

CREDIT SUISSE - 17TH ANNUAL ASIAN TECHNOLOGY CONFERENCE

MERCK KGAA, DARMSTADT, GERMANY

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Agenda

- Business overview
- **O2** Transforming the company
- **D3** Healthcare Funding for success
- Life Science Focusing on profitable growth
- Performance Materials Maintaining superior profitability
- **Executive Summary and Guidance**





Portfolio of three high-tech businesses



Leading in specialty pharma markets

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



Leading life science company

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

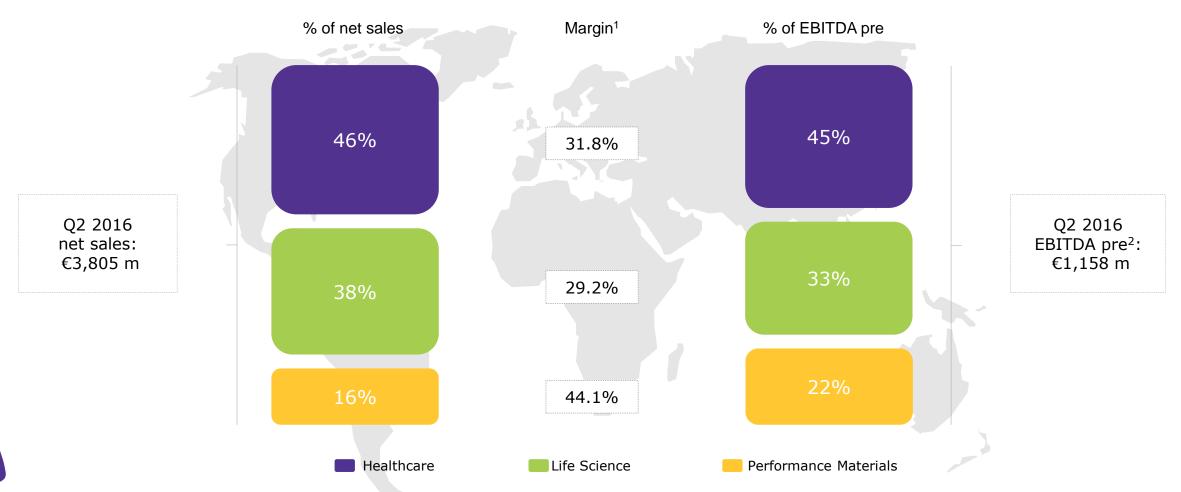


Market leader in display materials

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



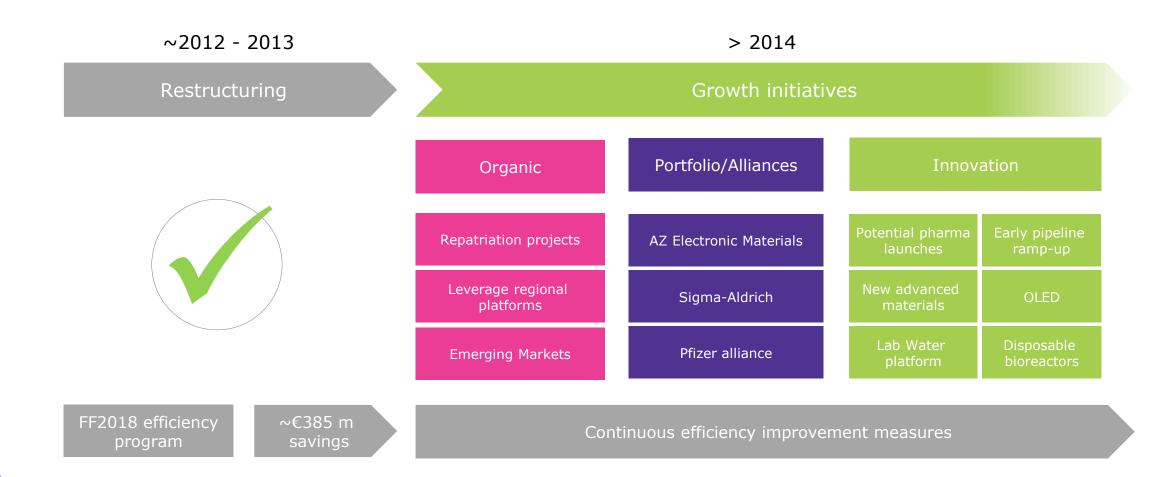
Strong businesses with attractive margins





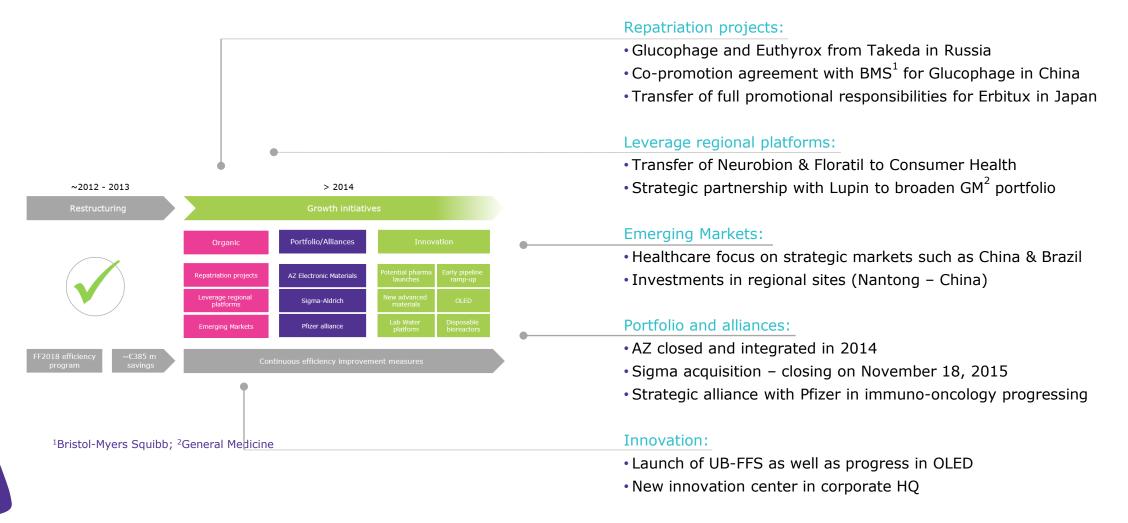


Strategic agenda 2018 – milestones achieved



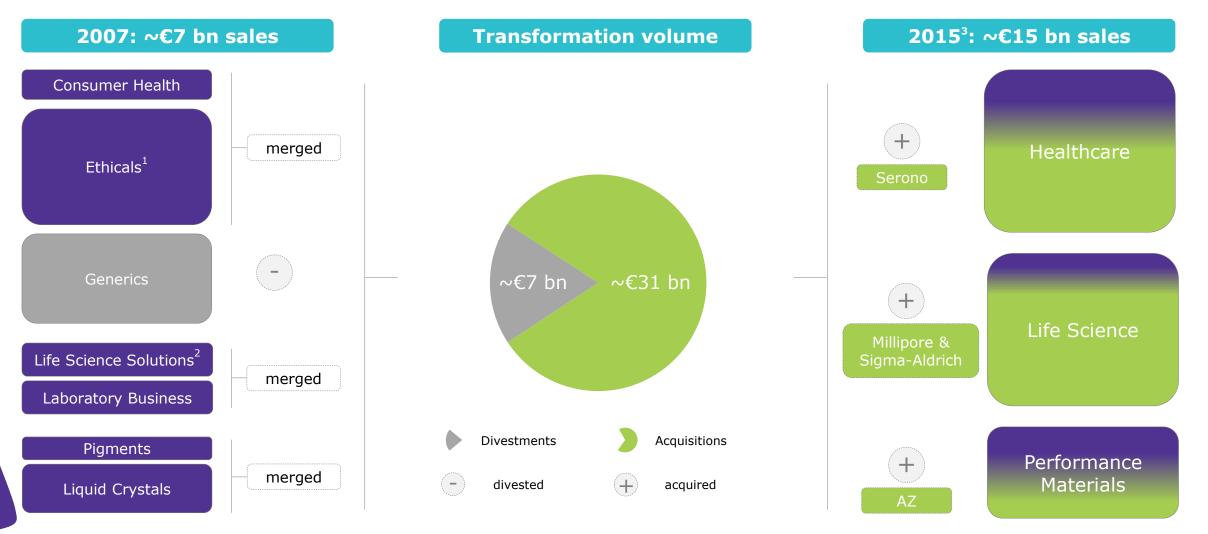


Strategic agenda 2018 - milestones achieved





The Group has added scale and strengthened the attractiveness of its portfolio





We have created three leading businesses

Healthcare

Life science

+ Serono

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

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

performance **Materials**



- World market leader
- Technology and innovation leader

Science Technology **Innovation Specialties** Quality Customer focus



13

North America and Emerging Markets have driven growth

Sales 2007

Initiatives

Sales 2015*



North America:

- Build presence through M&A
- Grow and defend Rebif
- Expand Fertility
- Grow Life Science





