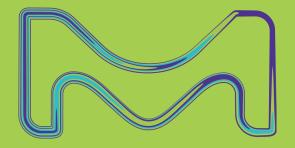
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Investor Relations

August 2020





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Risks and uncertainties include, but are not limited to: the risks of more restrictive regulatory requirements regarding drug pricing, reimbursement and approval; the risk of stricter regulations for the manufacture, testing and marketing of products; the risk of destabilization of political systems and the establishment of trade barriers; the risk of a changing marketing environment for multiple sclerosis products in the European Union; the risk of greater competitive pressure due to biosimilars; the risks of research and development; the risks of discontinuing development projects and regulatory approval of developed medicines; the risk of a temporary ban on products/production facilities or of non-registration of products due to non-compliance with quality standards; the risk of an import ban on products to the United States due to an FDA warning letter; the risks of dependency on suppliers; risks due to product-related crime and espionage; risks in relation to the use of financial instruments; liquidity risks; counterparty risks; market risks; risks of by the divested Generics Group; risks in human resources; risks from e-crime and cyber attacks; risks due to failure of business-critical information technology applications or to failure of data center capacity; environmental and safety risks; unanticipated contract or regulatory issues; a potential downgrade in the rating of the indebtedness of Merck KGaA, Darmstadt, Germany and its impact on goodwill impairment evaluations as well as the impact of future regulatory or legislative actions.

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Agenda

Business overview

02 Transforming the company



- **Life Science Focusing on profitable growth**
- **D5** Performance Materials Maintaining leadership and innovation
- **Executive summary and guidance**



strategic Roadmap

Group

Three high-tech businesses competing in attractive markets



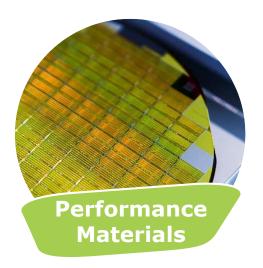
Leading in specialty pharma markets

- Biologics and small-molecule prescription medicines against cancer, multiple sclerosis, infertility
- Research focus: Oncology, Immunology & Immuno-Oncology
- Successful portfolio management: e.g. divestment of Consumer Health and Allergopharma



Leading life science company

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



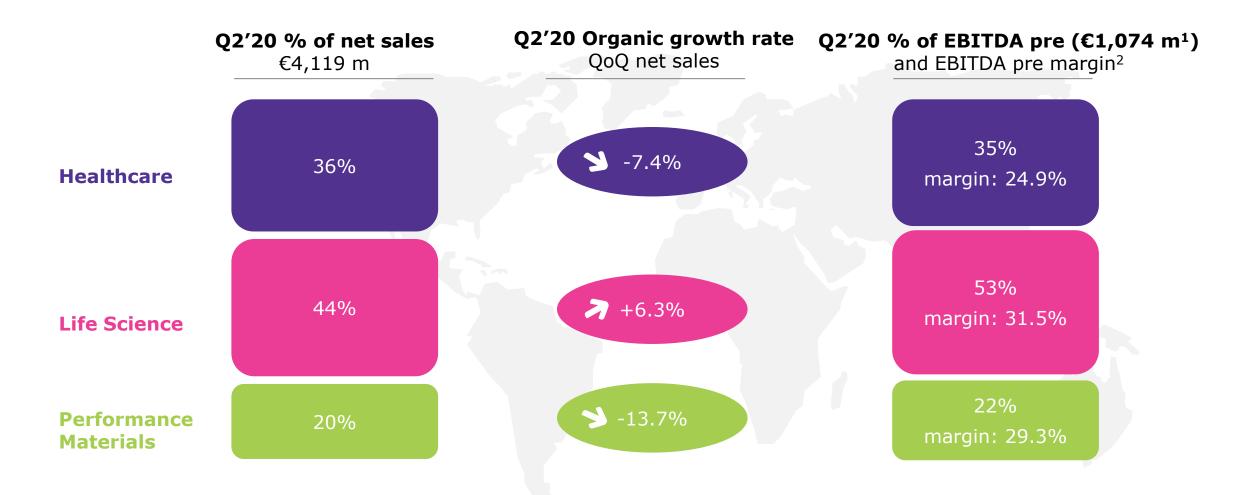
Leading company in high-tech solutions

- High-tech solutions and materials for electronics
- Broad portfolio of decorative and functional solutions

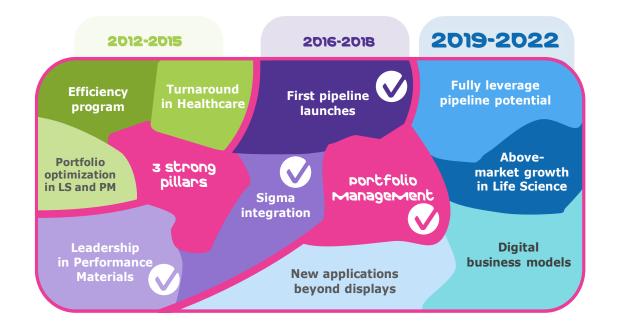
6

Group

Diverse businesses posting attractive margins and strong growth



Group 2019 – 2022: Entering the Growth & Expansion Phase





GLOOD:

Sustainable profitable growth and regular portfolio evaluation



Healthcare: Fully leveraging pipeline potential



Life science: Sustaining above-market growth



performance materials: On track towards a Bright Future

On track to deliver on the growth phase of the 2016-2022 strategic agenda

Merck KGaA Darmstadt, Germany

Group

2020 and beyond: Growth amid a challenging environment



Group Executive Summary



Group: Driving the profitable growth and expansion phase of our 2016 – 2022 strategic agenda



Healthcare:

Reaping the **fruit of the investment phase**, while keeping the base business at least stable, driving growth and managing costs



Life science:

Sustaining **profitable above-market growth** strategy through portfolio focus, customer-centric services and innovation



performance materials:

Transitioning from trough-year to **mid-term growth trajectory** supported by roll-out of Bright Future program

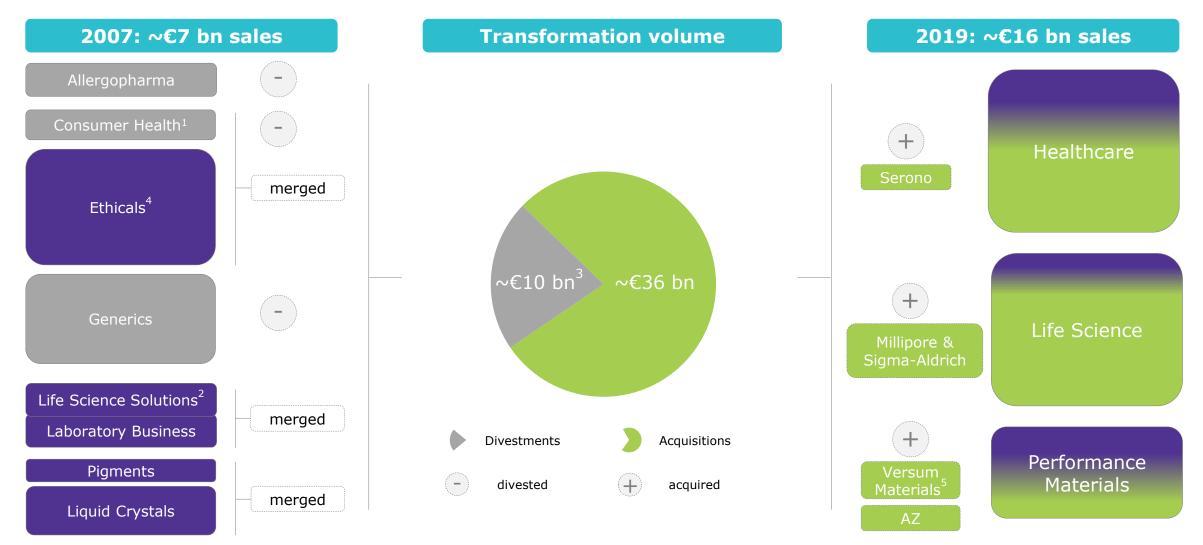
Merck kean, barmstadt, eermany steady earnings erowth at high Margins and a low risk profile

the company



Group

We have added scale and strengthened the attractiveness of our portfolio



12 ¹Closing of sale of Consumer Health at a cash purchase price of €3.4 bn completed as of December 1, 2018; ²Excluding "Crop Bioscience", which was divested; ³Profroma divestment volume includes cash proceeds for Consumer Health; ⁴Excluding "Theramex", which was divested; ⁵Closing of acquisition of Versum Materials at a purchase price of €5.8 bn completed as of October 7, 2019

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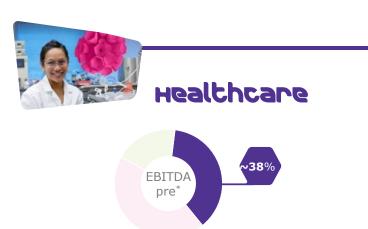
Group

Continue to transform to a science and technology focused company



13 ¹Included since 2 May 2014; ²2007 and 2014 EBITDA pre margin adjusted for comparability; ³2018 net sales reflect Consumer Health divesture (reduction of ~€1 bn net sales p.a.)

