthened the attractiveness of our portfolio



# Group We have created three leading businesses

Healthcare

+ Serono

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

# Life science

MilliporeSigma

# performance materials

+ AZ

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

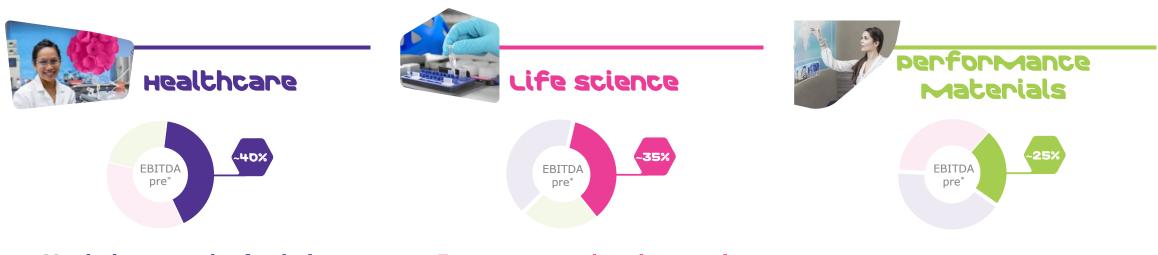
- World market leader
- Technology and innovation leader

Science	Technology	Innovation	Specialties	Quality	Customer focus

# Group Profitability improved fundamentally



# Group Clear set of priority goals to be realized by 2018



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

- Focus on seamless integration and deliver cost synergies
- Leverage strategic capabilities for value creation
- Drive innovation and technology leadership across all businesses
- Innovate in applications also beyond displays

#### Merck kgan, barmstadt, germany

- Deleverage to <2x net debt / EBITDA pre in 2018</li>
- No large acquisitions (>€500 m) for the next 2 years (unless financed by divestments)
- Dividend policy reflects sustainable earnings trend





# Healthcare Healthcare is set to deliver on promising pipeline candidates

**Deliver** on organic growth

Focus on pipeline



Stable existing business to fuel slight organic growth



Solid pipeline of oncology, immuno-oncology and immunology molecules



Transformation of R&D operating model ongoing



Competitive R&D funding in our focus areas



Cost discipline and efficient execution

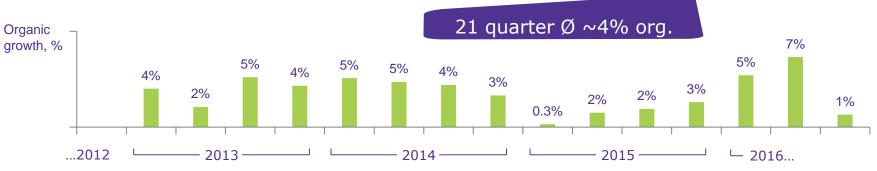




# Healthcare Operational excellence drives healthy growth of existing businesses

Organic growth for 21 consecutive quarters





Qualitative organic sales growth guidance per product/franchise until 2018

Commitment to at least stable organic sales until 2018

**Rebif**<sup>®</sup>: Sales decline in line with interferon market

oncology: Stable sales

**Fertility:** Mid single-digit growth

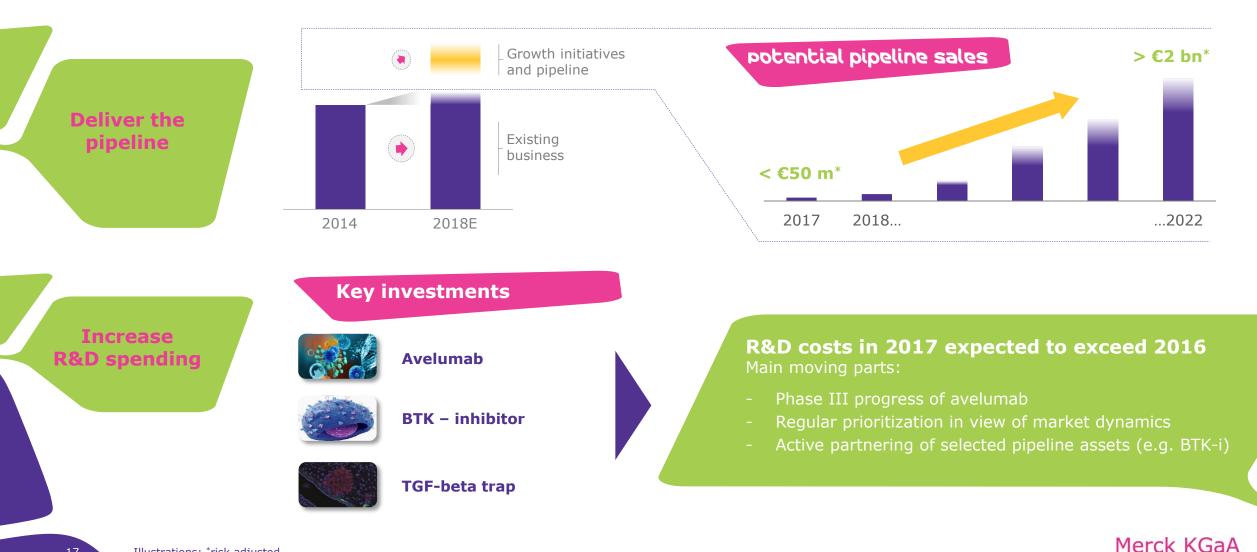
**Endocrinology:** Low single-digit growth

**General Medicine:** Mid to high single-digit growth

**consumer Health:** Mid single-digit growth

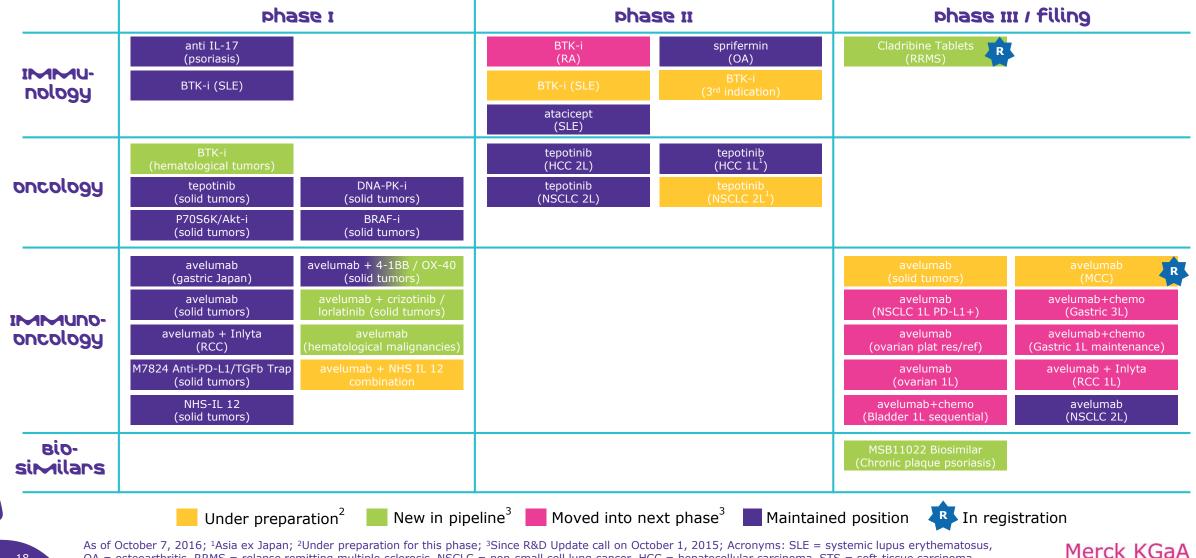


# Healthcare Well on track to deliver the pipeline



Darmstadt, Germany

# Healthcare **Pipeline progress since October 2015**



Darmstadt, Germany

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



# LIFE SCIENCE -FOCUSING ON PROFITABLE GROWTH

# Life Science Serving customers across the life science industry



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



- Pharmaceutical companies
- Small biotech
- Contract manufacturing organizations



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

# Life Science We create sustainable value that is based on strong strategic levers



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



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



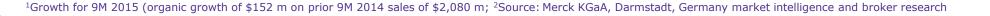
- Outstanding supply chain management (ability to deal with complexity)
- Simple e-commerce platform (customer interface with global coverage)
- Expertise to manage regulatory barriers