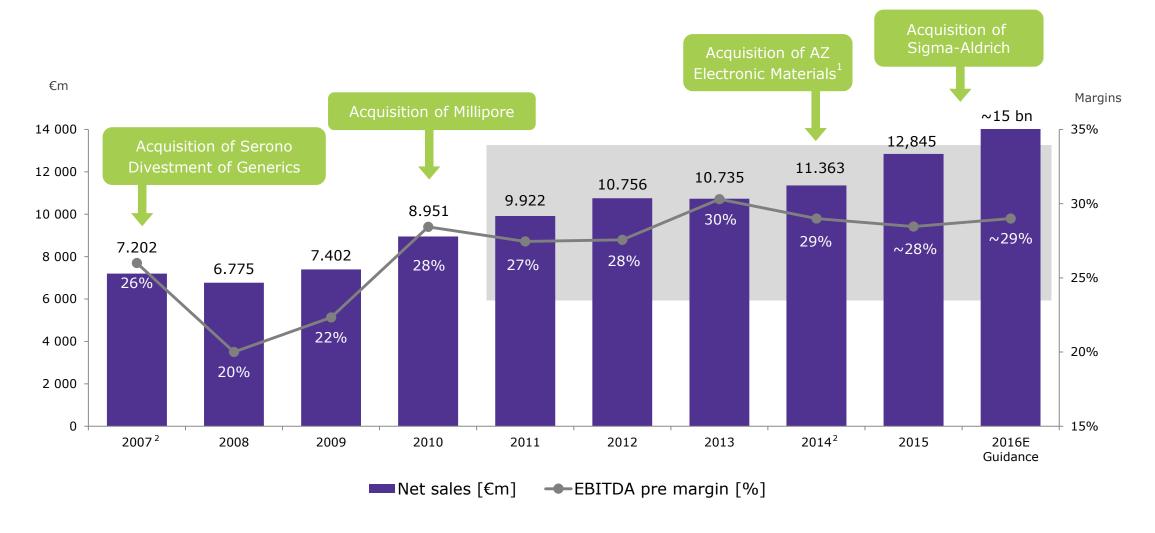
Emerging Markets:

- Drive General Medicine and Consumer Health
- Leverage Life Science portfolio
- LC and OLED leadership



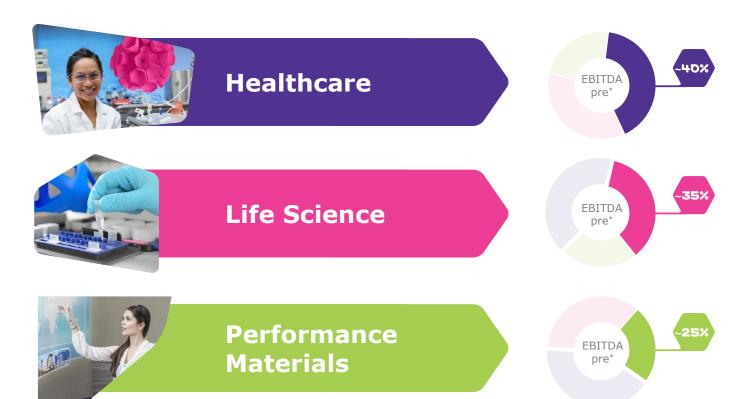


Profitability improved fundamentally





Each business sector has its specific priorities



Funding for success

- Invest in pharma pipeline
- Prepare for launches
- Maintain cost discipline

Focusing on profitable growth

- Sustain top-line momentum
- Drive underlying earnings
- Integrate Sigma and realize synergies

Maintaining superior profitability

- Build on resilient four-pillar platform
- Continuously innovate
- Sustain superior profitability with high value-added products

We are set for profitable and sustainable growth





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

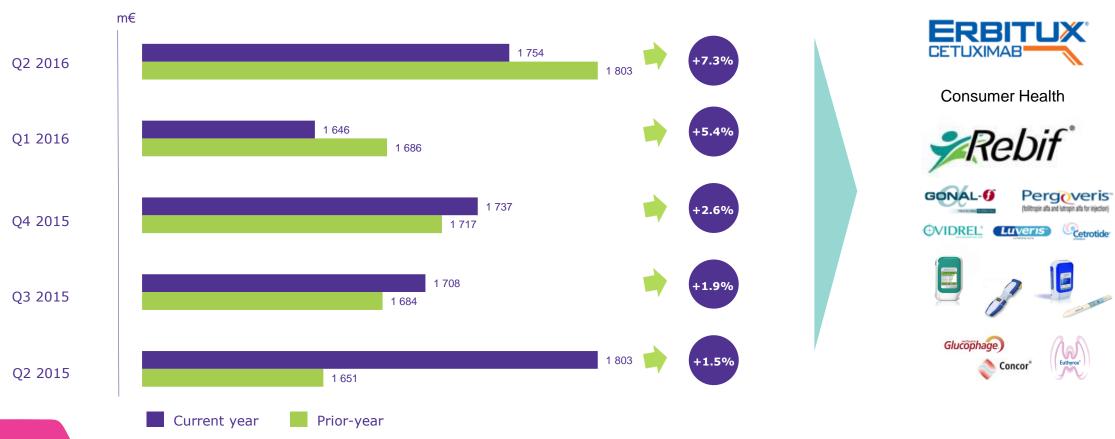






Delivered organic sales growth, committed to future performance

Stable to slight organic growth

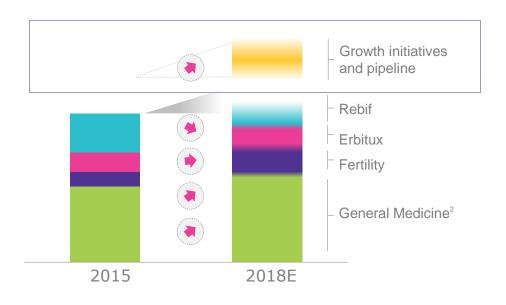


Defending the existing product portfolio is a key strength of Healthcare



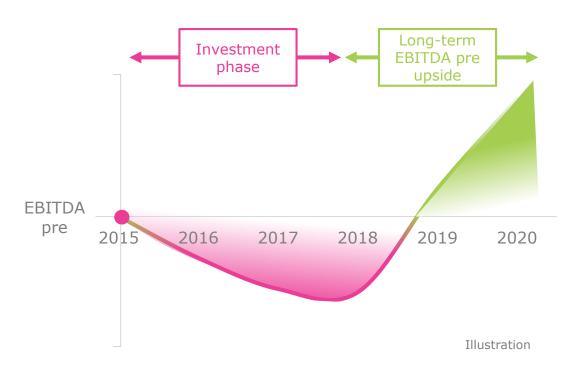
Pipeline opportunities will lead to rising investments

Stable to slightly growing sales until 2018 confirmed



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

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





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



Investments in future growth



- Immuno-Oncology: avelumab and ramp-up of earlier pipeline projects +€150-200m cost increase in 2016
- Oncology/Immunology, e.g. tepotinib, BTK inhibitor: mid to high double-digit €m cost increase in 2016
- Launch readiness to be ensured for avelumab and cladribine
- Costs for launch preparation in the mid to high double-digit €m range in 2016

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

Long-term growth investments partly mitigated by strict cost management







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



We create sustainable value that is based on strong strategic levers



Wide, innovative portfolio

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



Balanced Geographic Footprint

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



Industry-leading Capabilities

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



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



Life Science 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:

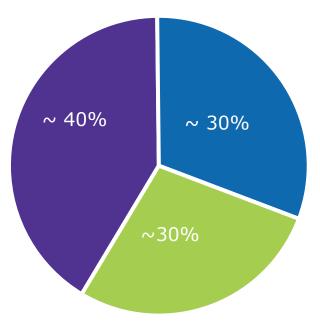
- Organization structure implemented
- High engagement from organization
- Common definition and implementation of processes well underway, e.g. pricing, customer excellence

No disruption of growth momentum during integration



Expected synergies identified and fully confirmed

Sources of synergies (3rd full year 2018)



- Production & Manufacturing Marketing & Selling
- Administration, R&D

Three major areas for delivering the synergies

Timing of expected synergies and related costs [€m]