Group Clear set of priority goals



- Deliver on ambition to keep core business at least stable until 2022
- Transition from investment to earnings phase by 2019
- Foster successful Bavencio[®] and Mavenclad[®] ramp up
- Stringent pipeline execution

 Strengthen position as differentiated player in a highly attractive market

EBITDA

pre*

Life science

~50%

 Maintain consistent abovemarket growth trajectory and superior profitability performance materials



- Deliver ambition of 2-3% CAGR*
- Implement 5-year transformation program and focus on seamless integration of Versum and Intermolecular; to deliver financial ambition of 30% margin
- Maintain strong cash generation and cash conversion

*based on H1 2020

Strategic capital allocation until 2022 newly defined



- Three balanced pillars with no business marginalized
- Leading market positions in attractive markets
- Clear portfolio roles assigned

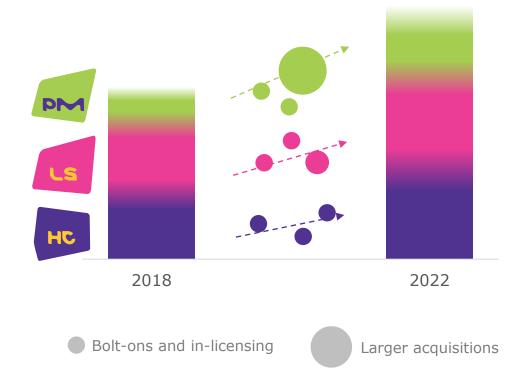


- Market attractiveness & capabilities
- Best strategic owner
- Risk profile



- IRR > WACC
- EPS pre accretive
- Maintain investment-grade credit rating

Illustration Group's sales and earnings drivers



Regular portfolio review and disciplined capital allocation will continue to ensure sufficiently diversified and value-creating structure of three strong pillars

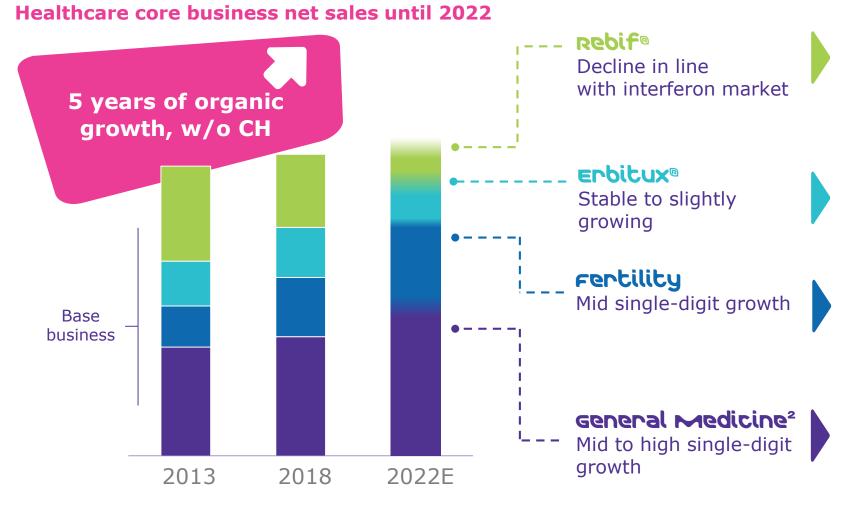
Healthcare

Fully leveraging pipeline potential



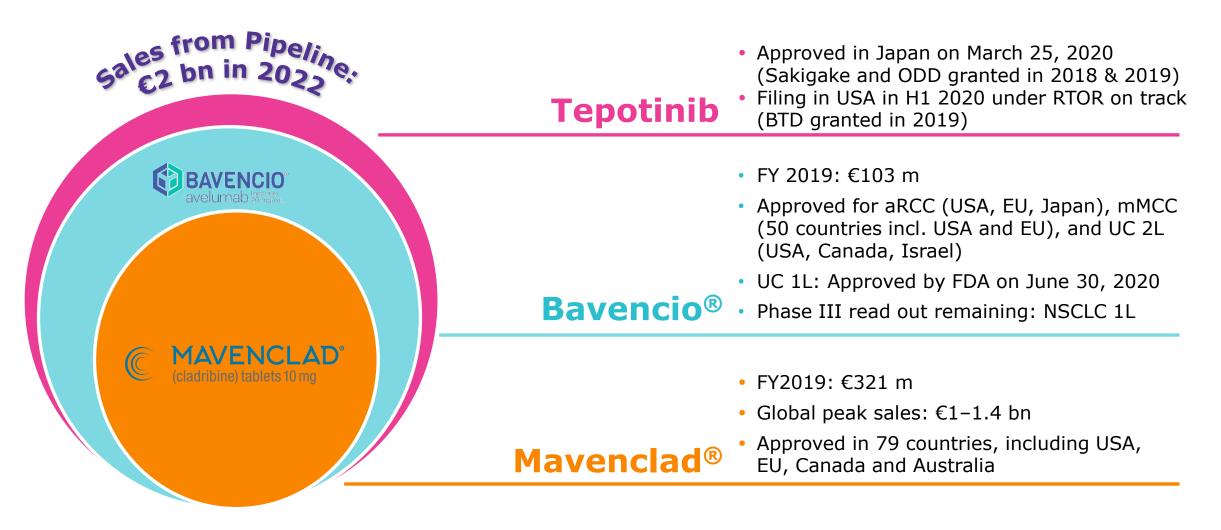
Healthcare

Ambition to keep core business sales organically stable until 2022

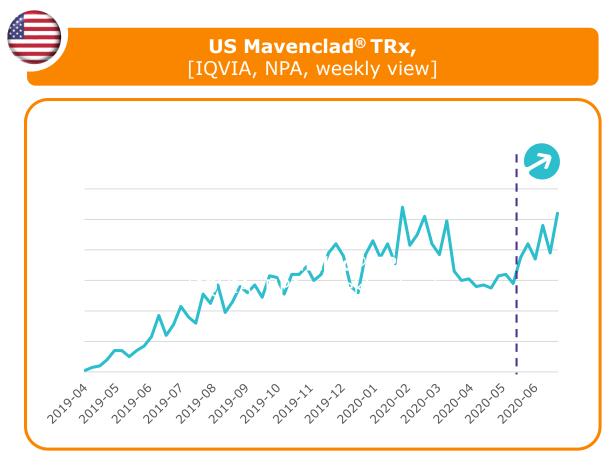


- Maintaining solid track record of patient retention
- Integration into joint franchise strategy with Mavenclad[®]
- Driving emerging markets growth
- Inclusion in China's NRDL
- Mitigate price and competitive pressure in EU by clear Erbitux[®] franchise positioning
- Drug demand driven by emerging markets growth and demographics
- Differentiation due to coverage of the entire ART portfolio¹
- Sustainable growth through innovation (e.g. Pergoveris[®] pen)
- Increasing prevalence of diabetes and cardiovascular diseases
- Emerging markets growth
- Effective lifecycle management

Pipeline sales - Mavenclad® and Bavencio® launches on track for €2 bn financial ambition for 2022



Mavenclad[®] - Global launch continues to make progress, with recovery of ramp-up from peak COVID impact visible starting in June 2020



Approved in 79 countries

• Impact of COVID:

- Restricted HCP access and forced pivot to digital engagement only; treatment guidelines restricting use of products
- Significant decline of patient consults with neurologists, leading to fewer treatment initiations and fewer treatment switches (dynamic market temporarily depressed)
- **Recovery:**

.

- US: Continuing to gain market share in dynamic High Efficacy (6.7%) and dynamic Oral classes (9.7%)¹
- Ex-US: Recovery as of June, dynamic HE market share defended despite COVID 19, pre-COVID prescribers have reinitiated patients on Mavenclad[®]

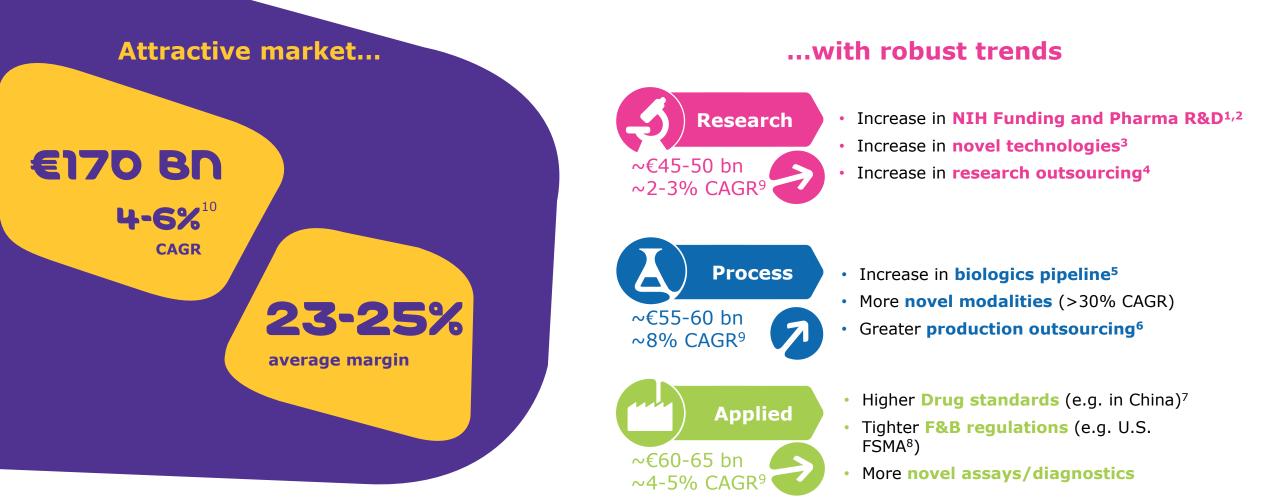
Healthcare Catalysts - 2020 characterized by significant developmental progress across all therapeutic areas

Q2 2020	H2 2020 (R&D Update Call: September 25)	H1 2021
Tepotinib (c-Met-inhibitor)		
METex14: U.S. filing on track under RTOR (BTD granted in 2019)		
Bavencio [®] (Avelumab/Anti-PD-L1)		
1L UC: U.S. FDA approval on June 30, EMA validation of filing on June 22, & acceptance of supplemental new drug application by the Japanese MHLW	 1L UC: Subgroup analyses to be presented at ESMO (September 19) 1L RCC: NICE recommendation published on July 31 	 1L UC: Expected regulatory feedback from EMA and Japanese MHLW 1L NSCLC: Expected in-house availability of Ph III data
	Bintrafusp alfa (Anti-PD-L1/TGF-B-Trap)	
Evobrutinib (BTK-inhibitor)	Initiation of additional studies beyond NSCLC: 2L UC (Ph Ib, monotherapy), solid tumors (Ph I, bintrafusp alfa + M6223 (TIGIT inhibitor)), 2L TNBC (Ph II, monotherapy) recently posted on ct.gov	
RMS: Recruitment initiation (Ph III) \checkmark		2L BTC: Expected data read-out
M5049 (TLR7/8 antagonist)		Oncology Neurology
Initiation of trial for severe symptoms of Covid-19 infection (Ph II)	Results from Ph II expected end of 2020	Immuno-Oncology Immunology