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

# Life Science Above-market growth to be enhanced by top-line synergies

Mid to high Organic Above-market single digit 6.5% growth, % growth 5.5% 4.5% 7.3% 3.8% Long-term average market growth<sup>2</sup>  $\sim$  4% 3.5% 3.8% 2.6% ... 2012 2013 2014 2015 2016 2017 +Merck KGaA, Darmstadt, Germany Sigma-Aldrich **Portfolio composition Top-line synergies** Sources of **Exposure to biopharma** Best in class eCommerce market outperformance **Highest share of consumables Excellent service capabilities Broad product offering Global reach** 

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





# Life Science **Synergy upgrade driven by fast 2016 execution and top-line synergies**



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

Net cost synergies
Accelerated cost synergies
Top-line synergies

Synergy upgrade of ~10% confirms strong integration capabilities

#### Sources

### Cost synergy update (for 2016)

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

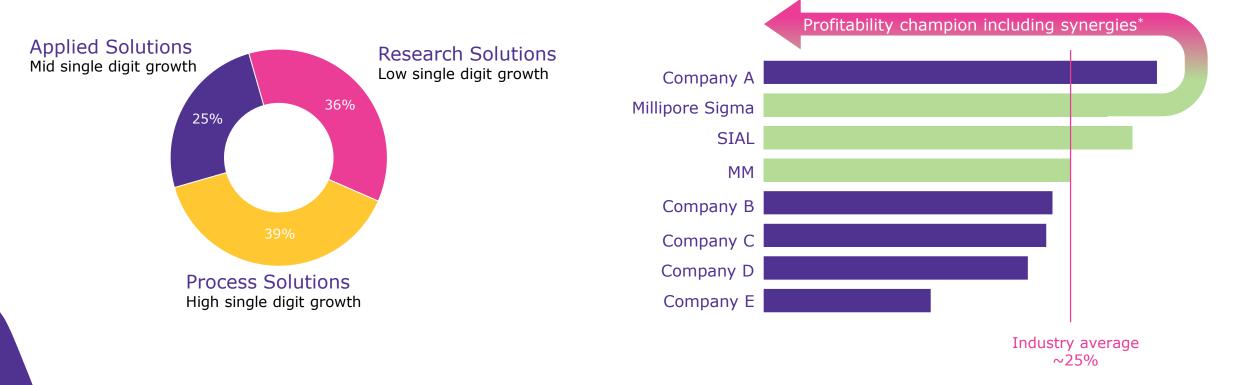
### **Top-line synergies (from 2017)**

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

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

### Sales breakdown as of Q3 2016

24



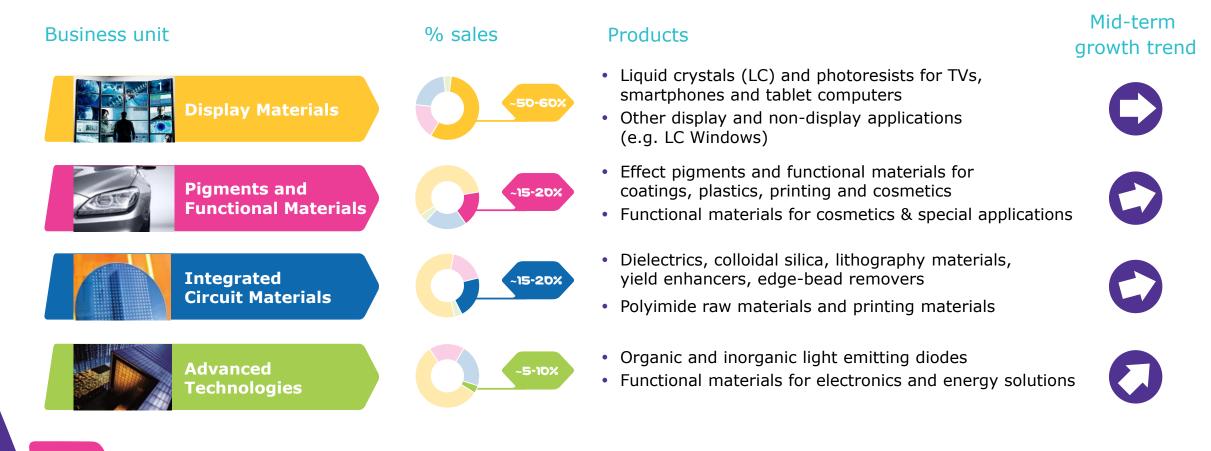
Life Science is well set for sustainable growth and profitability

### Above industry margin levels



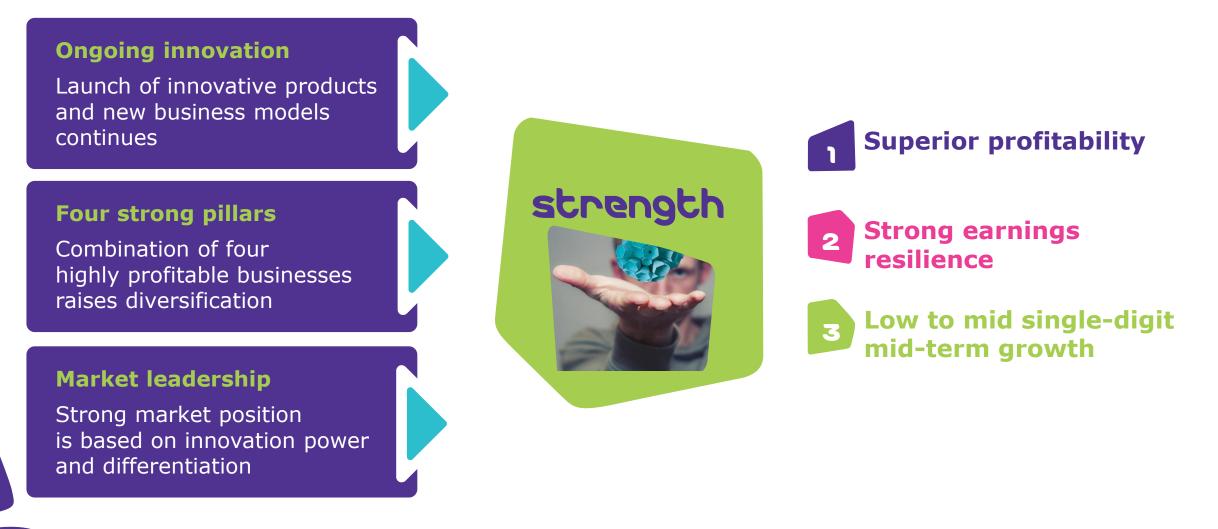


# Performance Materials The four pillars are set for future profitable growth



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

# Performance Materials Four-pillar strategy and innovation power strengthen our earnings profile



## Performance Materials Sound platform to deliver high earnings

### Four-pillar platform diversifies earnings stream

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



### **Continuous innovation as key profitability driver**

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

### **Balanced sales and consistently high earnings**



#### We are the innovation leader "Improved picture quality" 1996 IDS\* First to commercializ 2000 "Large TVs" VA\* PS-"Display cost reduction & 2008 advanced performance" VD\* "Superior image resolution and 2014 lower energy consumption"