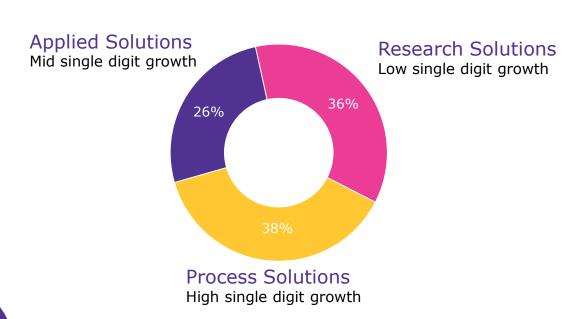


Fast synergy ramp-up to reach two thirds of target in 2017

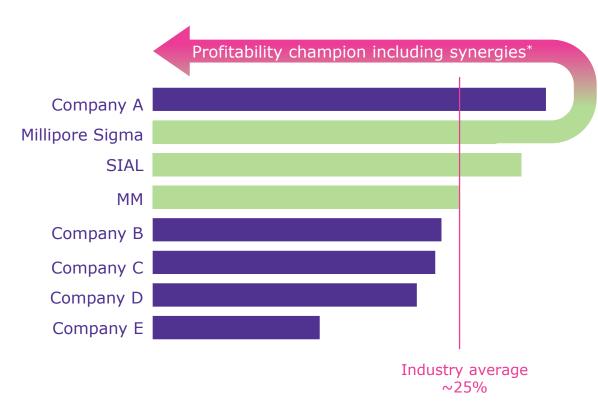


We aim to be the profitability champion of the sector

New sales breakdown as of Q2 2016



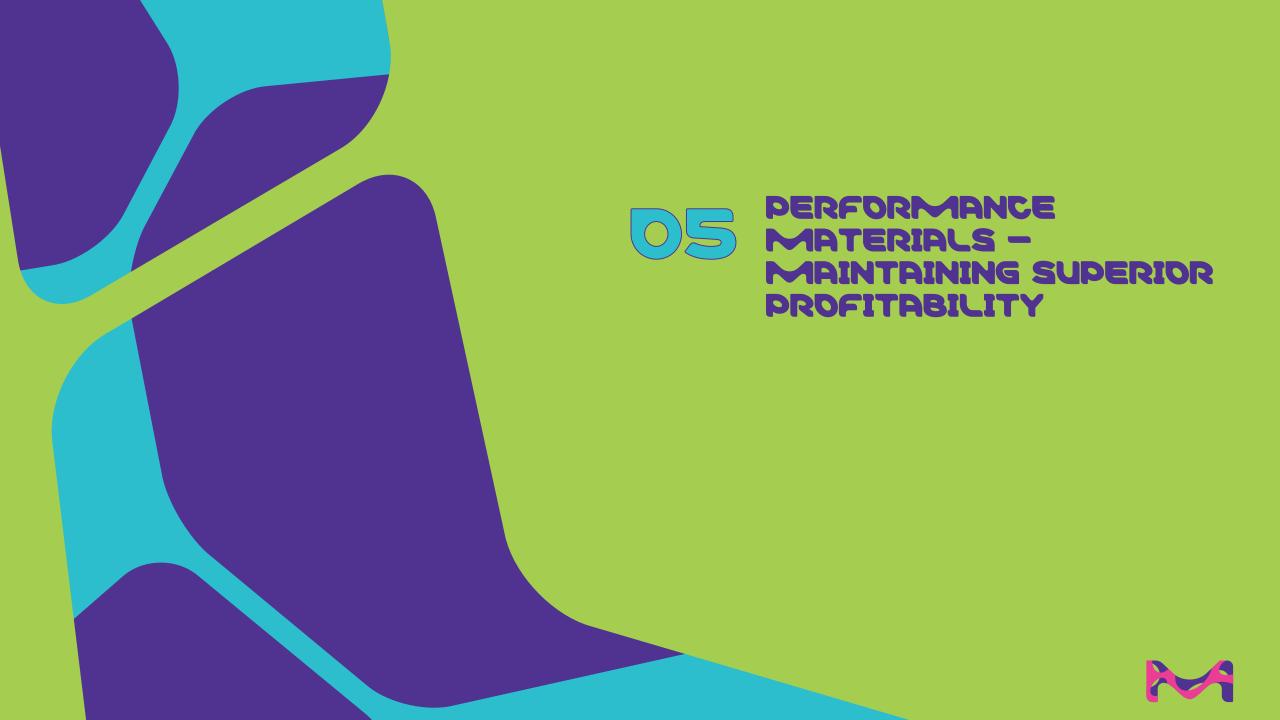
Above industry margin levels





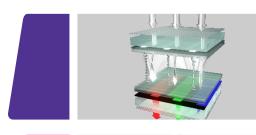
Life Science is well set for sustainable growth and profitability





Performance Materials

The four pillars are set for future profitable growth



Display Materials



Pigments and Functional Materials



Integrated Circuit Materials



Advanced Technologies

~50-60% of total sales,

- liquid crystals (LC) and photoresists for TVs, smartphones and tablet computers
- other display and non-display applications (e.g. LC Windows)

~15-20% of total sales,

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

~15-20% of total sales,

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

~5-10% of total sales,

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



Performance Materials

Innovation leadership is the backbone of future profitability and growth





LC

pigments

advanced tech.

New singles for PSVA technology, new mode

SA-VA

Meoxal luminous metal effect pigments

low defect CMP² slurries

Organic Photovoltaics



Fundamental research - more substantial investments needed

OLED printing technology

LC

pig~ents

ICM'

advanced tech.

Smart windows, smart antennas Counterfeiting prevention applications Directed self-assembly (DSA) in lithography



Integrated Circuit Materials – enabling solutions for the semiconductor market and adjacent industries

Dielectric Materials

 Spin-on silicon-based materials forming electrical insulation layers inside the microchips, displacing chemical vapor deposition (Spinfil®)



Lithography Materials

 Diverse portfolio of bespoke materials that improve resolution and performance and reduce costs in the IC lithography process



Silica Materials

 Colloidal silica used in chemical mechanical planarization (CMP), substrate polishing and industrial applications (Klebosol®)



IC Process Materials

 Removers, developers and other solvents as well as polyimide raw materials





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

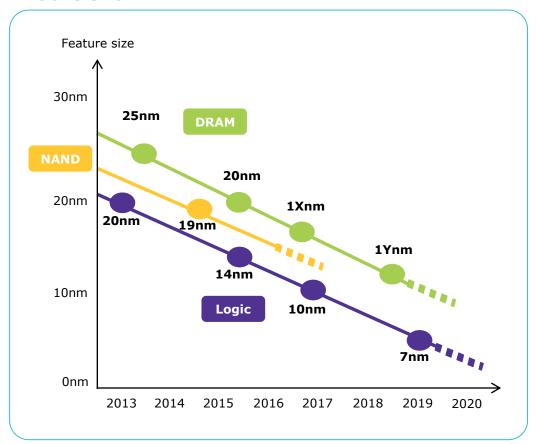
Big Data: Increasing need for intelligent data storage

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

Selected competitors

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

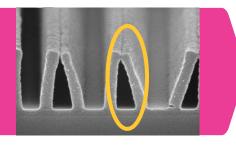
Feature sizes develop as predicted by Moore's law



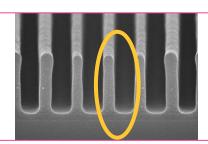


Integrated Circuit Materials develops dedicated solutions for customer challenges, enabling cutting edge innovation

Pattern collapse

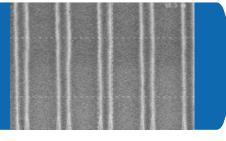


Firm® rinse materials



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

Lithography limitation



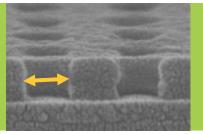
Directed self assembly

(DSA)

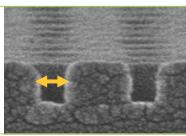


 Block Copolymer can generate small lines or contact holes by self-assembly. This allows miniaturization without expensive new equipment.

Wide features



Relacs® shrink materials



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



Performance Materials

Sound platform to deliver high earnings

O

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

Liquid Crystals Pigments AZ

OLED

Balanced sales and consistently high earnings



2

Continuous innovation as key profitability driver

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

We are the innovation leader

2013





Diversification of portfolio and ongoing innovation lead to strong profitability



Performance Materials

Long-term growth and profitability drivers are intact

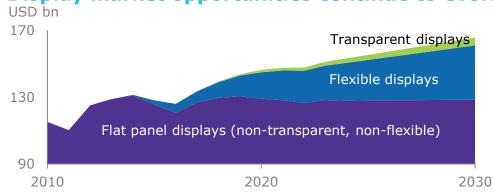
Macroeconomics and electronics remain buoyant

- 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

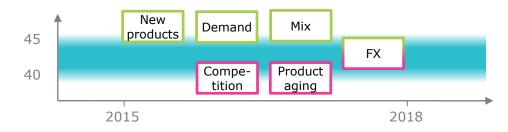
- High market share in liquid crystals expected to prevail
- Strong differentiation by innovation inherent mature of business

Display market opportunities continue to evolve¹



Sustainable profitability drivers

EBITDA pre margin (%)



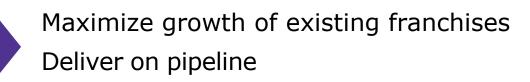
Unique differentiation and market position will continue to lead to strong profitability and maintain low single-digit growth trajectory





We are well set for profitable and sustainable growth







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



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



Group

We have clear financial priorities for the next two years



Focus on cash flow and deleveraging



Ongoing cost discipline



Efficient capital allocation

- 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 Group's profitable growth path



Group

Upgrade of full-year 2016 guidance

Guidance for 2016

Net sales: ~ €14.9 - 15.1 bn

EBITDA pre: ~ €4,250 - 4,400 m

EPS pre: ~ €5.85 - 6.10







Appendix

- **Ol** Guidance details
- **02** Healthcare
- **Life Science**
- **Performance Materials**
- **5** Financial details





2016 business sector guidance



Net sales

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

EBITDA pre

~ €1,950 - 2,050 m



Net sales

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

EBITDA pre

~ €1,620 - 1,670 m



Net sales

- Moderate organic decline
- Improving macro signals amid destocking in liquid crystals
- Growing demand in all businesses