Acronyms: BTC = Biliary Tract Cancer, BTD = Breakthrough Therapy Designation, EMA = European Medicines Agency, FDA = U.S. Food and Drug Administration, MHLW = Ministry of Health, Labour and Welfare, NEJM = New England Journal of Medicine, NICE = UK National Institute for Health and Care Excellence, NSCLC = Non-Small Cell Lung Cancer, RMS = Relapsing Multiple Sclerosis, RTOR = Real-Time Oncology Review, TGIT = T cell immunoreceptor with Ig and ITIM domains, UC = Urothelial Cancer

Focus on profitable growth

The Life Science tools market is attractive and dynamic



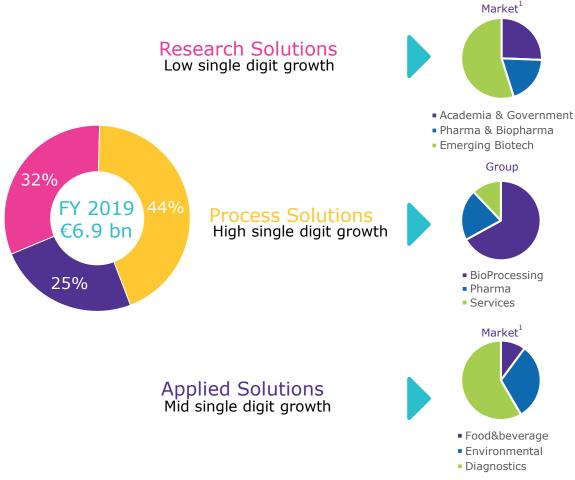
¹CAGR 2015-2019; ²PhRMA members, CAGR 2013-2017; ³CAGR 2014-2018 VC investment into platform technologies; ⁴CAGR 2015-2022. Discovery outsourcing market; ⁵CAGR through 2020; ⁶CAGR 2016-2020; ⁷International Council for Harmonization of Technical Requirements for Pharmaceuticals for Human Use; ⁸Food Safety Modernization Act implementation through 2024; ⁹Total market CAGR; ¹⁰Company estimate based on industry forecast over 5 year horizon; Acronyms: NIH = National Institutes of Health, U.S. FSMA = FDA Food Safety Modernization Act

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22

Business is on track to deliver above-market organic growth

Life Science



Long-term growth drivers

- Research activity: >3,000 projects in research pipelines², rising number of experiments and newly emerging therapies/technologies backs healthy growth in biotech and CROs³
- **Public and private funding**: availability, access and predictability drive demand from academia and emerging biotech customers
- Regulation: rising requirements foster long-term customer partnerships
- Biologics: mAbs production⁵ growing by ~11-15% p.a. for 2018-2024 driven by new molecules and biosimilars
- Diversification: contribution by top 10 molecules will decline to ~20% until 2024 from 60% today⁶
- **Novel modalities**: innovation in complex-to-deliver therapies, e.g. gene and cell therapy, will drive demand for single-use, end-to-end and new technology solutions
- **Regulation**: testing volumes overall are rising globally rise in quality standards and increased demand for testing across customer segments
- Population and economic growth: demand for access to more sophisticated products and services rises, e.g. in emerging markets
- **Speed**: need for fast testing results raises requirements for Applied customers, esp. in clinical testing and food & beverage testing

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Above-market growth continues to be driven by portfolio focus





Continuing to set the benchmark for industry performance



Maintain industry-leading profitability with 20-30 bps underlying margin progression Sustain leading market position

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Critical offering in the fight against COVID-19



VIRUS **DETECTION**

- Leading critical component provider for Molecular and Serological diagnostic kits
- PCR reagents, kits and tools for all stages of assay development

VIRUS CHARACTERIZATION

- Offering is among largest biologic reagents and hardware portfolios
- Effective vaccines and therapies start with reliable virus characterization
- Highest quality reagents needed for understanding of viral attachment, genomics, or proteomics

VACCINE & THERAPY **PRODUCTION**

- Supporting global COVID-19 vaccine and therapy response effort:
 - Upstream and downstream research and scaling
 - End-to-End solutions
 - Biosafety Testing Services

performance materials

Maintaining leadership and innovation



Performance Materials

Strong setting to capture attractive value in the electronics market

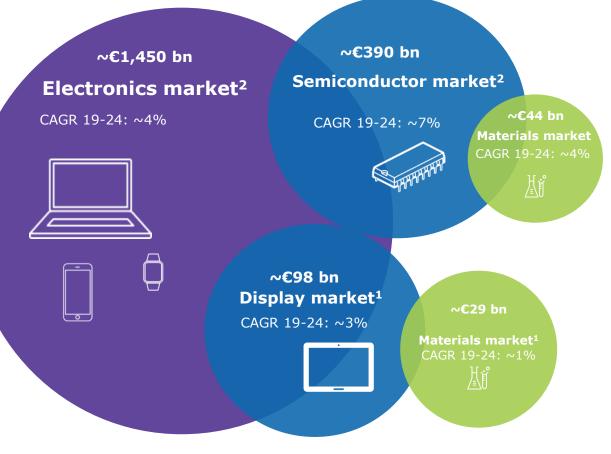


Illustration of the electronics market and thereof its selected sub markets

Electronic materials competitor landscape¹ C4 C6 \mathbb{C}^{7} C1 C3 versum C10 C9 **C**8 C5 C2

¹Bubble size in competitive landscape illustrates share of electronics material sales of indicated competitors (C1 – C11)

Source: ¹Prismark 2019; ²McClean/IC Insights 2020

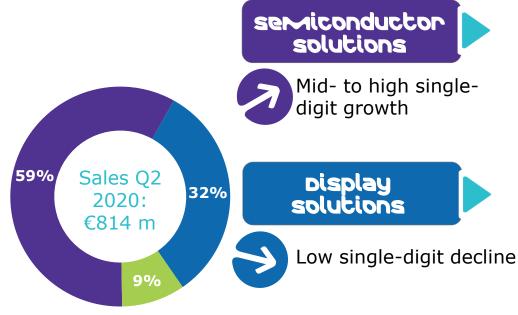
Performance Materials: Attractive underlying market trends and business conditions to deliver the turnaround in 2020

mid term outlook

surface

solutions

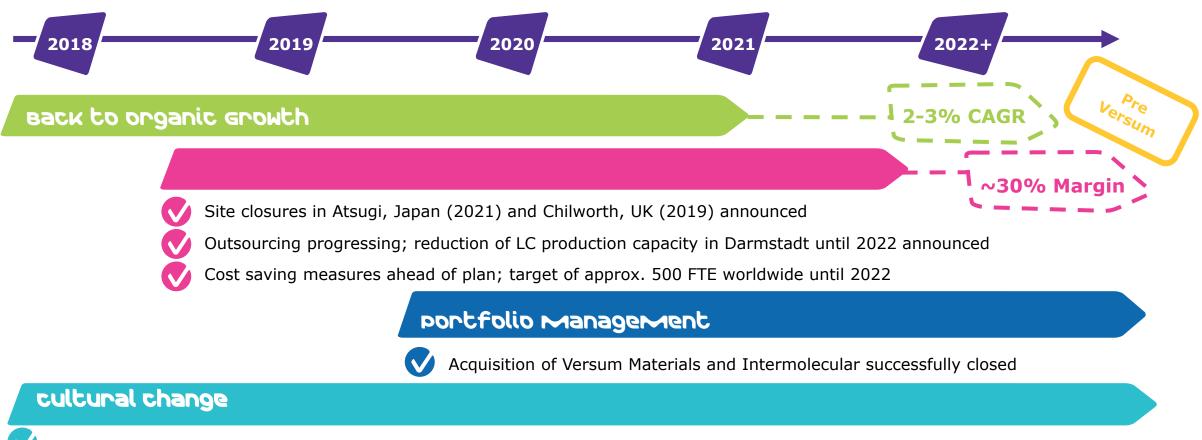
Low single-digit growth



- Continued market growth due to technological advances (Artificial intelligence, 5G, Big Data and cloud, Internet of Things) serving customers in Logic, Memory, Packaging and others
- Delivery Systems and Services representing ~15% of Semiconductor Solutions net sales is driven by investments in new semiconductor fabs as well as a safe and reliable supply of high-purity materials
- Semiconductor market expected to grow ~7% CAGR¹
- Driven by trend to bigger TV size, higher resolutions, more mobile devices
- Maturing LC market expected to decline in mid to high single-digit, driven by ~3% CAGR² (2018-2023) of LCD area shipment more than offset by ongoing price pressure
- OLED display shipment area³ [km²] to grow ~28% CAGR (2018-2023) with OLED material market⁴ to exceed LC material market by 2022
- Surface Solutions well balanced exposure to **automotive** and **cosmetics** market
- Drivers are raising living standards, higher disposable income in growing markets and increasing demand for high value products at reasonable prices
- CAGR ~3% volume growth⁵ for pearlescent pigments
- Source: ¹McClean 2020; ^{2 & 3} IHS display long term demand forecast Q3 2019; ⁴Internal Business Intelligence; ⁵Smithers Rapra, Merck KGaA, Darmstadt, Germany-internal

Performance Materials

5-year transformation program Bright Future is well on track



Significant changes in composition of leadership team

Cultural change addressed in three dedicated initiatives focused on customer centricity, market-driven innovation and corporate culture

Performance Materials

Strategic roadmap starting to materialize...