### Diversification of portfolio and ongoing innovation lead to strong profitability

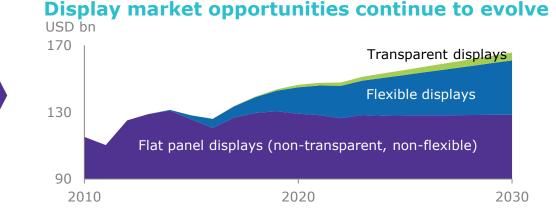
Merck KGaA

## Performance Materials Long-term growth and profitability drivers are intact



### 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

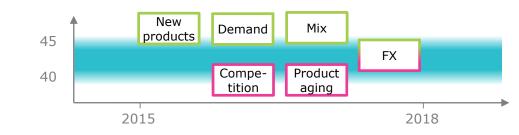


### High value-added products yield superior profitability

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

### **Sustainable profitability drivers**





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

## Unique selling proposition of SA-VA for manufacturers and consumers

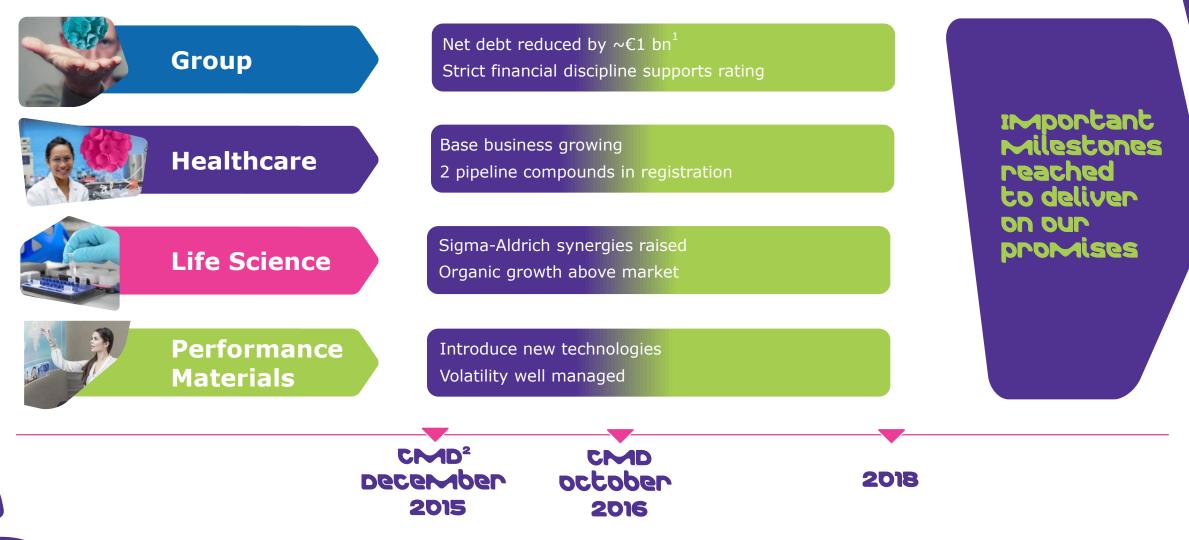


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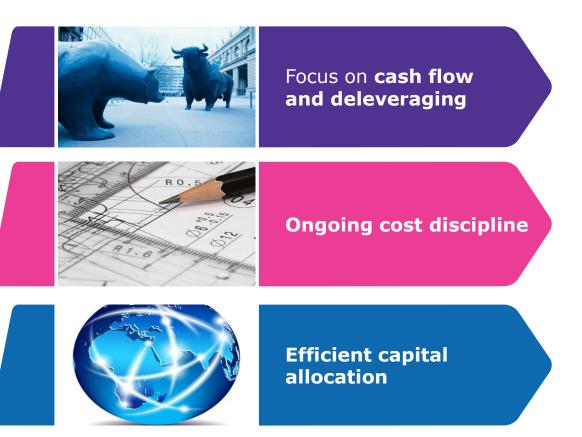


# Group We are well on track to deliver on our promises



Illustration; <sup>1</sup>Net financial debt ex pension provisions as of September 30, 2016 versus December 31, 2015; <sup>2</sup>Capital Markets Day

# Group We have clear financial priorities for the next two years



- **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
- Synergy generation is utmost priority
- Cost discipline continues in all business sectors
- Further efficiency gains from ongoing improvement and harmonization of processes and systems
- All our businesses have growth potential
- **Decisions on growth investments** are based on sound business cases and robust clinical data

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

# Group Upgrade of full-year 2016 guidance

Group guidance for 2016









# Appendix





















# 2016 business sector guidance



# Additional financial guidance 2016

# Further financial details

Corporate & Other EBITDA pre		~ -€370 – -400 m	
Interest result		~ -€270 – -300 m	
Intangibles amortization from Sigma PPA		~ €250 – 300 m p.a.	
Underlying tax rate		~ 23% to 25%	
Capex on PPE		~ €750 – 800 m	
Hedging/USD assumption	2016 & 2017 hedge ratio ~40%-45% at EUR/USD ~ 1.11 to 1.10		
2016 Ø EUR/USD assumption		~ 1.09 – 1.12	

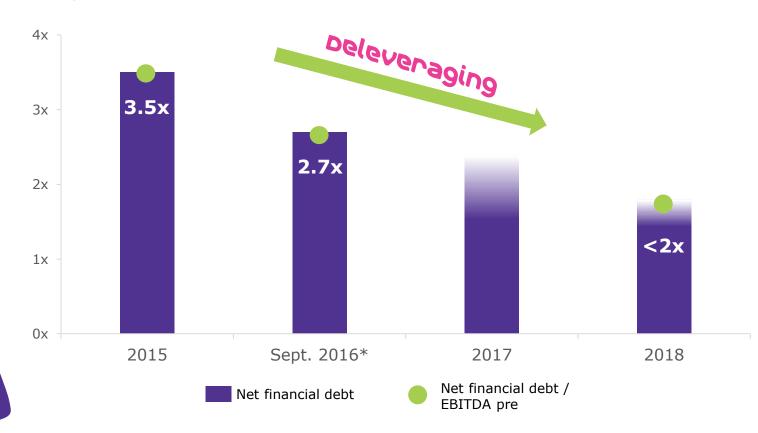




# Strong focus on cash generation to ensure swift deleveraging

# Net financial debt and leverage development

[Net financial debt/ EBITDA pre]



#### Focus on deleveraging

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

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



#### 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

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#### 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

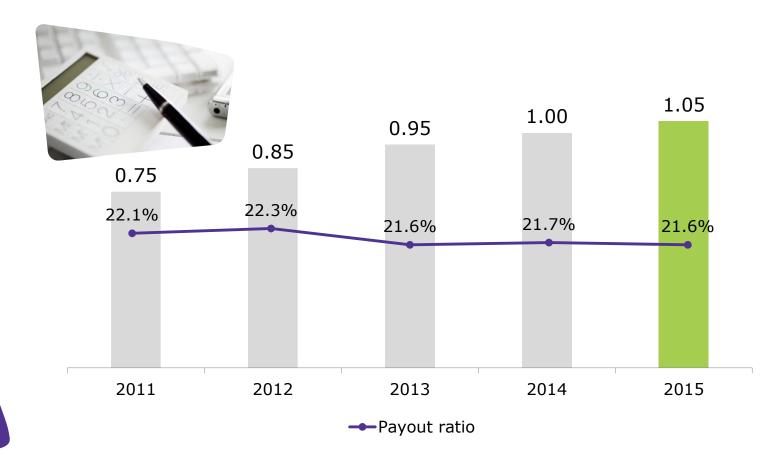
#### **FX** Impact



# **Sustainable dividend development**

#### Dividend<sup>1</sup> development 2011-2015

42



#### 2015 dividend and policy

- Dividend of €1.05 per share for 2015
- Last year's dividend constitutes the minimum level<sup>2</sup>
- Development of dividends in line with business performance and earnings progression
- Aiming for a corridor of 20%-25% of EPS pre





# Portfolio management: Differentiating across diverse business models

# General Medicine portfolio



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

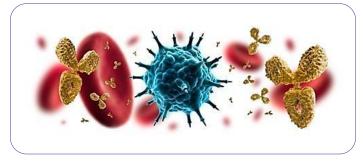
# **Biologicals portfolio**



- Moderate risk and reward profile
- Economies of scale due to stateof-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



Continue to drive mCRC<sup>\*</sup> share by increasing patient testing and expanding head and neck coverage

consumer нealth



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

sales and marketing activities delivering above-market



Build on No.1 position and ART<sup>\*</sup> channel access with embryo diagnostics and other innovative technologies



Glucophage

Saizen<sup>®</sup>

Concor<sup>®</sup>

Harness strengths of existing business and build a new focus area driven by innovative devices and services for patients

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





organic sales growth

# **Clinical pipeline**

#### Phase I

**Tepotinib – c-Met kinase inhibitor** Solid tumors

M2698 – p70S6K & Akt inhibitor Solid tumors

M3814 – DNA-PK inhibitor Solid tumors

Beigene-283 – BRAF inhibitor Solid tumors

**M7583 - BTK inhibitor** Hematological malignancies

Avelumab – Anti-PD-L1 mAb Solid tumors

Avelumab – Anti-PD-L1 mAb Hematological malignancies

M9241 (NHS-IL12)<sup>1</sup> Cancer immunotherapy Solid tumors

**M7824 - Bifunctional immunotherapy** Solid tumors

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

**M2951 – BTK inhibitor** Systemic lupus erythematosus

#### Phase II

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

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

#### Phase III

Avelumab – Anti-PD-L1 mAb Non-small cell lung cancer 1L<sup>2</sup> Avelumab – Anti-PD-L1 mAb Non-small cell lung cancer 2L<sup>3</sup> Avelumab – Anti-PD-L1 mAb Gastric cancer 1L<sup>2</sup> Avelumab – Anti-PD-L1 mAb Gastric cancer 3L<sup>4</sup> Avelumab – Anti-PD-L1 mAb Bladder cancer 1L<sup>2</sup> Avelumab – Anti-PD-L1 mAb Ovarian cancer platinum resistant/refractory Avelumab – Anti-PD-L1 mAb Ovarian cancer 11<sup>2</sup> Avelumab - Anti-PD-L1 mAb Renal cell cancer 1L<sup>2</sup>