EBITDA pre

~ €1,100 - 1,150 m



Additional financial guidance 2016

Further financial details

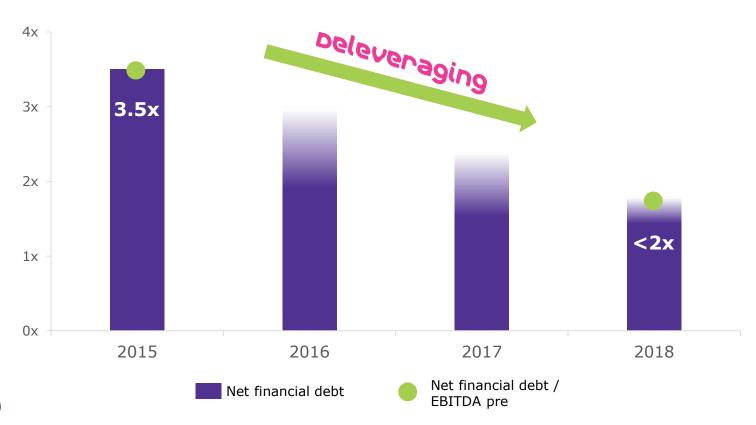
Corporate & Other EBITDA pre	~ -€370 – -400 m
Interest result	~ -€270 – -300 m
Intangibles amortization from Sigm	a PPA ~ €250 – 300 m p.a.
Underlying tax rate	~23% to 25%
Capex on PPE	~€750 – 800 m
Hedging/USD assumption	2016 & 2017 hedge ratio ~40%-45% at EUR/USD ~1.10 to 1.15
2016 Ø EUR/USD assumption	~1.07 - 1.12



Strong focus on cash generation to ensure swift deleveraging

Net debt and leverage development

[Net debt/ EBITDA pre]



Focus on deleveraging

- Commitment to swift deleveraging to ensure a strong investment grade 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





- Global presence
- ~40% of sales in Europe

Costs

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

FX Impact



Sales

 Balanced regional sales split between EU, NA and RoW

Costs

- Extensive manufacturing and research footprint in the U.S.
- Global customer proximity requires broad-based sales force

FX Impact



Sales

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

Costs

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

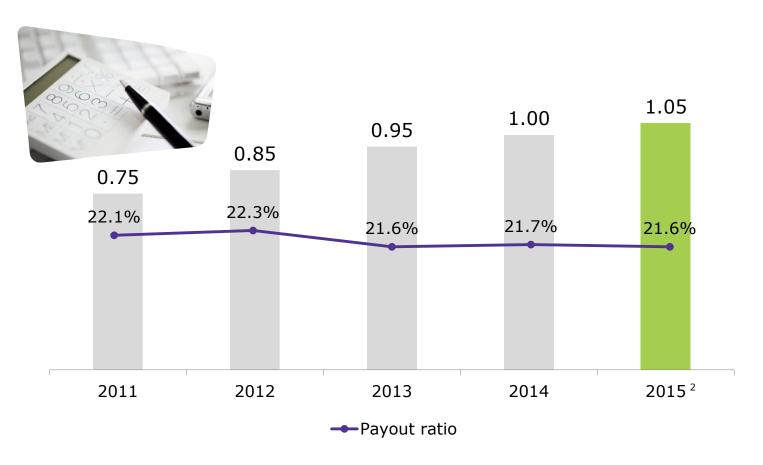
FX Impact





Sustainable dividend development

Dividend¹ development 2011-2015



2015 dividend and policy

- Dividend of €1.05 per share proposed² for 2015
- Last year's dividend constitutes the minimum level³
- 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



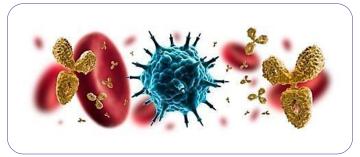
Biologicals portfolio



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







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



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



The road to maximizing existing franchises is clear



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



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



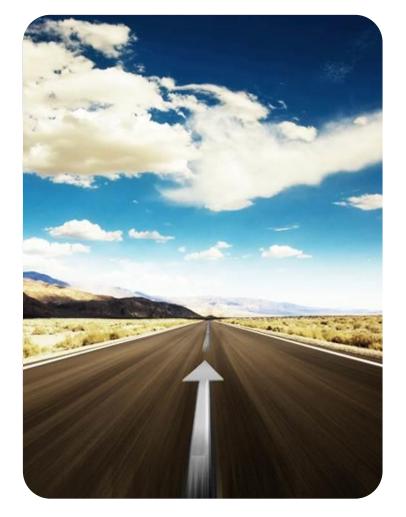
Build on No.1 position and ART¹ channel access with embryo diagnostics and other innovative technologies



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



Build on existing track record in Emerging Markets, drive brand and life-cycle management and expand business including asset repatriation





Clinical pipeline

Phase I

Tepotinib
c-Met kinase inhibitor
Solid tumors

M2698

p70S6K & Akt inhibitor

Solid tumors

M3814

DNA-PK inhibitor

Solid tumors

Beigene-283 BRAF inhibitor

Solid tumors

Avelumab Anti-PD-L1 mAb

Solid tumors

Avelumab

Anti-PD-L1 mAb

Hematological malignancies

M9241 (NHS-IL12)1

Cancer immunotherapy

Solid tumors

M7824

Bifunctional immunotherapy

Solid tumors

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

Psoriasis

M2951

BTK inhibitor

Systemic lupus erythematosus

Phase II

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

Tepotinib c-Met kinase inhibitorNon-small cell lung cancer

Tepotinib c-Met kinase inhibitor

Hepatocellular cancer

Avelumab
Anti-PD-L1 mAb
Merkel cell carcinoma

Sprifermin
Fibroblast growth factor 18
Osteoarthritis

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

M2951

BTK inhibitor

Rheumatoid arthritis

Phase III

Avelumab – Anti-PD-L1 mAb Non-small cell lung cancer 1L²

Avelumab - Anti-PD-L1 mAb

Non-small cell lung cancer 2L3

Avelumab - Anti-PD-L1 mAb

Gastric cancer 1L2

Avelumab - Anti-PD-L1 mAb

Gastric cancer 3L4

Avelumab - Anti-PD-L1 mAb

Bladder cancer 1L²

Avelumab - Anti-PD-L1 mAb

Ovarian cancer platinum resistant/refractory

Avelumab - Anti-PD-L1 mAb

Ovarian cancer 1L2

Avelumab - Anti-PD-L1 mAb Renal cell cancer 1L²

MSB11022

Proposed biosimilar of Adalimumab

Chronic plaque psoriasis

Registration

Cladribine Tablets⁵ – Lymphocyte targeting agent

Relapsing-remitting multiple sclerosis

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

Pipeline as of July 28th, 2016

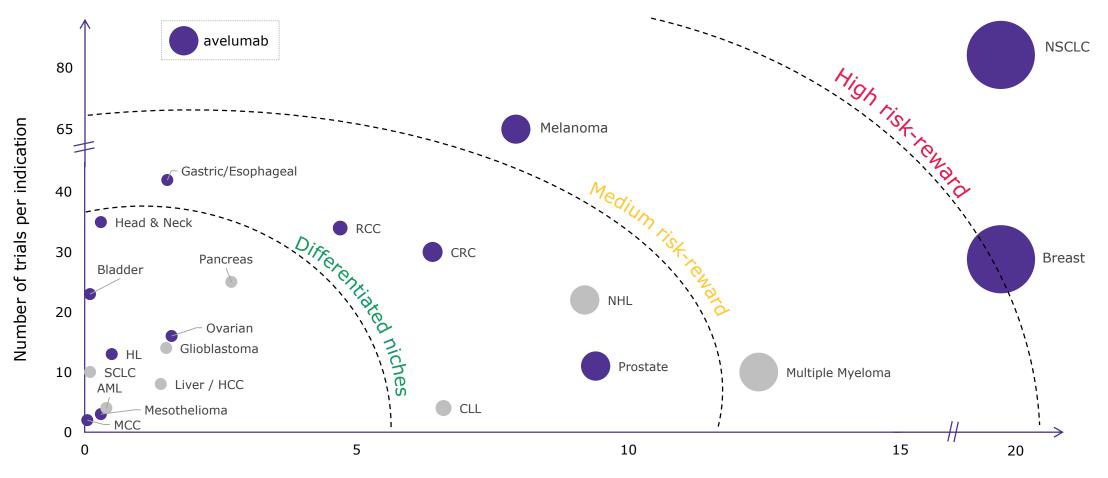
Pipeline products are under clinical investigation and have not been proven to be safe and effective. There is no guarantee any product will be approved in the sought-after indication.

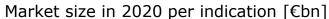


¹Sponsored by the National Cancer Institute (USA); ²1st line treatment; ³2nd line treatment; ⁴3rd line treatment

⁶As announced on July 18th, 2016 the European Medicines Agency accepted Merck KGaA, Darmstadt, Germany Marketing Authorization Application

Avelumab plays predominantly in attractive and differentiated niches







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

Unsaturated and / or niche indications

Ambition: Smart leader

- Indications (Merkel cell) or markets (Asia for gastric)
- Quick to market strategy, e.g. BTD for MCC in November 2015
- Small, but less crowded markets and sales potential with notable impact for us
- Strategic strength of Healthcare in niche markets

Ambition: Smart follower

Saturated and / or major indications

- Indications such as NSCLC or Bladder
- Learn from experience of incumbents/early movers
- Potential for combinations given breadth of combined development pipelines, e.g. lung
- Differentiate in trial design and explore application of further biomarkers





The alliance initiated 8 Phase III studies

Ovarian Plat res/ref

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

2 Bladder 1L maint.

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

Gastric 1L maint.