----Measures for a bright future -----

V Darmstadt

- In Darmstadt focus on R&D and production
- Immediate bottom line contribution from 2019 onwards
- Reduce the number of FTEs by ~15%
 = ~400 FTEs

🗸 Chilworth

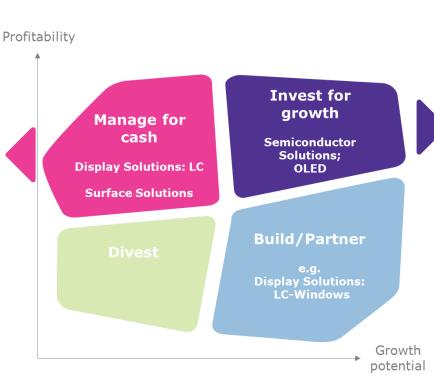
Chilworth site during September 2019
 successfully closed

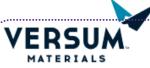
Atsugi

- Shut down of Performance Materials activities at Atsugi site started (to be completed during 2021)
- R&D and production activities in Atsugi transferred and consolidated in other PM locations in Asia
- Consolidation of site structure in Japan



Bottom-line management to support margin ambition of 30% in the long-term





- Leading supplier of high-purity process chemicals, gases and equipment serving semiconductor manufacturers
- Track record of accelerated growth and industry leading profitability
- Creating a leading electronic materials player with attractive long-term prospect

INTERMOLECULAR®

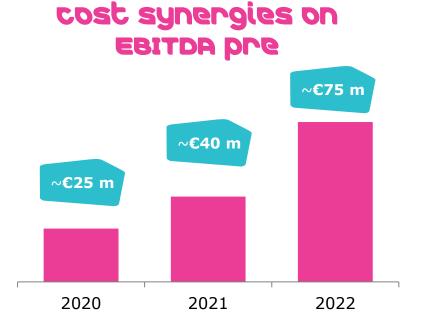
- Leading in advanced materials innovation
- Acquisition to strengthen semiconductor technology offering
- Application specific materials expertise with that perfectly complement Group's business and technology portfolio



Both transactions successfully closed

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Performance Materials: Versum integration and synergy realization in focus



- Cost synergy target of ~€75 m from 2022 onwards confirmed as P&L effective
 - Integration measures on track
 - Integration costs of €125 m in line with previous expectations, mostly in 2020 and 2021
- Cost synergies represent 6%¹ of acquired net sales

source of synergies

•

•

and supply chain

BUSINESS

optimization

 Optimize production and supply chain network

Transform country setup

Streamline duplicate structures

 Achieve savings through joint procurement

corporate and Administrative Functions

- Integrate corporate & administrative functions
- Cost savings due to U.S. company delistings

¹Assumes LTM Dec-2018 Versum Materials Revenue of €1,233 m and 1.12 USD to EUR exchange rate.

Executive summary and guidance

06

Our assumptions on the development of the COVID-19 pandemic have remained largely the same since May



Impact across all regions

Previous assumptions

(communicated in May)



Cases expected to **peak in Q2**



Stressed health systems Some countries have less effective response than China



However, no major resurgences



Some countries **struggle to contain** virus resulting in stressed health systems Effective **vaccines** not broadly available



Additional flares, but **not triggering** new widespread lockdowns



Situation eases in H2 Pandemic crisis lasts for FY



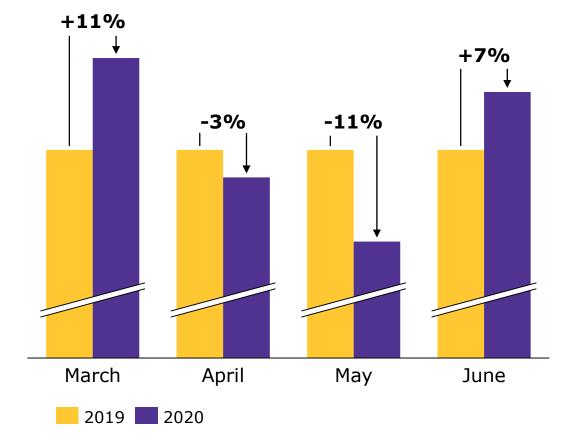
Recovery progressing during H2

Current assumptions

Impact across all regions

(communicated in August)

Active crisis management and resilient product portfolio allowed quick 8-week recovery time



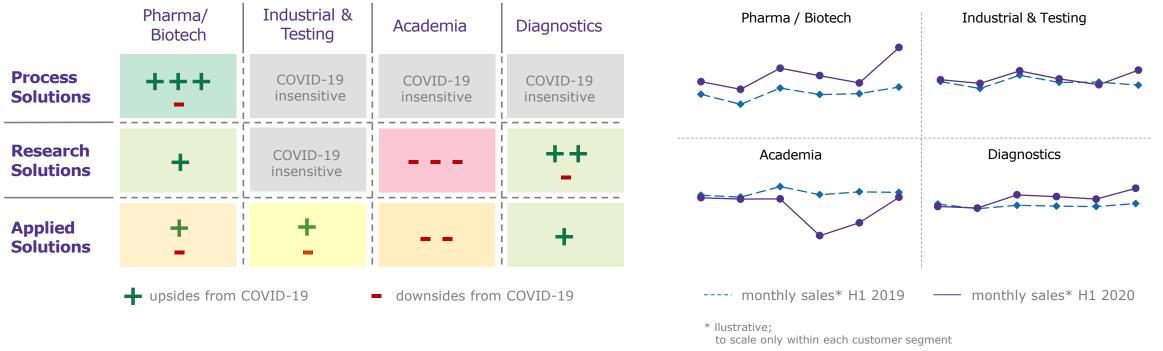
Organic sales growth - Group

Increased visibility of COVID-19 impact

- Strongest correlation with mandatory workplace closures
 - Fertility: closure of clinics
 - **N&I**: closure of practices, limited visits
 - **Research Solution**: closure of research labs
 - **Display Solutions**: closure of electronic retail
- Merck KGaA, Darmstadt, Germany well positioned in essential industries:
 - Governments moved from mandatory workplace closures to mandatory workplace measures
 - Immediate restoration of business
- Other changes of a longer-lasting nature (Display or Automotive end markets)

Life Science highly resilient and well positioned to participate in potential mid-term upside from COVID-19

2020 heatmap of COVID-19 impact by customer segment





- Mid-term: downsides to fade, some upsides to stay, recovery started in June
- Order book for Process Solutions up by >40%, capacity expansion underway



COVID-19 guidance given in May overall accurate, improved visibility warrants slight upgrade

Group:

- Up to mid single-digit percentage sales impact full year
- Countermeasures in place: confirm 50 to 60% of net sales impact to hit EBITDA pre
- Recovery visible in June, expected to continue in Q3 and Q4



Healthcare assumptions:

- Biggest impact in Fertility behind, as clinics are opening up again
- Mavenclad[®] recovery visible in June
- Other businesses normalizing

Life Science assumptions:

- **Net upside** from COVID-19-related demand in Process Solutions
- Recovery as of June in Applied Solutions
- **Research** showed **largest impact**, recovering in June as well

Performance Materials assumptions:

- Strong growth in Semiconductor expected to continue despite COVID-19
- Some ease of impact from COVID-19 in Display versus Q2
- Slight ease on Surface's end markets expected versus Q2

Group

Key earnings drivers to remember for 2020

EBITDA pre - supporting factors

- Increasing sales contribution from Mavenclad[®] and Bavencio[®]
- Stringent M&S and R&D cost management in HC (decrease YoY absolute and as % of sales)
- Ongoing strength in Life Science with above-market sales growth
- Good momentum in Semiconductor Solutions and cost savings from Bright Future program related initiatives
- High level of cost consciousness and prioritization
- Four quarters of Versum

EBITDA pre - reducing factors

- No more support from Pfizer deferred income (€191 m in 2019)
- Lower income from pipeline management
- Continued decline of Liquid Crystals and Rebif®
- COVID-19-related sales and earnings effect
- Potential additional effect from VBP* in China during Q4 for Glucophage[®]

Group Full-year 2020 guidance

Net sales:

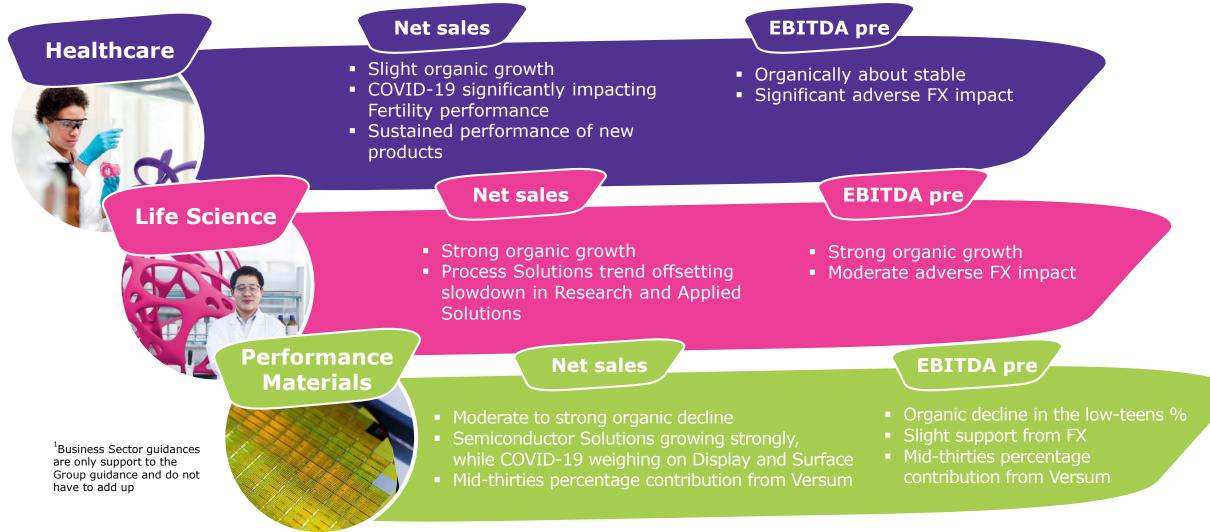
Slight to moderate organic growth, Versum growth contribution in mid single-digit percentage range; FX between 0% to -2% YoY; ~€16.9 – 17.7 bn