MSB11022 Proposed biosimilar of Adalimumab Chronic plaque psoriasis

Pipeline as of November 7<sup>th</sup>, 2016

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

#### Registration

Cladribine Tablets – Lymphocyte targeting agent Relapsing-remitting multiple sclerosis

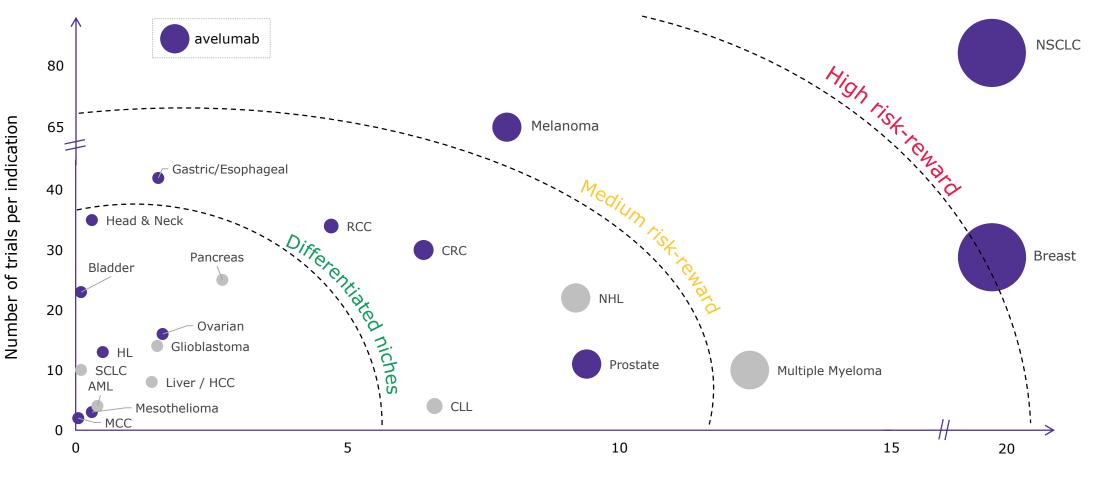
Avelumab<sup>5</sup> – Anti-PD-L1 mAb Merkel cell carcinoma

- Neurodegenerative DiseasesOncologyImmunology
- Immuno-Oncology
- Biosimilars

<sup>1</sup> Sponsored by the National Cancer Institute (USA); <sup>2</sup>1st line treatment; <sup>3</sup>2nd line treatment; <sup>4</sup>3rd line treatment;
 <sup>5</sup> European Medicines Agency accepted Marketing Authorization Application from Merck KGaA, Darmstadt, Germany in October 2016



# Avelumab plays predominantly in attractive and differentiated niches



Market size in 2020 per indication [€bn]

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

Merck KGaA Darmstadt, Germany

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

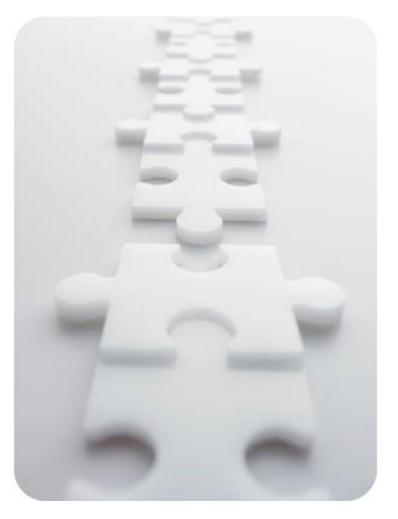


- Ambition to lead in niche indications (e.g. Merkel cell) or markets (e.g. Asia for gastric)
- Quick to market strategy (e.g. BTD designation for MCC)
- Small, but less crowded markets and sales potential with notable impact for us
- Strategic strength of Healthcare in niche markets



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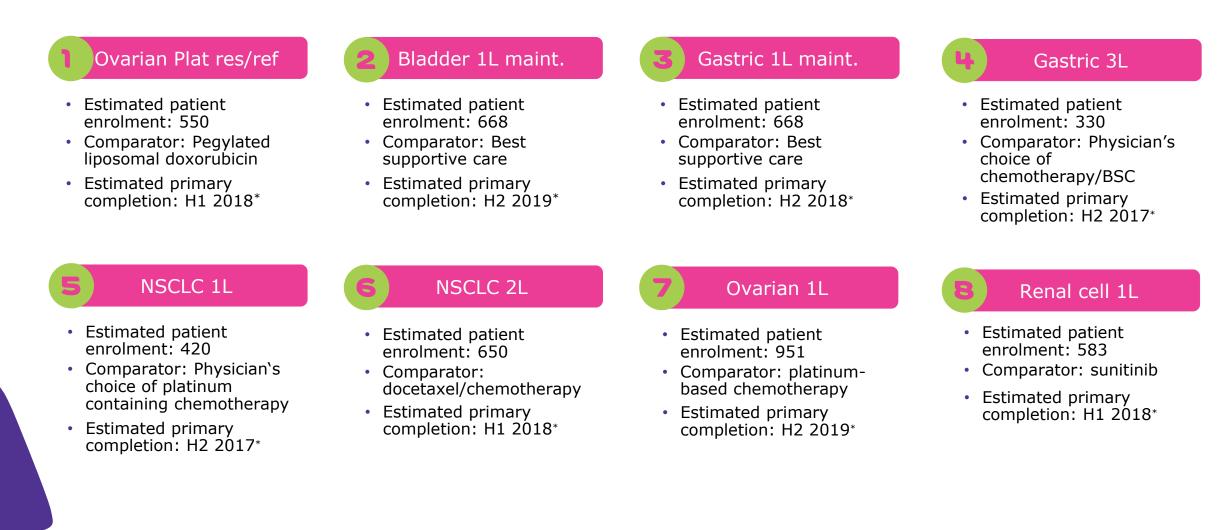
- Learn from experience of incumbents/early movers in major indications (e.g. NSCLC, Bladder)
- Potential for combinations given breadth of combined development pipelines
- Differentiate in trial design and explore application of further biomarkers



Merck KGaA Darmstadt, Germany

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# The alliance initiated 8 Phase III studies



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

# Encouraging response rates<sup>1</sup>

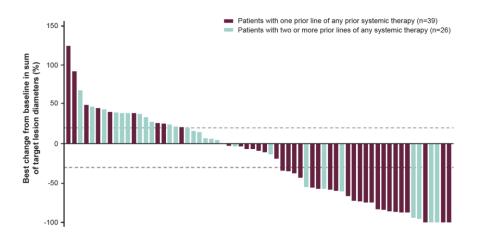
- ORR: 31.8%
  - 9.1% complete response
  - 22.7% partial response
  - Rapid (78.6% responding within 7 weeks of treatment)
  - Durable (82.1% still responding at time of analysis)
- 6-mo OS: 69% (median OS: 11.3 months)
- 6-mo PFS rate: 40%
- Manageable safety profile; no unexpected safety signals





#### 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

<sup>1</sup>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.