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

Gastric 3L

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

5 NSCLC 1L

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

NSCLC 2L

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

7 Ovarian 1L

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

Renal cell 1L

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



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

Encouraging response rates¹

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

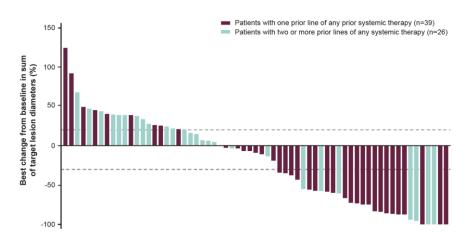






Potential for differentiation

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





Going forward, avelumab combinations will drive differentiation strategy



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



Phase III, RCC 1L (avelumab + Inlyta)

Phase Ib/II, NSCLC 1L ALK+ (avelumab + Xalkori/lorlatinib)

• Phase I/II (avelumab + 4-1BB)

Phase Ib/II, ovarian (avelumab + Entinostat; Syndax collaboration)

Phase I/Ib, ovarian (avelumab + VS-6063; Verastem collaboration)

Further combination trials under consideration



Cladribine tablets - MAA submission accepted by EMA in July 2016

Background

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

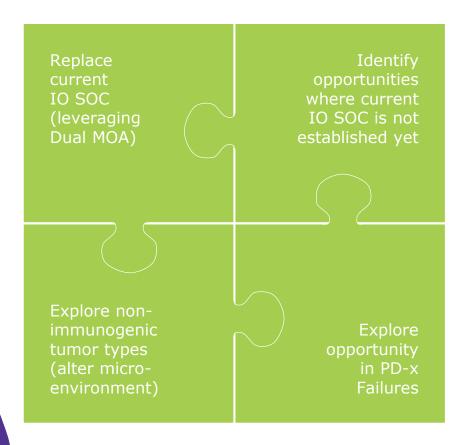
Potential for differentiation

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



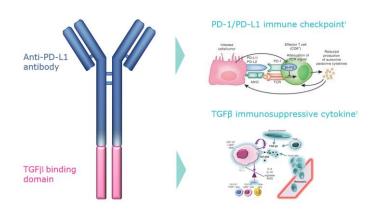
PD-L1-TGF-beta indicates potential to move beyond checkpoint inhibitors

Four focus areas for exploration



Status and next steps

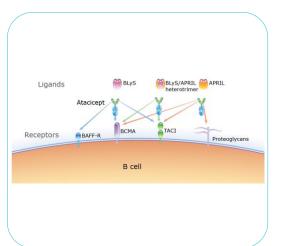
- Novel, first-in-class bifunctional immunotherapy
- Bifunctional mode should result in broader application vs. respective mono-functional agents
- Great potential when combined with Standard of Care, immunotherapy and internal pipeline drug candidates
- Dose level finding of Phase I completed
- Expansion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



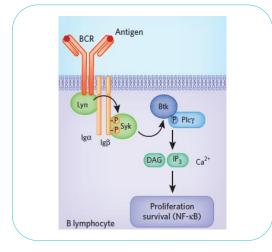


Update on selected assets (1/2)

Atacicept



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



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

Phase III decision expected in H2 2016

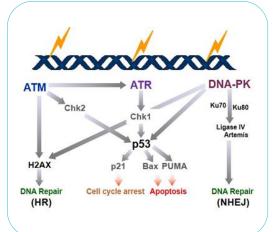
Three phase II trials expected to be started until end of 2016 (e.g. RA, SLE)



BTK

Update on selected assets (2/2)

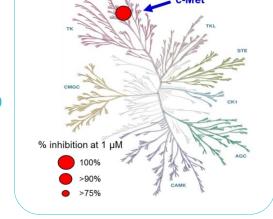
DNA-PK inhibitor



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

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





tolerated dose; ²Qin, ECC 2015, (3) Kim et al, IASCL-WCLC 2015

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

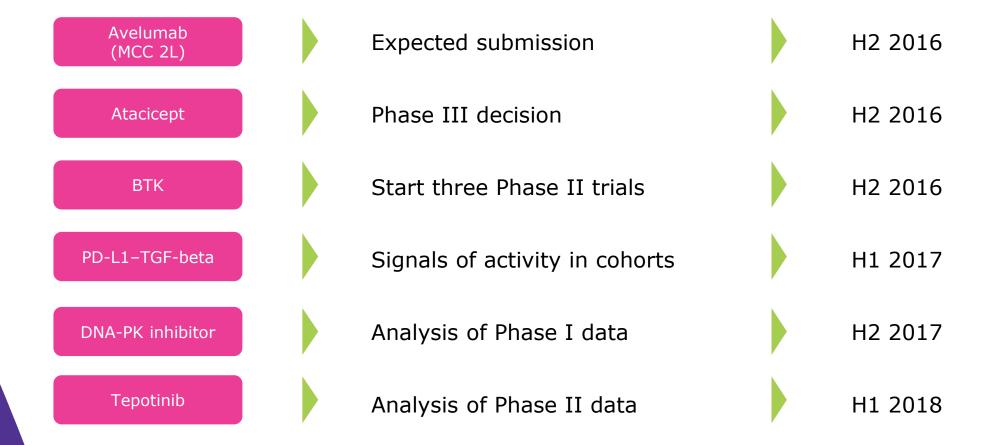
Analysis of Phase II data for HCC and NSCLC expected in H1 2018

Note: timelines are event-driven and may change

¹Graphics only illustrative; Acronyms: SCCHN = Squamous Cell Carcinoma of the Head and Neck, NSCLC = Non-small Cell Lung Cancer, CRC = Colorectal Cancer, PaCa = Pancreatic Cancer, HCC = Hepatocellular Cancer, PFS = Progression-free Survival, SoC = Standard of Care, FIM = First-in-Man, RT = radiotherapy, CT = chemotherapy, MTD = maximum



Outlook - MCC submission planned in H2 2016





Healthcare is well set for future growth

Stable existing business

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

Strong R&D pipeline

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

Successful collaborations

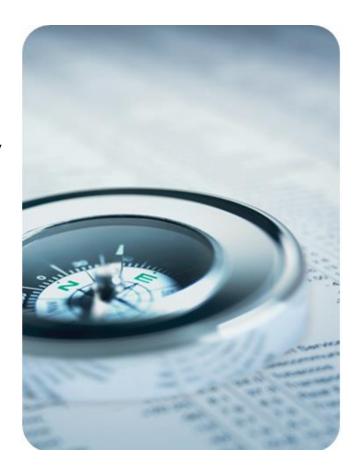
Proven success in partnering through joint investments and collaborations – maximizing potential of assets in competitive space

Promising late stage progress

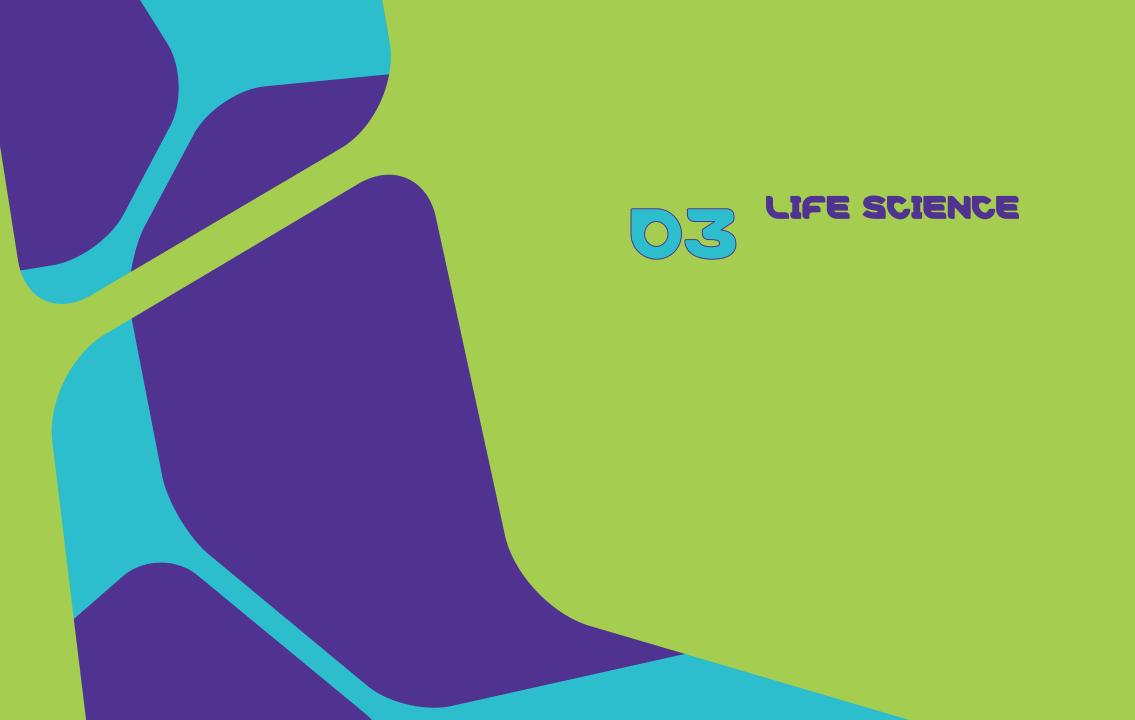
Two expected submissions in 2016 may potentially result in product launches in 2017