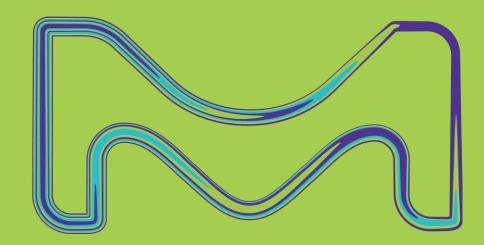
EBITDA pre: Slight to moderate organic growth, mid single-digit percentage range growth from Versum; FX headwinds of -2% to -4% YoY; ~€4,450 – 4,850 m

> EPS pre: ~€5.60 - 6.25



Group 2020 business sector guidance¹





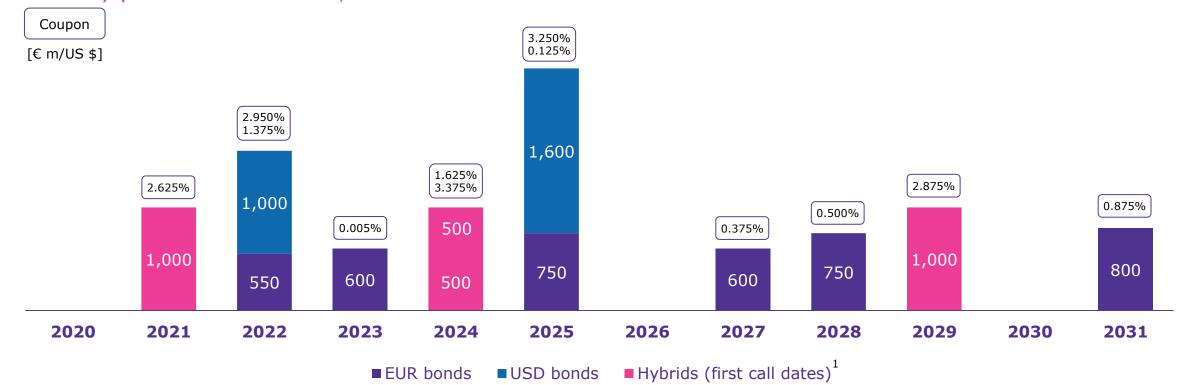
Additional financial guidance 2020

Further financial details

Corporate & Other EBITDA pre	slightly lower than last year	
Interest result	~ -280 to -310 m	
Effective tax rate	~24% to 26%	
Capex on PPE	~1.1 bn to 1.2 bn	
Hedging/USD assumption	FY 2020 hedge ratio ~65% at EUR/USD ~1.16	
2020 Ø EUR/USD assumption	~1.09 to 1.13	



Maturity profile reflects Sigma-Aldrich and Versum financing transactions



Maturity profile as of June 30, 2020

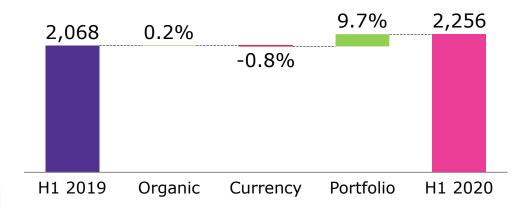
Balanced maturity profile in upcoming years avoids refinancing risks; Merck KGaA, Darmstadt, Germany will become a more frequent issuer

A strong Q1 and double-digit Q2 growth in Process Solutions and Semiconductor Solutions allow for overall organic growth in H1

H1 YoY Net Sales	Organic	Currency	Portfolio	Total
Healthcare	3.2%	-1.4%	-0.5%	1.3%
Life Science	5.9%	0.2%	0.0%	6.2%
Performance Materials	-9.5%	2.1%	51.1%	43.7%
Group	2.4%	-0.2%	7.7%	10.0%

- Healthcare growing organically in H1 on the basis of a strong Q1 supported by resilient Oncology and General Medicine portfolio in Q2, overall June visibly stronger than May and April
- Accelerating Process Solutions growth is overcompensating flat Applied Solutions and declining Research Solutions where demand was impacted by COVID-19 related lockdowns
- Semiconductor Solutions organic growth accelerated from Q1 to Q2 – however, COVID-19 impact on Display and Surface Solutions results in overall organic decline

H1 YoY EBITDA pre



- EBITDA pre growing slower than sales organically, largely due to non-recurring Healthcare income (~ €185 m higher in H1 2019)
- Margin accretive Versum portfolio effect
- FX tailwinds from U.S. and Taiwan dollar did not fully offset currency headwinds from some emerging markets

H1 2020: Overview

Key figures

H1 2019	H1 2020	Δ
7,717	8,489	10.0%
2,068	2,256	9.1%
26.8%	26.6%	-0.2pp
2.67	2.80	4.9%
1,235	1,019	-17.5%
Dec. 31, 2019	June 30, 2020	Δ
12,363	12,560	1.6%
3,944	4,474	13.4%
		0.8%
	7,717 2,068 26.8% 2.67 1,235 Dec. 31, 2019 12,363 3,944	7,7178,4892,0682,25626.8%26.6%2.672.801,2351,019Dec. 31, 2019June 30, 202012,36312,560

Comments

- A strong Q1, Versum portfolio effect and accelerating growth in Process and Semiconductor Solutions drive sales above last year, despite materializing COVID-19 impact in Q2
- EBITDA pre growing despite lower nonrecurring income components and fixed cost under-absorption due to lower sales amid COVID-19 impact
- EPS pre growing slower than EBITDA pre driven by a lower financial result
- Lower operating cash flow driven foremost by GSK upfront payment in 2019 and higher working capital in 2020

Merck KGaA

Darmstadt, Germany

Reported figures

Reported results

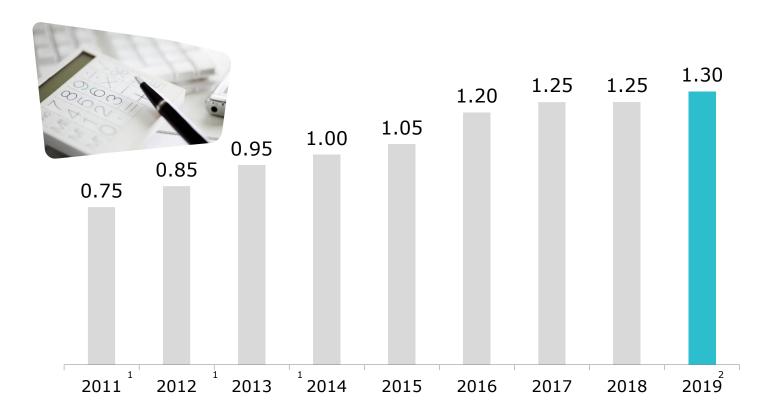
[€m]	H1 2019	H1 2020	Δ
EBIT	997	1,207	21.0%
Financial result	-174	-201	15.6%
Profit before tax	824	1,006	22.2%
Income tax	-203	-259	27.5%
<i>Effective tax rate (%)</i>	24.7%	25.8%	1.1pp
Net income	659	746	13.1%
EPS (€)	1.52	1.72	13.2%

Comments

- EBIT increase driven by Versum portfolio effect and Life Science growth, partially offset by lower nonrecurring income, higher depreciation & amortization from Versum PPA and impairments in Performance Materials
- Financial result impacted by LTIP and higher interest expenses related to Versum financing
- Effective tax rate within guidance range of ~24-26%
- Higher net income and EPS reflect higher EBIT

Sustainable dividend growth

Dividend¹ development 2011-2019



2019 dividend

- Dividend of €1.30 (+4% YoY) per share proposed² for 2019
- Payout ratio of 23.4% of EPS pre in 2019; we aim at 20–25% of EPS pre
 Dividend yield³ of 1.2%

47 1 Adjusted for share split, which has been effective since June 30, 2014; ²Final decision is subject to Annual General Meeting approval; ³Calculated with 2019 year-end share price of \in 105.35 per share.

Healthcare Pipeline

July 31, 2020

Phase I

berzosertib (M6620) ATR inhibitor Solid tumors

peposertib (M3814) DNA-PK inhibitor Solid tumors¹

M1774 ATR inhibitor Solid tumors

M3258 LMP7 inhibitor Multiple myeloma

M4344 ATR inhibitor Solid tumors

M8891 MetAP2 inhibitor Solid tumors bintrafusp alfa TGFbeta trap/anti-PD-L1 Solid tumors

M9241 (NHS-IL12) Cancer immunotherapy Solid tumors¹

M5049 TLR7/8 antagonist Immunology

M6495 anti-ADAMTS-5 nanobody Osteoarthritis

M5717 PeEF2 inhibitor Malaria

Phase II

peposertib (M3814) DNA-PK inhibitor Rectal cancer

tepotinib MET kinase inhibitor Non-small cell lung cancer

bintrafusp alfa TGFbeta trap/anti-PD-L1 Non-small cell lung cancer 1L

bintrafusp alfa TGFbeta trap/anti-PD-L1 Non-small cell lung cancer 1L/2L

bintrafusp alfa TGFbeta trap/anti-PD-L1 Locally advanced non-small cell lung cancer

bintrafusp alfa TGFbeta trap/anti-PD-L1 Biliary tract cancer 1L

bintrafusp alfa TGFbeta trap/anti-PD-L1 Biliary tract cancer 2L

bintrafusp alfa TGFbeta trap/anti-PD-L1 Cervical cancer 2L avelumab anti-PD-L1 mAb Solid tumors²

avelumab anti-PD-L1 mAb Non-small cell lung cancer²

avelumab anti-PD-L1 mAb Urothelial cancer²

M5049 TLR7/8 antagonist Covid-19 pneumonia atacicept anti-BlyS/APRIL fusion protein Systemic lupus erythematosus

atacicept anti-BlyS/APRIL fusion protein IgA nephropathy

sprifermin fibroblast growth factor 18 Osteoarthritis

M1095 (ALX-0761)³ anti-IL-17 A/F nanobody Psoriasis

Phase III

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

evobrutinib BTK inhibitor Multiple sclerosis

Registration

tepotinib MET kinase inhibitor Non-small cell lung cancer, *MET*ex14 skipping⁴

avelumab anti-PD-L1 mAb Urothelial cancer 1L-M⁵

- Oncology
- Immuno-Oncology
- Immunology
- Neurology
- Global Health

1L, first-line treatment; 1L-M, first-line maintenance treatment; 2L, second-line treatment.