# Going forward, avelumab combinations will drive differentiation strategy



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



- Phase III, RCC 1L
- Phase Ib/II, NSCLC 1L ALK+
- Phase I/II
- Phase Ib/II, ovarian
- Phase I/Ib, ovarian

- (avelumab + Inlyta)
- i+ (avelumab + Xalkori/lorlatinib)
  - (avelumab + 4-1BB/OX 40)
  - (avelumab + Entinostat; Syndax collaboration)
  - (avelumab + VS-6063; Verastem collaboration)
- Further combination trials under consideration

# Cladribine tablets – MAA submission accepted by EMA in July 2016

#### Background

- Targets lymphocytes (both B and T cells), integral to MS pathogenesis
- Two Phase III and one Phase IIIb extension studies conducted in RRMS and early MS<sup>1,2,3</sup>; Phase II study in patients failing IFN beta therapy<sup>5</sup>
- 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<sup>4</sup>

# Potential for differentiation

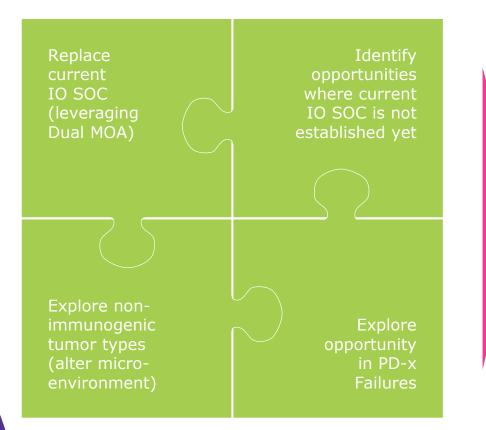
- Merck KGaA, Darmstadt, Germany aims to address significant unmet needs for agents delivering high efficacy with favorable safety profile in a convenient dosing regimen
- Administered orally (tablet formulation)
- Extremely short treatment courses (8–10 days per year) leading to long-term efficacy<sup>1</sup>

#### 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. <sup>1</sup> Giovannoni G et al. New Engl J Med 2010;362:416–26; <sup>2</sup> Giovannoni G et al. 65th annual meeting of the American Academy of Neurology 2013. P07.119. <sup>3</sup> Leist TP et al. Lancet Neurol 2014;13:257–67. <sup>4</sup> Giovannoni G et al. Lancet Neurol. 2011;10:329–37. <sup>5</sup> Montalban X et al. 65th annual meeting of the American Academy of Neurology 2013. P07.099.

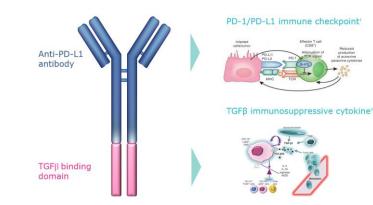
# **PD-L1–TGF-beta indicates potential to move beyond checkpoint inhibitors**

# Four focus areas for exploration

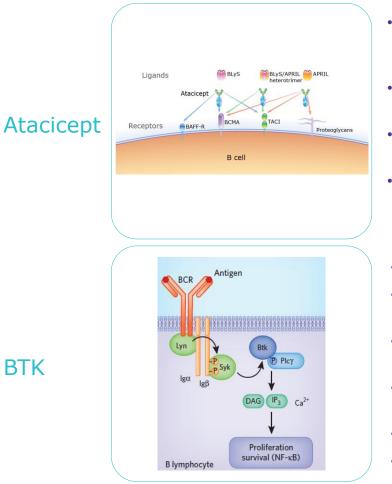


## Status and next steps

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



# Update on selected assets (1/2)



- Binds to receptors of two cytokines regulating maturation, function, and survival of B cells (B-lymphocyte stimulator (BLyS) & a proliferation-inducing ligand (APRIL))
- ADDRESS II (Ph IIb) in SLE patients aiming to show reduction in disease activity – 279 patients enrolled
- 24-week, randomized, double-blind, placebo-controlled Subcutaneous injection, once-a-week dosing
- Primary outcome: Percentage of patients with SLE responder index (SRI) response at week 24 compared to screening
- Suppress autoantibody-producing cells
- Preclinical research suggests therapeutic use in certain autoimmune diseases
- High and differentiated efficacy in preclinical models; promising kinase selectivity profile
- Aim to achieve best in class through minimization of off-target effects
- 2<sup>nd</sup> dose level of Phase I completed
- Partnering opportunities under consideration

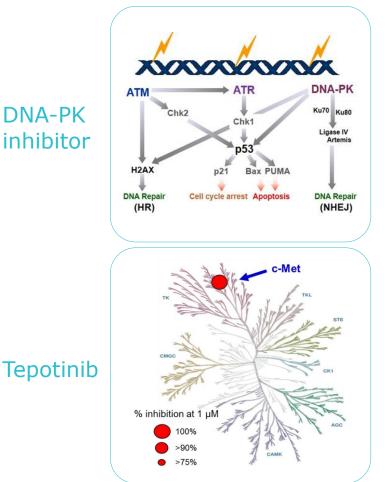
#### Phase III decision expected in H1 2017

Two additional phase II trials expected to be started in 2016

Note: timelines are event-driven and may change

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# Update on selected assets (2/2)



- M3814 is a selective and potent inhibitor of DNA-PK, a kinase mediating DNA double strand break repair<sup>1</sup>
- Preclinical PoC showing complete responses and/or increased PFS in combination with radiotherapy in several xenograft models (SCCHN, NSCLC, CRC, PaCa) and strong pre-clinical combination data with SoC chemotherapies
- Two Phase Ia trials ongoing: FIM (monotherapy): 5<sup>th</sup> dose level completed, MTD not yet reached; RT combination: recruitment ongoing

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

- 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<sup>2,3</sup>
- Phase II trials in progress in NSCLC and HCC

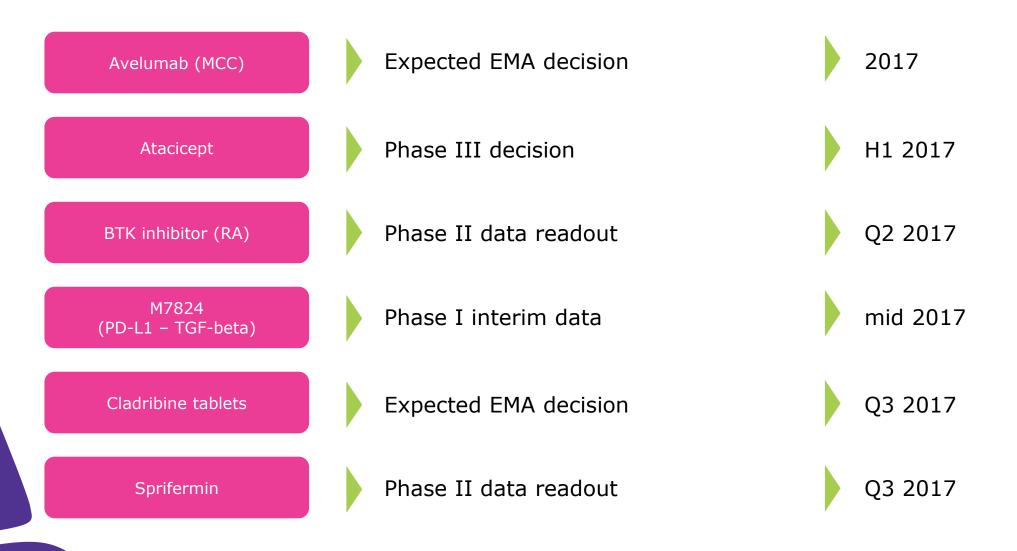
Analysis of Phase II data for HCC and NSCLC expected in H1 2018

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

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Note: timelines are event-driven and may change

# **Newsflow: Upcoming pipeline catalysts**



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# Healthcare is well set for future growth

Stable existing business

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

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

Successful collaborations

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

Promising late stage progress Three expected submissions in 2016 may potentially result in two product launches in 2017

Disciplined execution

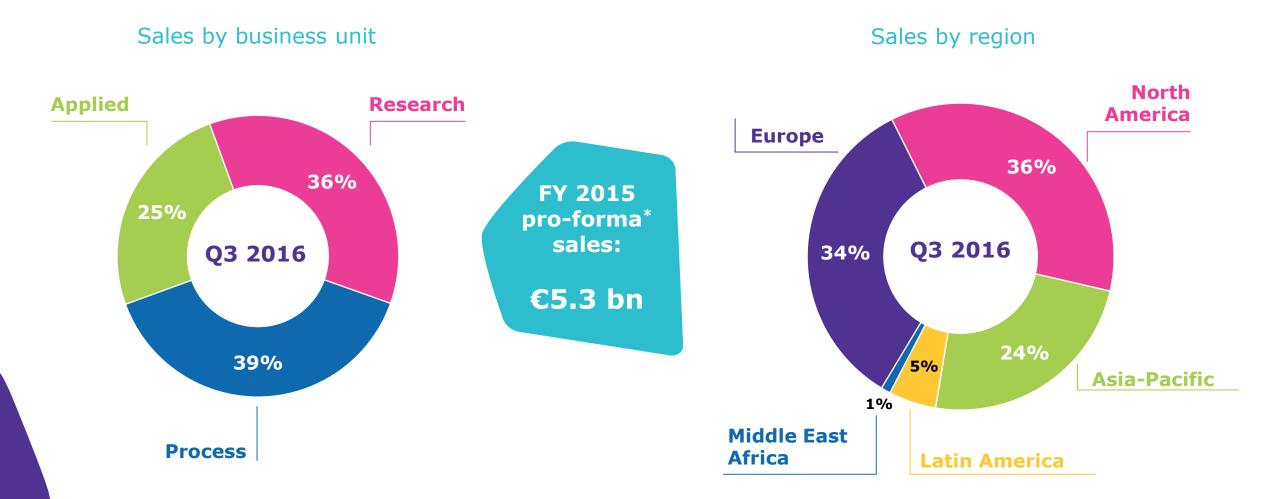
Systematic pipeline review and timely decision making allow efficient resource and budget allocation