Disciplined execution

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



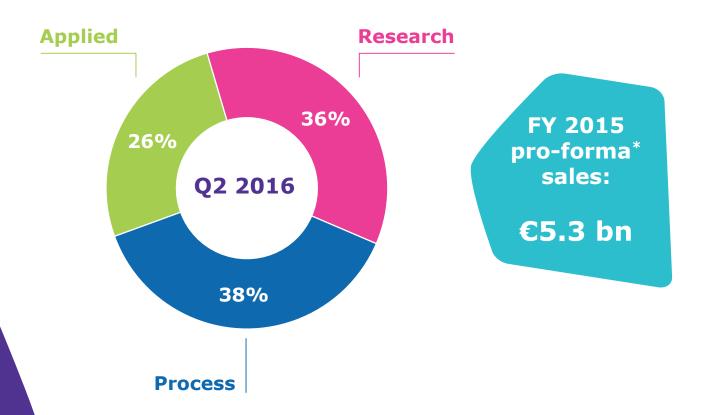




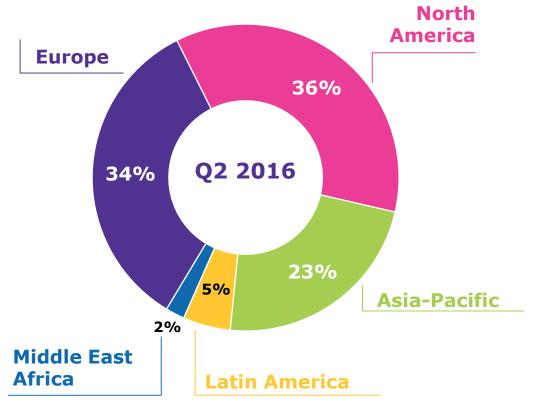


A balanced portfolio and geographic presence

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



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

RESEARCH



- Broad, relevant and innovative portfolio
- Simple customer interface
- Ability to manage complexity across organization (e.g., reliability of supply)

PROCESS



- Developed market:
 Deep expertise in each
 unit operation
- Emerging market: Broad portfolio
- Demonstrated quality & regulatory leadership

APPLIED



- Customized workflows for specific applications
- Ability to manage complexity across organization (e.g., reliability of supply)
 - Demonstrated quality & regulatory leadership



Process Solutions

Our end-to-end portfolio for manufacturing mAbs



MAKE

Produce antibodies



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**



PURIFYRemove cell debris, virus, etc.



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

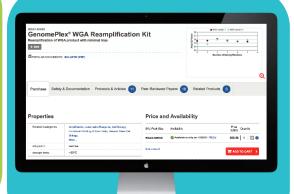




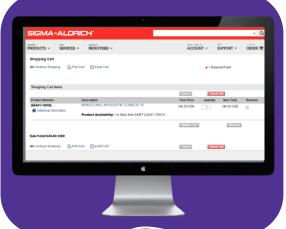
Online leader in scientific content: articles, protocols and peer reviewed papers



ORDER

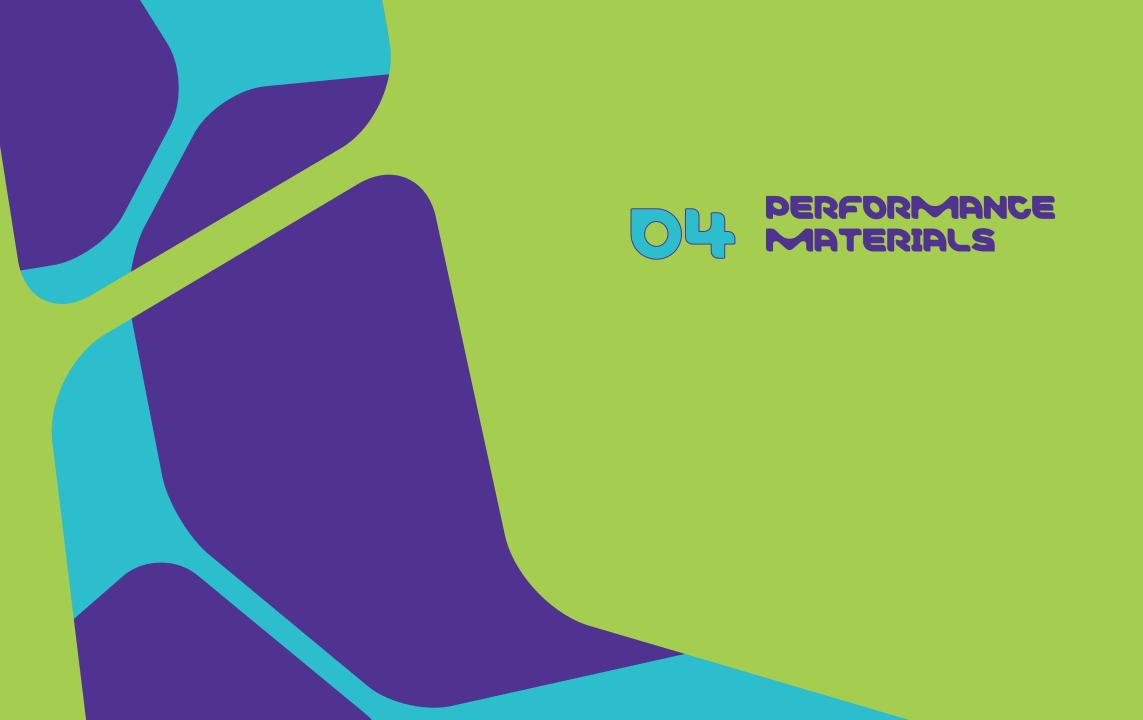


Real-time pricing and availability



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







Liquid Crystals stand apart from typical players in the chemical industry

Companies **Bulk** Players like BASF**, Bayer chemicals Materials Science, Dow Companies like DSM, Evonik, **Specialty** AkzoNobel, DuPont chemicals High value Specialty chemicals firms like added Symrise, Givaudan, Croda chemicals € bn business with small volumes at high value per gram and decisive function for customer

Volumes kt

Margins* 10-15% 15-20% kg 20-30% Premium

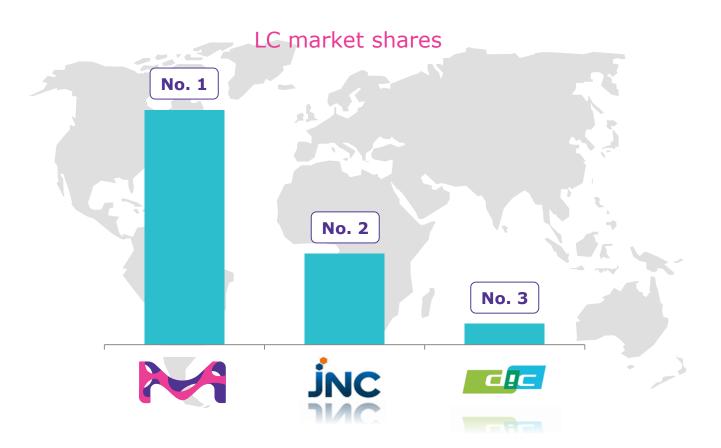


Chemical activities of the Group are the exact opposite of bulk



We are THE innovation leader in the highly consolidated liquid crystals market

Market share of liquid crystal suppliers*



Characteristics

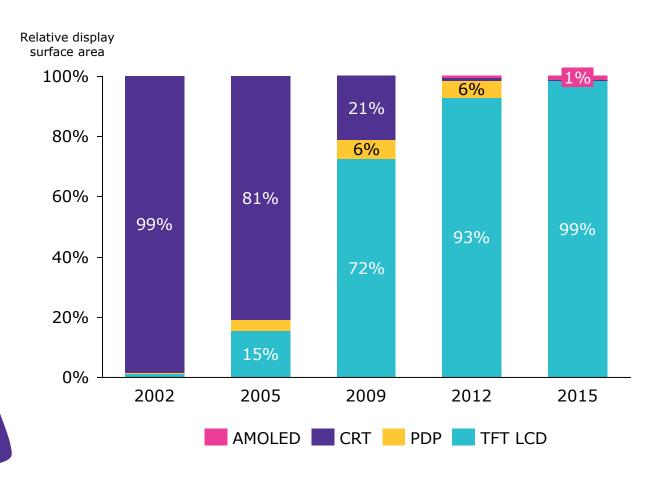
- Merck KGaA, Darmstadt, Germany is pioneer and market leader since the beginning of liquid crystals commercialization
- Proven innovation track record
- Customers come to us as the enabler for new product development and existing technology improvements
- Oligopolistic market structure with high barriers to entry

Sustained market leadership in liquid crystals



LCDs have squeezed all other large display technologies out of the market, OLED rising slowly

Market share by display technologies



LCD leadership foundation

For consumers

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

For manufacturers

- Price and scalability
- Production capacities
- Production costs

LCDs have created highest technological and commercial entry barriers, OLED share increasing in small and medium size applications



High quality and low cost of LCD TVs limit significant near-term cannibalism from OLED

Key characteristics of displays



Key takeaways

- Picture qualities of LCDs and OLED displays at similar high levels
- Unknown lifetime of OLED displays versus LCD (>15 years)
- Maximum size of LCDs two times larger than of OLED displays
- Thickness of LCD displays only ~1 mm thicker than OLED display
- OLED TVs prices significantly higher:
 \$10,000 versus ~\$1,500 for
 55 inch TVs