¹ Includes studies in combination with avelumab. ² Avelumab combination studies with talazoparib, axitinib, ALK inhibitors, cetuximab, or chemotherapy. ³ As announced on March 30 2017, in an agreement with Avillion, anti-IL-17 A/F nanobody will be developed by Avillion for plaque psoriasis and commercialized by Merck KGaA, Darmstadt, Germany. ⁴ As announced on March 25 2020, tepotinib was approved in Japan for the treatment of patients with non-small cell lung cancer harboring *MET*ex14 skipping. ⁵ As announced on June 30, 2020, Avelumab was approved in US for maintenance treatment of patients with locally advanced or metastatic urothelial carcinoma (UC) that has not progressed with first-line platinum-containing chemotherapy.

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.

Tepotinib: Significant unmet need **Tepotinib is a highly selective oral, once daily, MET TKI that blocks MET-mediated signaling pathways**

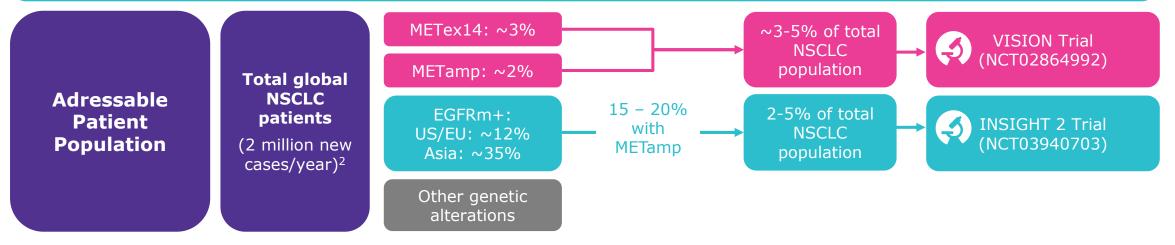


 Preclinical and clinical evidence support MET activation as a primary oncogenic driver in lung cancer subsets and as a secondary driver of acquired resistance to targeted therapy in other lung cancer subsets¹

• Higher prevalence of MET alterations amongst elderly patients in Lung (median age of patients with METex14: 72.5 years)

Targeted Oncology

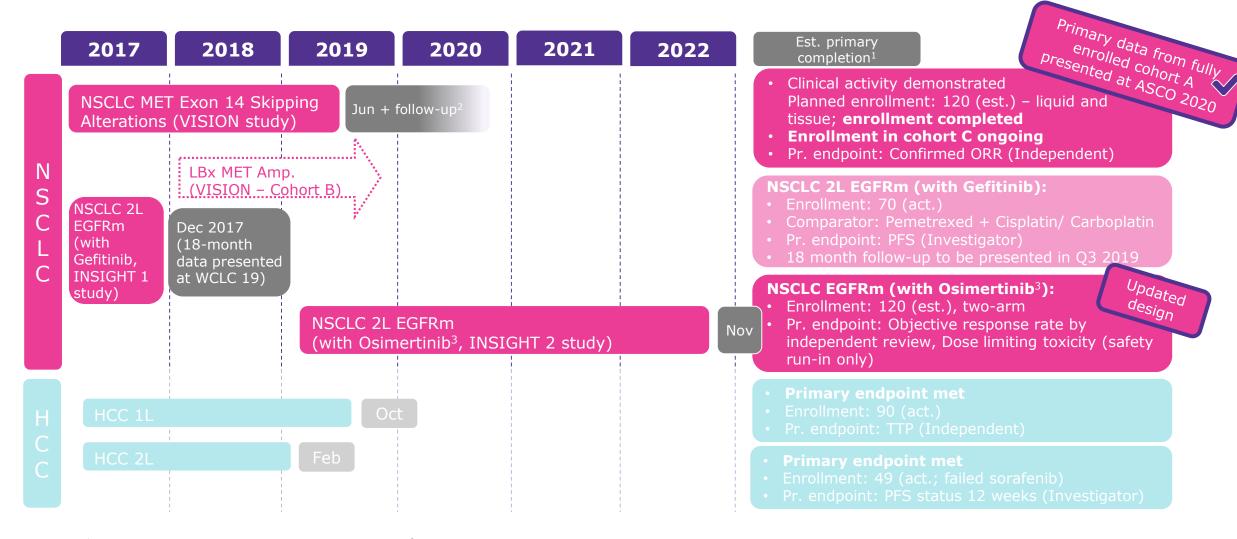
• Evidence exists to support the role of MET in cancers and resistance settings other than lung cancer



Key Achievements

- SAKIGAKE designation awarded in Japan, Breakthrough designation awarded by US FDA
- METex14: Tepmetko approved in Japan in March, USA filing on track under RTOR
- **EGFRm+/METamp:** INSIGHT 2 program started in 2019, study design adapted in 2020 to align with current treatment landscape

Tepotinib: Program overview Development focused on biomarker enriched patient populations



Targeted Oncology

50

Tepotinib: Updated data presented at ASCO 2020 9-months follow-up from the VISION study highlights durable clinical activity of Tepotinib¹

Targeted Oncology

Patients (\mathbf{n})

- As of 01 January 2020, 152 patients received tepotinib (safety population) and 99 patients comprised the primary efficacy population with ≥ 9 months' follow-up data
- 60/152 and 22/99 patients were still receiving tepotinib at data cut-off

Clinical response in the primary efficacy population

Objective response rate by independent review (primary endpoint) was 46.5–50.0% and by investigator assessment was 55.6–61.7%

		psy group⁺ 66)		psy group‡ 60)		ined* 99)
	IRC	INV	IRC	INV	IRC	INV
Objective response rate, % (95% CI)	48.5 (36.0, 61.1)	56.1 (43.3, 68.3)	50.0 (36.8, 63.2)	61.7 (48.2, 73.9)	46.5 (36.4, 56.8)	55.6 (45.2, 65.5)
Duration of response, median months (95% CI)	9.9 (7.2, ne)	14.0 (7.3, ne)	15.7 (9.7, ne)	16.4 (9.7, ne)	11.1 (7.2, ne)	14.0 (9.7, 18.3)
Disease control rate, % (95% CI)	65.2 (52.4, 76.5)	69.7 (57.1, 80.4)	68.3 (55.0, 79.7)	78.3 (65.8, 87.9)	65.7 (55.4, 74.9)	72.7 (62.9, 81.2)

'Two patients were liquid-biopsy positive only. '25 patients were tissue-biopsy positive only; objective response rate by independent review was 40.0% (95% CI: 21.1, 61.3) and 48.0 (95% CI: 27.8, 68.7) by investigator assessment. "Combined = liquid-biopsy positive and/or tissue-biopsy positive. INV, investigator assessment; IRG, independent review committee; ne, not estimable; CI, confidence interval

Manageable tolerability profile (n=152)

- Grade \geq 3 treatment-related adverse events reported in 27.6% of patients
- Few adverse events leading to discontinuation (permanent discontinuations in 11.2% of patients)
- No grade 5 TRAEs, few grade 4 (2%)

Activity in patients with brain metastases

Outcomes in patients with baseline brain **metastases** (n=11), all of which were nontarget lesions, were comparable to the overall population

May 29, 2020: Updated data published in The New England Journal of Medicine (NEJM)²

J.C.H. Yang, Y.-M. Chen, E.F. Smit, A.J. van der Wekken, T. Kato, D. Juraeva, C. Stroh, R. Bruns, J. Straub, A. Johne, J. Scheele, J.V. Heymach, and X. Le Merck KGaA Darmstadt, Germany

ORIGINAL ARTICLE

Tepotinib in Non-Small-Cell Lung Cancer

with MET Exon 14 Skipping Mutations

P.K. Paik, E. Felip, K. Velilon, H. Sakal, A.B. Cortot, M.C. Garassino, J. Mazleres, S. V. H. Senellart, J. Van Meerbeeck, J. Raskin, N. Reimmuth, P. Conte, D. Kowalski, B.C. C. I. D. Dotol, L. Lucov, E. Crineinane, L.V. Hon, V.C. Vine, C.F. Chang, C.J. Teol P.K. Paik, E. Felip, R. Veillon, H. Sakai, A.B. Cortot, M.C. Garassino, J.

rt. Senellart, J. Van Meerbeeck, J. Kaskin, N. Keinmuth, P. Conte, D. Kowalski, B.C. Cr. J.D. Patel, L. Horn, F. Griesinger, J.-Y. Han, Y.-C. Kim, G.-C. Chang, C-L. Tsai, J.C. H. Yang, Y. M. Chen, F.F. Smit, A.L. van der Webken, T. Kato, D. Luraeva J.C. H. Yang, Y. M. Chen, F.F. Smit, A.L. van der Webken, T. Kato, D. Luraeva

J.D. Patel, L. Horn, F. Griesinger, J.Y. Han, Y.C. Kim, G.C. Chang, C.L. Tsai, J.C.H. Yang, Y.M. Chen, E.F. Smit, A.J. van der Wekken, T. Kato, D. Juraeva, C. Stroh R. Bruns, I. Straub, A. Johnne, J. Scheele, J.V. Heumarch, and X. Le