# A balanced portfolio and geographic presence



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# Life Science is an attractive market



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

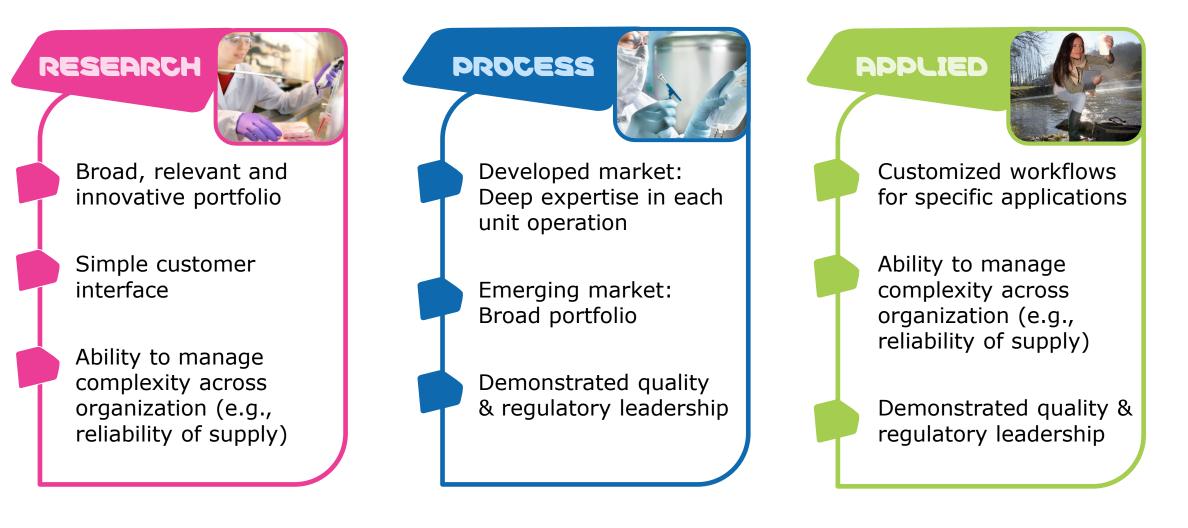


- Drug volume growth
  - from biologics
  - from emerging modalities
- Continued shift to single-use



- Volume growth from
  - Population growth
  - Increased testing needs

# Success driven by portfolio breadth and differentiation, a customer-centric approach and world-class capabilities



# **Process Solutions Our end-to-end portfolio for manufacturing mAbs**



MAKE Produce antibodies



Advanced™ CHO Fed-batch Medium Cell culture media to enhance cell growth

2000L CellReady bioreactor Tank for cultivating cells

Clarisolve ® clarification filters debris

PURIFY Remove cell debris, virus, etc.





Viresolve<sup>®</sup> Pro

Pellicon® cassette filters Washing and



**FORMULATE** Final drug product

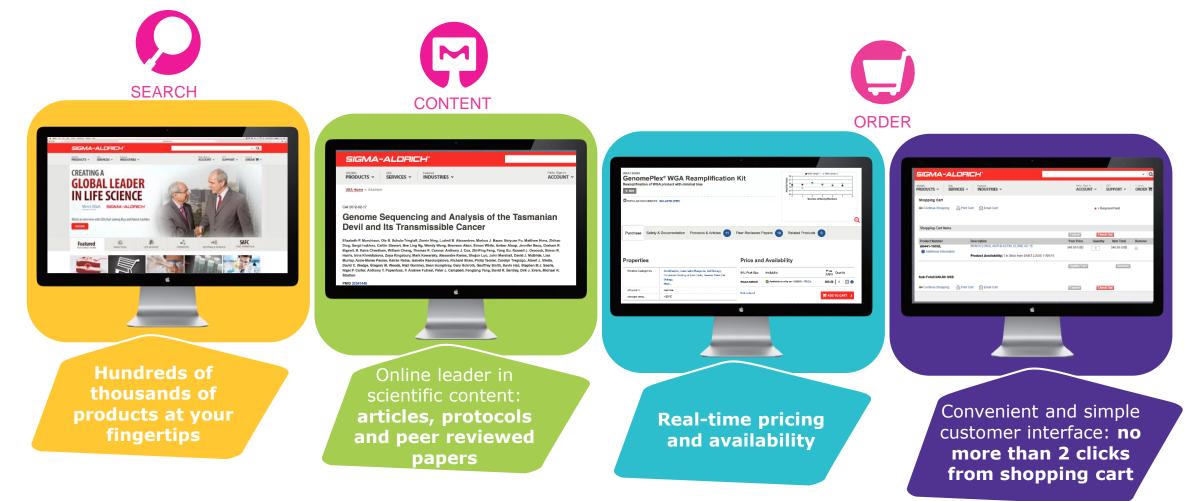
Opticap<sup>®</sup> capsules Sterile filtration



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# **#1** website in research life science industry

Industry leading e-commerce platform and supply chain capability



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# Life Science Life Science delivers synergies and integrates as planned

# synergies

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

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



# Integration

Smooth integration ongoing with early achievements:

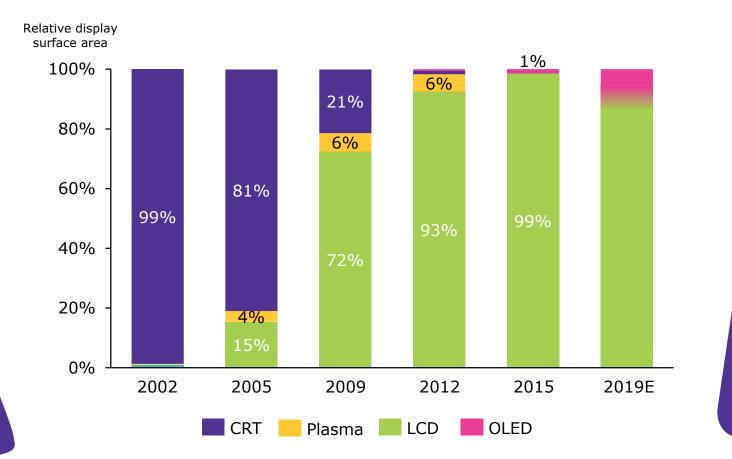
- Organization structure implemented
- High engagement from organization
- Common definition and implementation of processes well underway, e.g. pricing, customer excellence

No disruption of growth momentum during integration





# 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

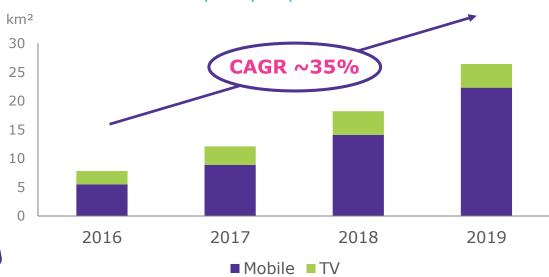
OLED share will increases in mobile applications



# 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



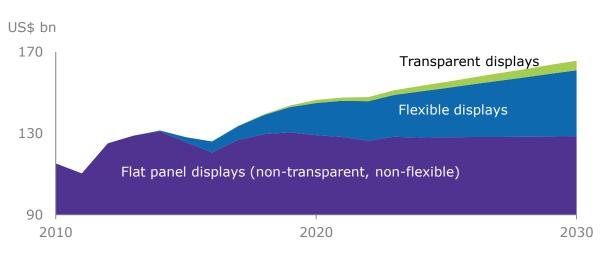
#### Announced OLED capacity expansion<sup>1</sup>