OLED TV displays are not a revolution and are not highly differentiated



The next step – innovation in liquid crystal applications beyond displays

Holography

Complete spatial immersion

Transparency

Invisible when off

Robustness

Light-weight and indestructible

Intelligent light guiding

Seamless light adjustment, saving energy

Smart window

Mechanical free light direction

Smart Antenna

Active antennas for high speed data streams



Combined business strengthens portfolio

Customers















Sakai Display Products

Panasonic

- Liquid Crystals

State-of-the-art liquid crystal mixture

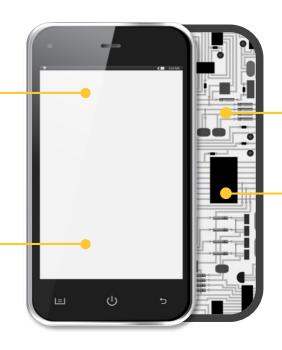


AZ Electronic Materials

FPD photoresists

To provide touch-sensor structures

To enhance resolution and brightness



AZ Electronic Materials

Dielectrics and antireflective coatings for processor chips

To provide more instructions-per-second at lower power consumption

AZ Electronic Materials

Dielectrics and antireflective coatings for memory chips

To further miniaturize and increase memory capacity

Customers

SAMSUNG

SONY









SanDisk[®]











AZ Electronic Materials – attractive business characteristics

Key strengths

Segment position

- No. 1 or 2 in ~80% of sales; high share of patent protection
- Chemicals only ~3% of procurement costs

Chemical products

- For displays: e.g. photoresists
- For ICs: dielectrics, colloidal silica

EBITDA margins

- IC Materials ~40%1
- Optronics ~30%¹

R&D spend

- Above-average 7% of sales1
- New products drive and support margins

Overview of financial data¹

US\$ m ²	2011	2012	LTM H1 2013
Revenue	792	794	774
% yoy at constant FX	+10%	+2%	n.a.
EBITDA	261	262	248
% of sales	33%	33%	32%
D&A	110	112	106
% of sales	14%	14%	14%
Employees (period end)	1,060	1,092	n.a.
Net financial debt (period end)	343	289	301
No. of shares (basic, m)	380.9	380.9	380.9



Transition to solution provider maximizes value for the Company and its customers

Transitioning from supplying materials to providing solutions

Value potential

Strategy rationale

- Be ready to move if market comes
- Careful spending according to market development
- Increase technical success by focus

Common strategy

 Concentration of development on few layers with good IP base

Material supplier



Full stack strategy

- Address all layers and combinations
- Understand the overall device
- Optimize the combination of materials

Strategy rationale

- Address needs of customers directly
- Be a competent partner
- Speed up development
- Achieve sustainable technical position (beyond IP in singles)
- Be ready for printable technology

Solution provider

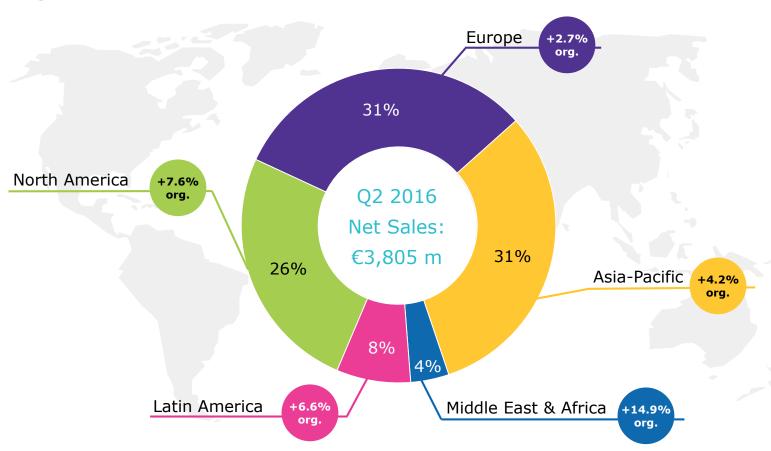
Time





Organic growth in all regions

Regional breakdown of net sales [€ m]



Regional development

- Organic growth in Europe driven by robust demand in Process Solutions
- North America benefits from strong
 Fertility business, Rebif pricing and demand for Process Solutions products
- Asia-Pacific shows solid organic growth driven by Fertility, GM and Life Science partially offset by display destocking
- Solid organic growth in LatAm driven by GM and CH as well as increasing demand for analytical testing (Applied Solutions)



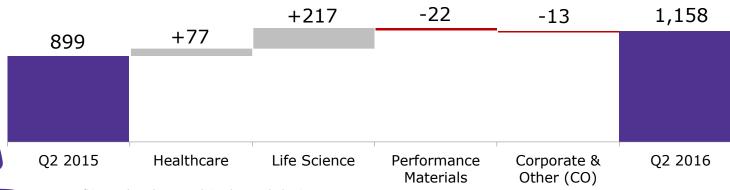
Life Science and Healthcare drive increase in EBITDA pre

Q2 2016 YoY net sales

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

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

Q2 YoY EBITDA pre contributors [€ m]



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



Q2 2016: Overview

Key figures

[€m]	Q2 2015	Q2 2016	Δ
Net sales	3,219	3,805	18.2%
EBITDA pre Margin (in % of net sales)	889 <i>27.9%</i>	1,158 30.4%	28.8%
EPS pre	1.30	1.55	19.2%
Operating cash flow	326	311	-4.7%
[€m]	Dec. 31, 2015	June 30, 2016	Δ
Net financial debt	12,654	12,510	-1.1%
Working capital	3,448	3,813	10.6%
Employees	49,613	50,456	1.7%

Comments

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

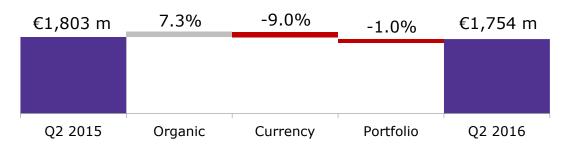


Healthcare: Strong organic growth, EBITDA pre and profitability

Healthcare P&L

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

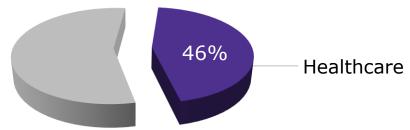
Net sales bridge



Comments

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

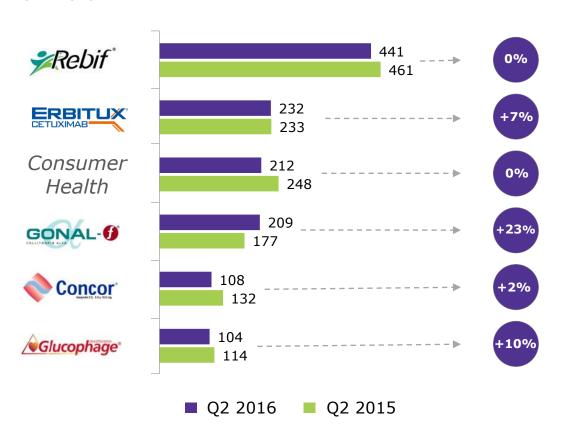
Q2 2016 share of group net sales



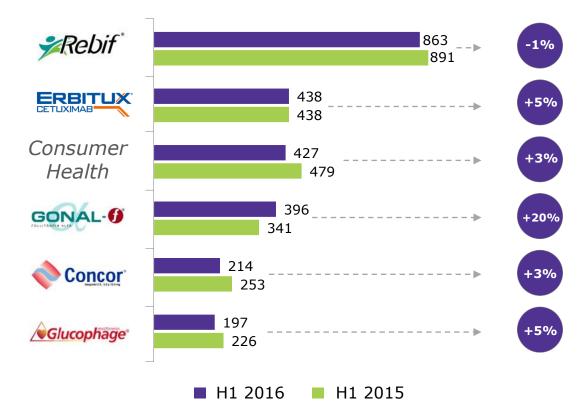


Healthcare organic growth by franchise/product

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



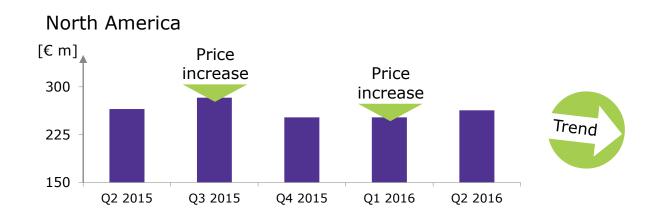
H1 2016 organic sales growth [%] by key product [€ m]

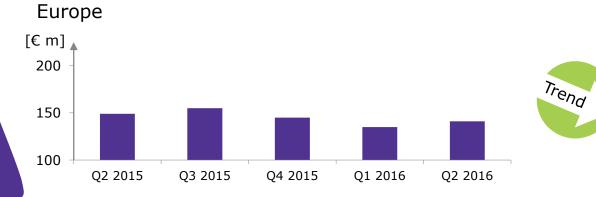




Rebif: Relief in the U.S. – competitive ramp-up in Europe ongoing

Rebif sales evolution





Q2 drivers 0.0% org.





TX

Q2 drivers

-2.3% org.