51 ¹Le et al., Primary efficacy and biomarker analyses from the VISION study of tepotinib in patients with NSCLC with MET exon 14 skipping, presented at ASCO 2020 (Abstract #9556), ² Paik et al., Tepotinib in Non–Small-Cell Lung Cancer with MET Exon 14 Skipping Mutations, New England Journal of Medicine, 29/05/2020, DOI: 10.1056/NEJMoa2004407

Tepotinib: Clinical Efficacy in Met-amp EGFR-mutant Population INSIGHT 2 study follows from encouraging INSIGHT 1 data

Data from INSIGHT 1 study (18-months follow-up presented at WCLC 2019)¹

• MET-amp population:

Endpoint	Tepotinib + gefitinib	Chemotherapy
Primary - PFS (HR 0.13 [90% CI 0.04, 0.43])	16.6 m	4.2 m
Secondary - ORR (OR 2.67 [90% CI 0.37, 19.56])	66.7%	42.9%
Secondary - OS (HR 0.09 [CI 0.01, 0.54])	37.3 m	13.1 m

- METamplification can be considered a suitable biomarker for treatment with tepotinib
- Safety: generally well-tolerated, most AEs mild to moderate
- Enrollment halted due to low recruitment

INSIGHT 2 study



Merck KGaA

Darmstadt, Germany

Study Design:

Targeted Oncology

- Two-arm study, open label, N = 120
- Enrollment restricted to participants whose disease has progressed following first-line treatment with osimertinib²
- MET Amplification Determined Centrally by Fluorescence in situ Hybridization (FISH); explorative LBx testing

Arms & Interventions:

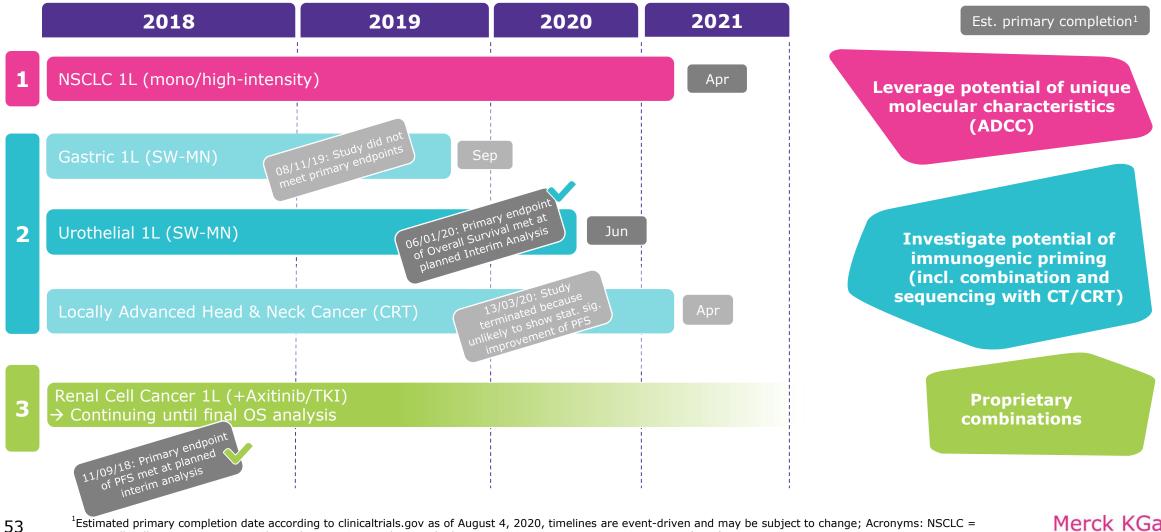
- 1. Tepotinib 500mg QD + Osimertinib 80mg QD
- 2. Tepotinib 500mg QD

Primary endpoints:

- Objective response rate by independent review
- Number of participants experiencing dose limiting toxicities

Avelumab: Program overview

Ongoing studies – JAVELIN Bladder 100 data (UC 1L) presented at ASCO 2020 plenary session



2

Avelumab

¹Estimated primary completion date according to clinicaltrials.gov as of August 4, 2020, timelines are event-driven and may be subject to change; Acronyms: NSCLC = Non-small Cell Lung Cancer, CT = Chemotherapy, CRT = Chemoradiotherapy, DMC = Data Monitoring Committee (DMC), MN = Maintenance, PFS = Progression-Free Survival, SW = Switch, TKi = Tyrosine Kinase inhibitor

Avelumab: UC 1L / JAVELIN Bladder 100

There is an urgent need for a 1L treatment strategy that maintains and reinforces the initial benefit of induction chemotherapy

2

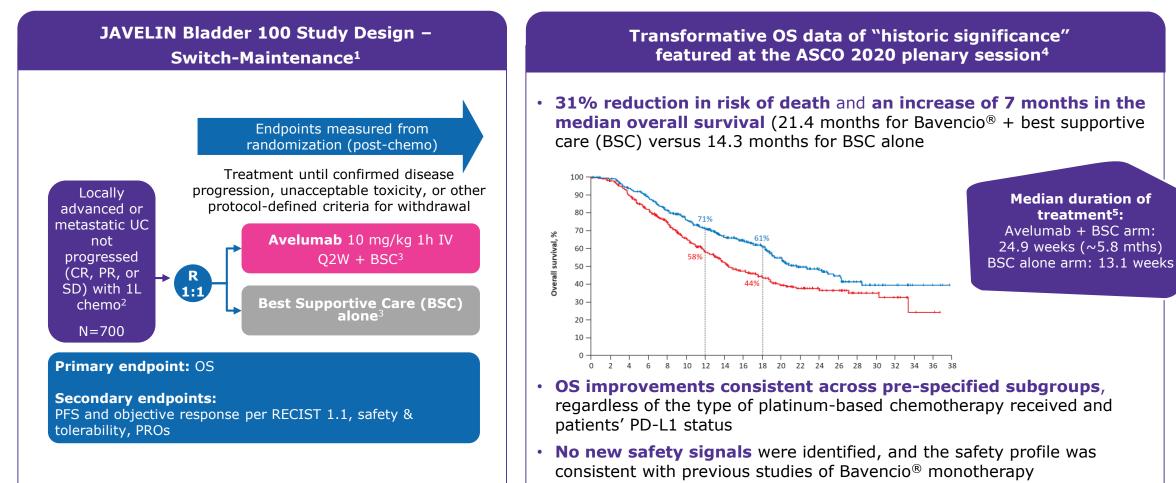
Avelumab

Durable responses to standard of care (1L chemotherapy) are rare with most patients experiencing progression within 9 months of treatment¹ **Carboplatin or** Complete or partial response, or **Cisplatin 1L** stable disease; eliable for US: ~50% treatment: maintenance therapy: ~70% US: ~6k US: ~8.5k EU5: ~85% EU5: ~15k EU5: ~21k Platinum JP: ~5k JP: ~95% JP: ~7k eligble: US: ~17k Newly 85% EU5: ~25k ~30% diagnosed JP: ~8k Show disease progression metastatic Other during chemotherapy: UC cases/ chemotherapy or IO (incl. Bavencio in the US) year in the Immuno-Oncology approved as 2L treatment US: ~20k 15% (IO) montherapy EU5: ~29k Platinum Japan: ~9k ineligble 2 checkpoint inhibitors approved for 1L UC treatment as monotherapy given the **high unmet** need in 1L UC - labels currently restricted to cis-ineligible, PD-L1 positive patients.

Avelumab: UC 1L / JAVELIN Bladder 100 First & only immunotherapy to significantly improve OS as a 1L treatment for locally advanced or metastatic urothelial cancer in a Phase III study

2

Avelumab



1: NCT02603432; 2: 4-6 cycles of standard 1L chemotherapy: gemcitabine + cisplatin or gemcitabine + carboplatin; 3: BSC administered as deemed appropriate by the treating 1: NCT02603432; 2: 4-6 cycles of standard 1L chemotherapy: genclability enclability of genclability of genclab Avelumab as First-Line Maintenance Therapy for Locally Advanced or Metastatic Urothelial Carcinoma. Presented at ASCO 2020; 5: Mean duration of treatment (DoT) accounts for the substantial number of patients who remain progression free beyond 12 months, this is higher than the median DoT; Acronyms: BSC = best supportive care, CR = complete response, PR = partial response, PRO = patient reported outcome, Q2W = every two weeks. SD = stable disease

Bintrafusp alfa¹ (M7824) An innovative first-in-class bifunctional fusion protein discovered in-house leading the TGF-β immuno-oncology field

			PD-1/PD-L1 immune checkpoint ¹
\sim	 Innovative first-in-class bifunctional fusion protein designed to simultaneously target two immune suppressive pathways (blocking PD-L1 and reducing TGF-β signaling) 	Anti-PD-L1 antibody	Heledad elakumor PD-L1 PD-L2 P
mode of action	• Demonstrated superior anti-tumor activity in pre-clinical study compared to anti-PD-L1 alone, and anti-PD-L1 and TGF- β given in combination as separate agents		TGFβ immunosuppressive cytokine ²
	 Great excitement in IO community about M7824 uniquely addressing TGF-B biology widely accepted as key resistance factor for anti-PDx therapies 	TGFβ binding domain	
	 Tested in 14 Phase Ib expansion cohorts across >700 patients in more than 10 tumor types 		
clinical pevelopment	 Shown clinical anti-tumor activity across multiple hard-to-treat advanced NSCLC, biliary tract cancer, HPV-associated ca 	incers, and gastric cancer	
achievements	 PhII study M7824 monotherapy versus pembrolizumab 11 high PD-L1-tumor expressers started in October 2018 	L, advanced NSCLC	

clinical Development plans

- Multiple high priority immuno-oncology clinical development studies ongoing or expected to commence shortly, including studies in non-small cell lung and biliary tract cancers with registrational intent and most recently advanced, unresectable cervical cancer
- Further plans to be communicated at a later stage