# solution provider

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

#### Display market development<sup>1</sup>



<sup>1</sup>Source: IHS, Merck KGaA, Darmstadt, Germany, VLSI

# Liquid crystals of FER a variety of opportunities

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1. Adaptive lighting for automotive

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- 2. Adaptive lighting for architecture
- 3. Smart antenna
- 4. Liquid crystal windows for architecture
- 5. Holography

2

6. Free form LCD

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

# Market drivers and technological trends

Miniaturization: Devices are becoming smaller with better performance

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

#### Mobility: Everyone is continuously connected without direct power supply

- More chips needed for local energy production
- Energy storage  $\rightarrow$  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

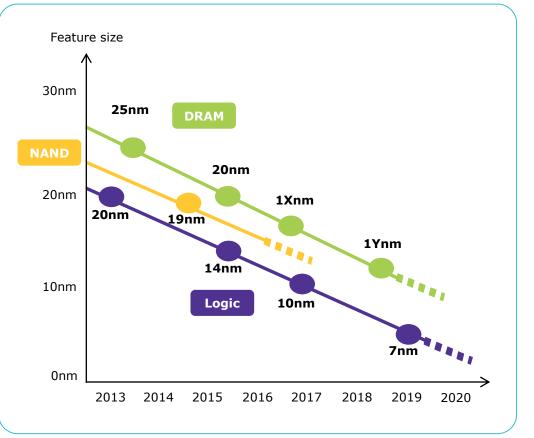
#### Big Data: Increasing need for intelligent data storage

• 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



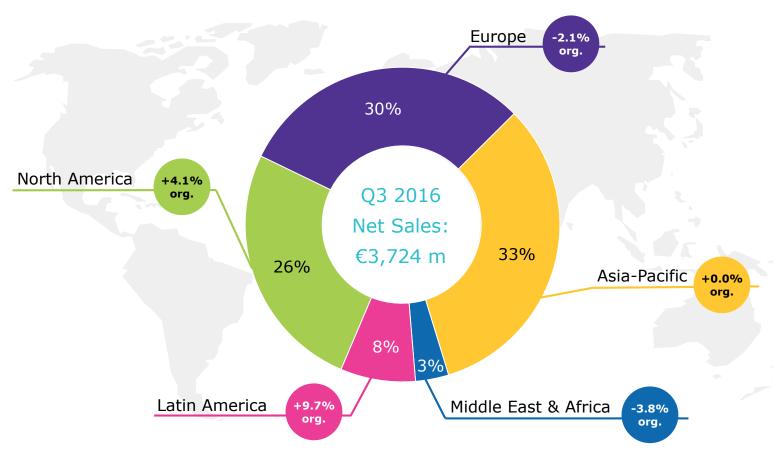
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# **Organic growth in all regions**

# Regional breakdown of net sales [€ m]



## Regional organic development

- Europe slightly lower as competitive pressure on Rebif outweighs strong demand for bioprocessing products
- North America continues to benefit from competitive situation for Fertility as well as Xalkori commission income
- Flat growth in Asia-Pacific reflects solid growth driven by Fertility, GM<sup>1</sup> and Life Science, offset by display destocking
- Very strong growth in LatAm driven by all businesses; significant contribution from PDP<sup>2</sup> in Brazil for Rebif

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

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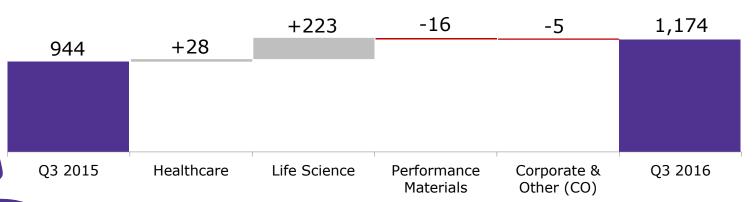
Merck KGaA Darmstadt, Germany

# Swift Sigma integration and organic growth drive EBITDA pre

# Q3 2016 YoY net sales

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

# Q3 YoY EBITDA pre contributors [€ m]



• Strong Fertility business and Xalkori commission income more than offset Rebif decline in Healthcare

- Life Science solid organic growth reflects strong Process Solutions
- Last significant effects of display industry destocking impacts Performance Materials

• Portfolio reflects Sigma and Kuvan

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

## Q3 2016: Overview

#### Key figures

[€m]	Q3 2015	Q3 2016	Δ
Net sales	3,120	3,724	19.3%
EBITDA pre Margin (in % of net sales)	944 <i>30.3%</i>	<b>1,174</b> 31.5%	24.3%
EPS pre	1.32	1.70	28.8%
Operating cash flow	872	1,067	22.4%
[€m]	Dec. 31, 2015	Sep. 30, 2016	Δ

[€m]	Dec. 31, 2013	Sep. 30, 2010	Δ
Net financial debt	12,654	11,649	-7.9%
Working capital	3,448	3,684	6.8%
Employees	49,613	50,967	2.7%

#### Comments

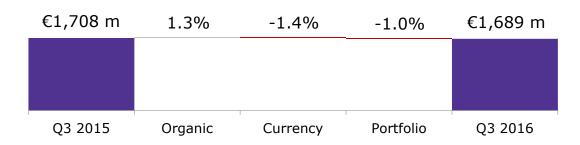
- EBITDA pre increase driven by Sigma, end of Rebif commission expenses, R&D provision release and higher royalties
- EPS pre up due to EBITDA pre increase and improved financial result
- Strong operating cash flow from EBITDA pre progression and improved working capital in Q3
- Net financial debt reduction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

## Healthcare: Higher profitability amid positive organic growth

#### Healthcare P&L

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

#### Net sales bridge

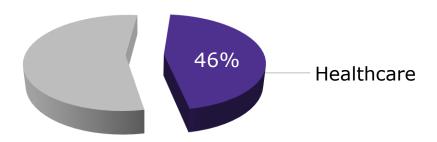


<sup>&</sup>lt;sup>1</sup>Productive Development Partnership; <sup>2</sup>Middle East & Africa Totals may not add up due to rounding

#### Comments

- Organic decline of Rebif from volume erosion in Europe and U.S. outweighs U.S. pricing and sound development of PDP<sup>1</sup> in Brazil
- Erbitux organically flat as EU pricing and competition offsets volume growth in China, Middle East and Latin America
- Fertility portfolio remains strong, especially in U.S. and China
- Softer Glucophage impacted by phasing and macro trends in MEA<sup>2</sup>
- Marketing & selling reflects end of commission expenses for Rebif (U.S.) partially offset by reinvestments in salesforce & launch preparations
- R&D spend contains ~€ 40 m release of pipeline termination provisions
- Higher EBITDA pre due to end of Rebif commissions, R&D provision release & higher royalties

#### Q3 2016 share of group net sales



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## Healthcare organic growth by franchise/product

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

#### Organic Organic 436 **%**Rebif *Rebif* 1,300 -5% -2% 468 1,358 219 657 +3% -1% 223 661 Consumer Consumer 219 646 +2% +3% 219 Health Health 698 182 578 +10% GONAL-GONAL-+17% 167 508 106 320 Concor +2% Concor +3% 106 359 89 286 / Glucophage -13% Glucophage -1% 103 329 Q3 2016 Q3 2015 9M 2016 9M 2015

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

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

#### Rebif sales evolution



#### Rebif performance

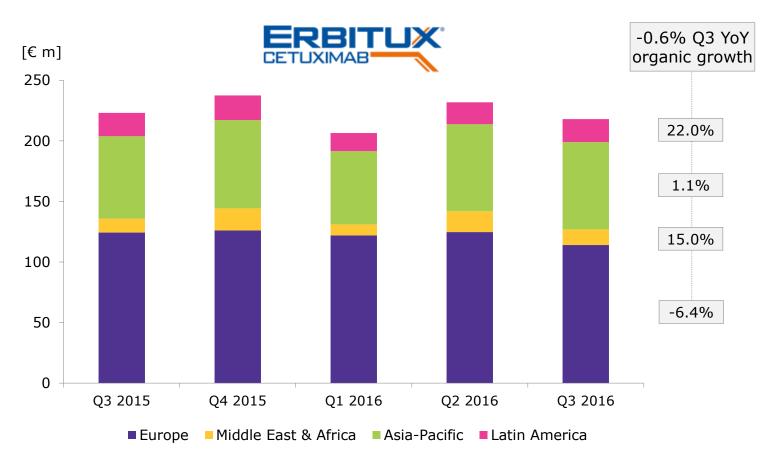
- Rebif sales of €436 m in Q3 2016 reflect organic decline of 5.5% amid negative FX effects mainly from LatAm
- Market share within interferons stable due to high retention rates and longterm safety track record
- •U.S. pricing & market share stabilization partially offset decline of interferon class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