Price

Volume

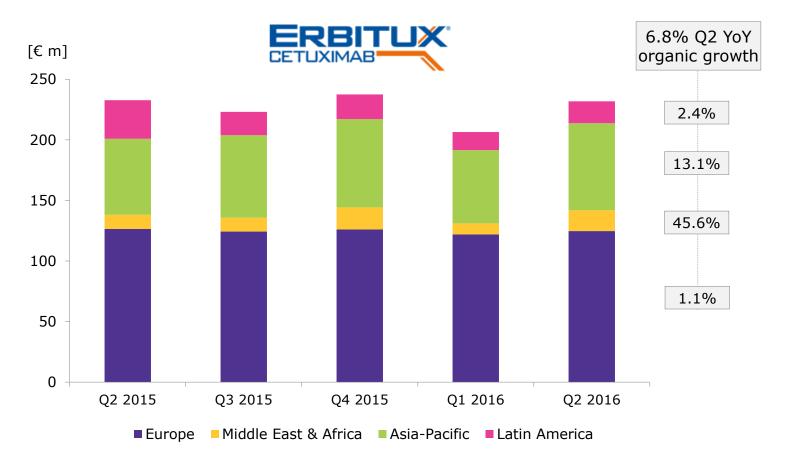
Rebif performance

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



Erbitux: A challenging market environment

Erbitux sales by region

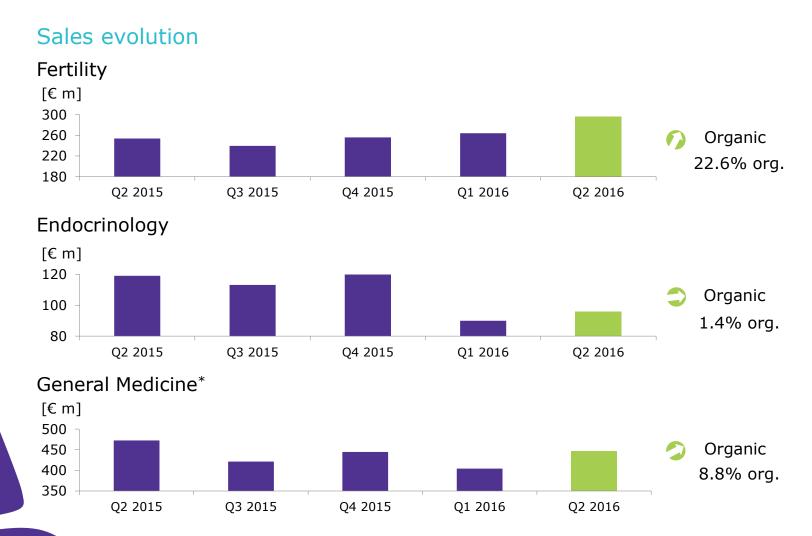


Erbitux performance

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



Strong organic growth in Fertility, General Medicine and Endocrinology



Q2 drivers

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



Life Science: Another strong quarter while integration on track

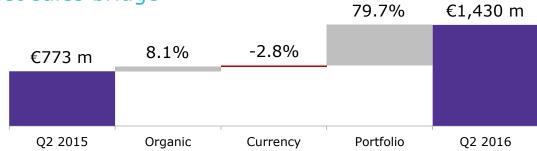
Life Science P&L

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

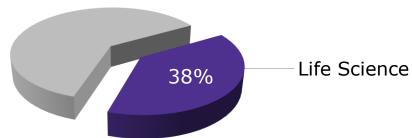
Comments

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

Net sales bridge



Q2 2016 share of group net sales



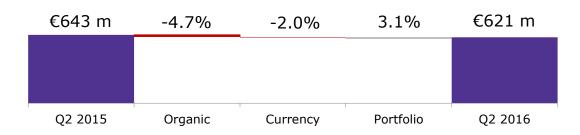


Performance Materials: Strong profitability amid ongoing destocking

Performance Materials P&L

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

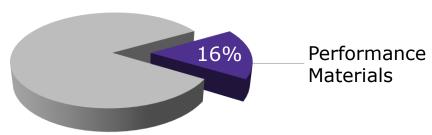
Net sales bridge



Comments

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

Q2 2016 share of group net sales





Reported figures reflect strong business performance

Reported results

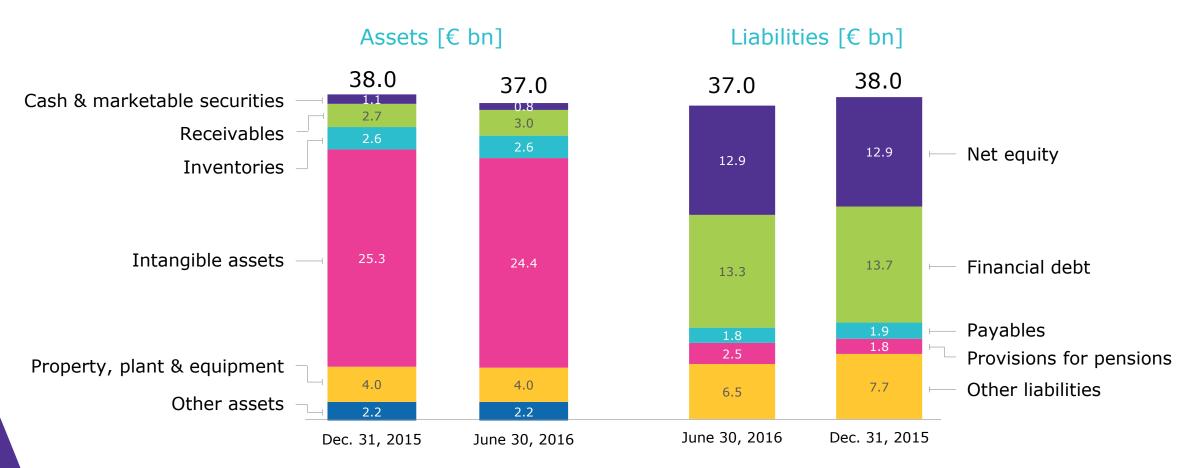
[€m]	Q2 2015	Q2 2016	Δ
EBIT	501	550	9.8%
Financial result	-41	-121	>100%
Profit before tax	461	429	-6.8%
Income tax	-115	-115	0.0%
Effective tax rate (%)	24.9%	26.7%	
Net income	343	312	-9.1%
EPS (€)	0.79	0.72	-8.9%

Comments

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



Balance sheet - deleveraging in progress after Sigma acquisition

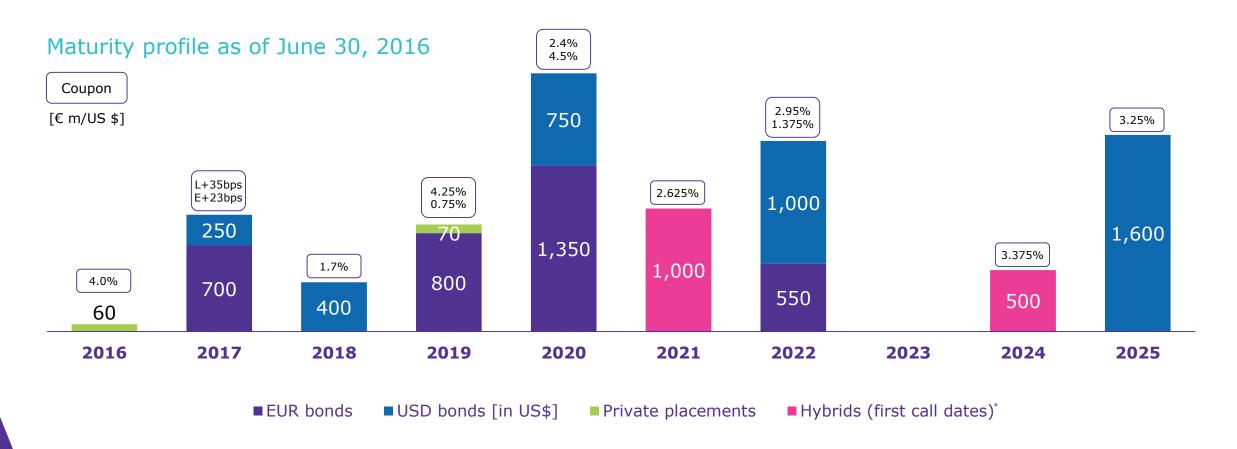


- Total assets decline by 2.6%, equity ratio grows to 34.7%
- Other liabilities decrease by €1.2 bn mainly due to dividend payment to E. Merck KG, Darmstadt, Germany and lower deferred taxes

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



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



Financing structure enables flexible and swift deleveraging



Healthy underlying operating cash flow

Q2 2016 – cash flow statement

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

Cash flow drivers

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



Exceptionals in Q2 2016

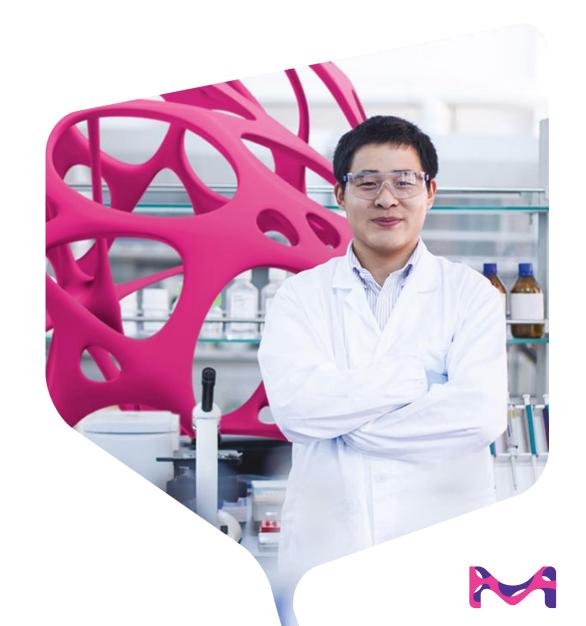
Exceptionals in EBIT

[€m]	Q2 2015		Q2 20	016
	Exceptionals	thereof D&A	Exceptionals	thereof D&A
Healthcare	21	2	70	71
Life Science	30	0	74	0
Performance Materials	-3	0	7	0
Corporate & Other	9	0	10	0
Total	56	2	160	71



Financial calendar

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



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