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\*Productive Development Partnership

## **Erbitux: A challenging market environment**

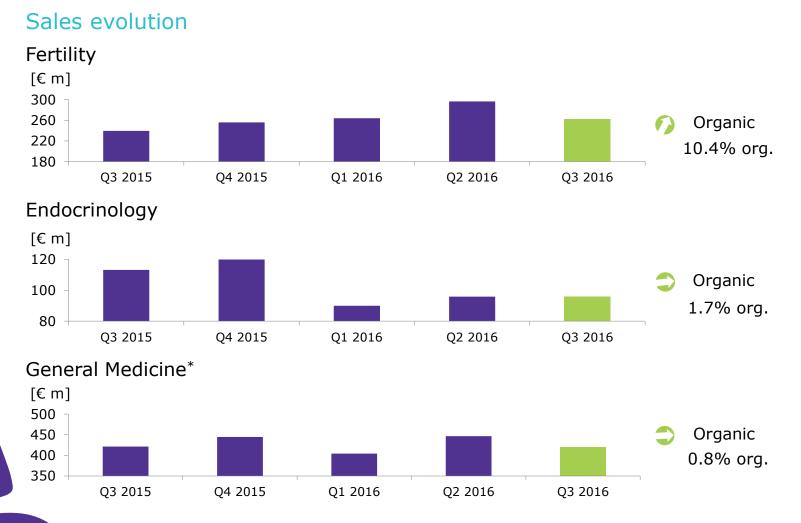
#### Erbitux sales by region



#### Erbitux performance

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

## Solid organic growth in Fertility, General Medicine and Endocrinology



#### Q3 drivers

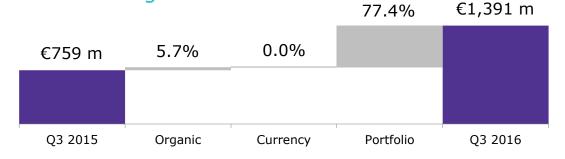
- Fertility shows strong growth across all products, especially in China
- Gonal-f still benefiting from competitive situation in the U.S. outweighing slight uptake of biosimilars in Europe
- Sales drop in Endocrinology reflects Kuvan divestment; remaining portfolio growing organically
- General Medicine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

## Life Science: Solid organic growth built on strong base

#### Life Science P&L

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

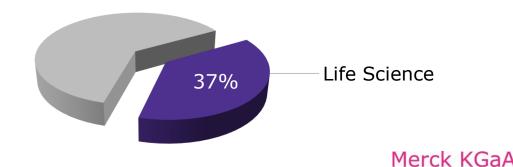
#### Net sales bridge



#### Comments

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

#### Q3 2016 share of group net sales



Darmstadt, Germany

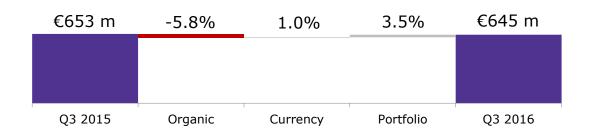
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## Performance Materials: Sound performance despite display destocking

#### Performance Materials P&L

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

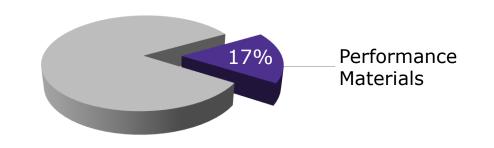
#### Net sales bridge



#### Comments

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

#### Q3 2016 share of group net sales



Merck KGaA

Darmstadt, Germany

## **Reported figures reflect solid business performance and Kuvan divestment**

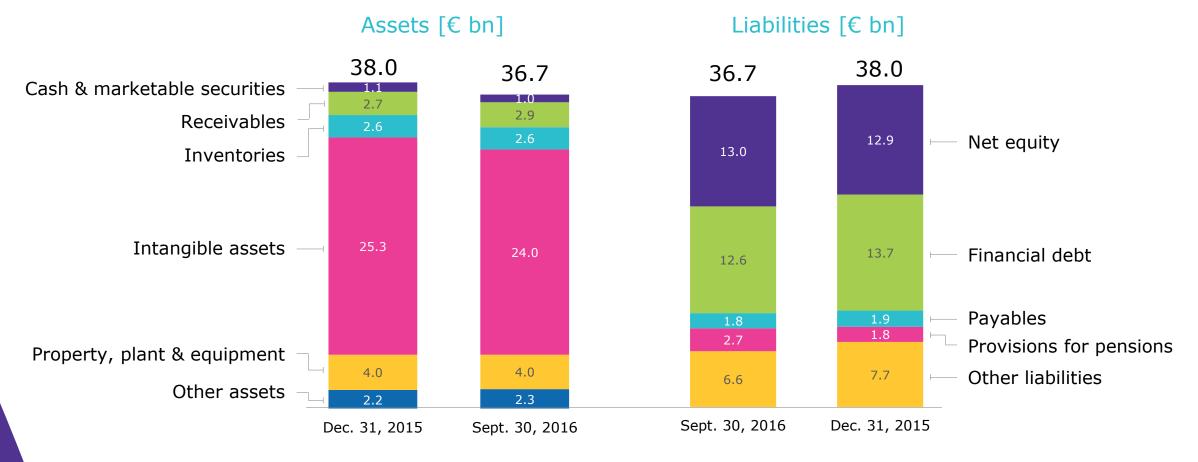
#### Reported results

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

#### Comments

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

### **Balance sheet – strong Q3 cash flow accelerates deleveraging process**

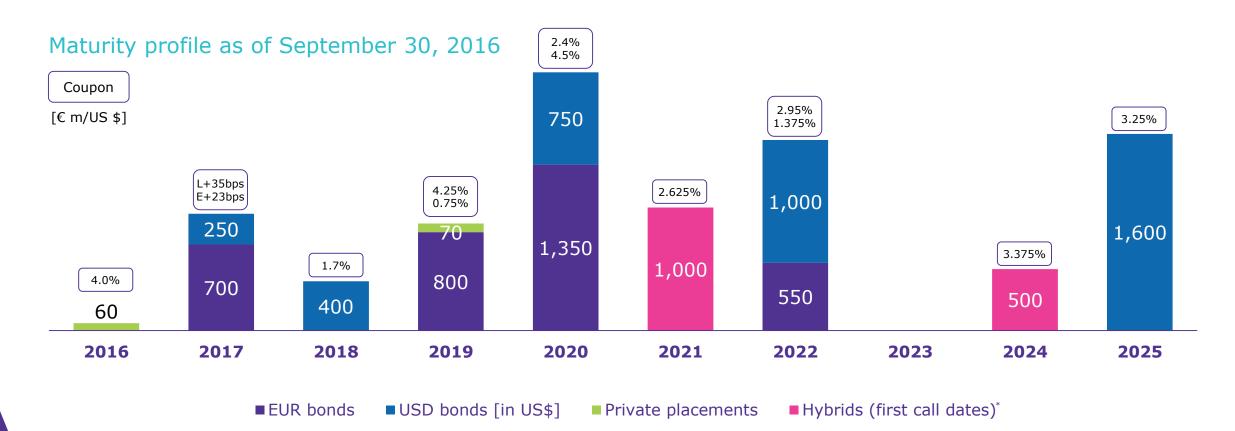


• Ongoing amortization of Sigma-related intangible assets

• Decline in interest rates drives increase in pension provisions

• Significant reduction of financial debt

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



Financing structure enables flexible and swift deleveraging

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## High EBITDA pre drives strong operating cash flow

### Q3 2016 – cash flow statement

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

#### Cash flow drivers

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

## **Exceptionals in Q3 2016**

### Exceptionals in EBIT

[€m]	Q3 2015		Q3 20	016
	Exceptionals	thereof D&A	Exceptionals	thereof D&A
Healthcare	-1	0	5	0
Life Science	21	0	25	0
Performance Materials	5	0	8	0
Corporate & Other	18	0	25	0
Total	44	0	63	0



## **Financial calendar**

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



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