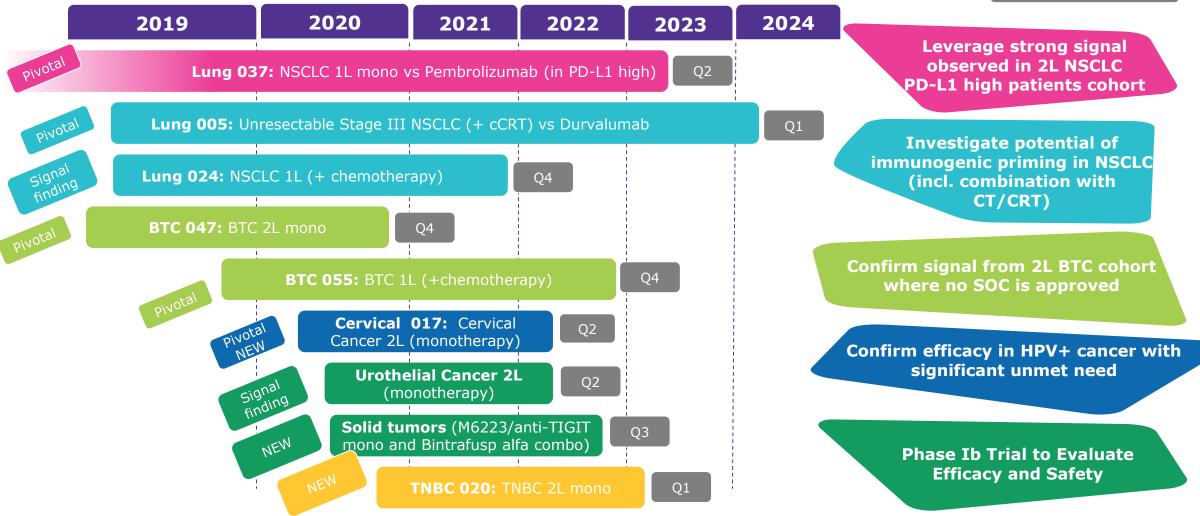
Merck KGaA Darmstadt, Germany

IO bifunctionals



Bintrafusp alfa: Development Strategy

Program overview: Five pivotal studies on track, several safety and signal finding studies recently initiated or in planning Est. primary completion¹



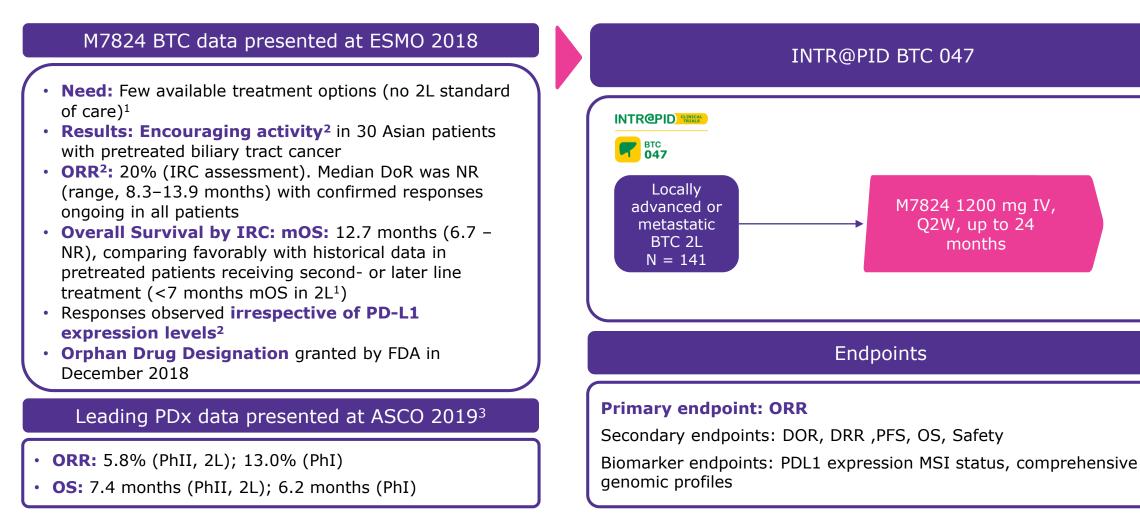
58 ¹Estimated primary completion date according to clinicaltrials.gov as of August 4, 2020, and internal estimates for upcoming studies; timelines are event-driven and may be subject to change; Acronyms: NSCLC = Non-small Cell Lung Cancer, BTC = Biliary Tract Cancer, CT = Chemotherapy, cCRT = Chemoradiation therapy

Merck KGaA Darmstadt, Germany

IO bifunctionals

Bintrafusp alfa: Developmental Progress

2L Biliary Tract Cancer (BTC) monotherapy trial recently initiated



¹Lamarca A, et al. Ann Oncol. 2014;25(12):2328–2338; ²Yoo et al., Poster presented at the 43rd European Society for Medical Oncology Annual Meeting, Munich, October 19–23, 2018; ³Bang et al., "Pembrolizumab (pembro) for advanced biliary adenocarcinoma: Results from the KEYNOTE-028 (KN028) and KEYNOTE-158 (KN158) basket studies", presented at ASCO 2019; Acronyms: DoR = Duration of Response, NSCLC = Non-small Cell Lung Cancer, NR = Not Relevant, MSI = Microsatellite Instability Status, OS = Overall Survival, PFS = Progression-Free Survival

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IO bifunctionals



Bintrafusp alfa: Developmental Progress

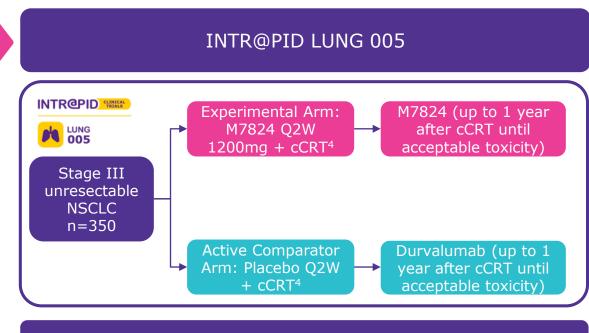
NSCLC Stage III cCRT Combo trial recently initiated

NSCLC 2L data presented at ESMO 2018

- Need: NSCLC accounts for 80-85% of all cases of lung cancer¹
- **Results: Encouraging efficacy comparing favorably** to established PDx-inhibitor monotherapy (IRC)^{2,3}:
 - **ORR (all-comers):** 25.0%
 - **ORR (PD-L1-positive):** 37.0%
 - ORR (PD-L1-high): 85.7%
- Progression free survival by IRC (PD-L1 \geq 1%):
 - M7824: **mPFS = 9.5 months**, competitor: 4.0 months^{2,3}
- Overall Survival by IRC (PD-L1 \geq 1%):
 - M7824: mOS not reached, competitor: 12.7 months^{2,3}

Pre-clinical data on M7824 + RT combo⁵

- M7824 and RT combination therapy enhances antitumor activity relative to mono-therapies in mouse models
- EMT, VEGF, and RT-induced fibrosis gene signatures are decreased with M7824 and combination therapy, and M7824 reduces RT-induced fibrosis
- Results support evaluation of M7824 + RT in the clinic



Endpoints

Primary endpoint: PFS

Main secondary endpoints: OS, Safety, Pulmonary function, Association of PD-L1 expression at base line and efficacy

¹Jemal A et al., Cancer statistics, 2007, CA Cancer J Clin 2007;57:43-66; ²Paz-Ares et al., Poster presented at the 43rd European Society for Medical Oncology Annual Meeting, Munich, October 19–23, 2018, data shown for 1200mg Q2W dose; ³Herbst et al.; Pembrolizumab versus docetaxel for previously treated, PD-L1-positive, advanced non-small-cell lung cancer (KEYNOTE-010): a randomised controlled trial (www.thelancet.com Published online December 19, 2015 http://dx.doi.org/10.1016/S0140-6736(15)01281-7); ⁴Cisplatin/Etoposide or Carboplatin/Paclitaxel or Cisplatin/Pemetrexed concomitant with Intensity Modulated Radiation Therapy (IMRT); ⁵Lan et al., Combination of M7824 and radiation therapy enhances antitumor activity, increases immune response, and modulates radiation-induced fibrosis in cancer models, 2018

Bintrafusp alfa: Developmental Progress

Data shown at AACR 2019 highlights opportunity in HPV-related cancers

Efficacy variable	HPV-associated cancer (n=43)	HPV+* (n=36)
Confirmed BOR, n (%)		
CR	2 (4.7%)	2 (5.6%)
PR	10 (23.3%)	9 (25%)
SD	6 (14.0%)	5 (13.9%)
PD	20 (46.5%)	17 (47.2%)
Not evaluable	5 (11.6%)	3 (8.3%)
Delayed PR ⁺	3 (7.0%)	3 (8.3%)
ORR per RECIST v1.1, n (%) [95% CI]	12 (27.9%) [15.3–43.7]	11 (30.6%) [16.3-48.1]
Total clinical response rate ⁺ , n (%)	15 (34.9%)	14 (38.9%)
DCR, n (%)	18 (41.9%)	44.4%

Prevalence: >630,000 new cases of HPV-related cancer are reported worldwide annually¹

IO bifunctionals

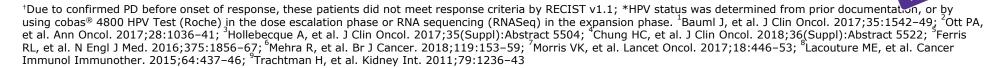
Response Rates:

- Bintrasfusp alfa response rates compared favorably to those with anti-PD-1 inhibitors (ORRs of 13%-24%)¹⁻⁷
- ORR was 27.9% and 30.6% in HPV-associated and HPV+ cancers, respectively
- Including three additional patients with delayed PRs after initial PD: Total response rate was 34.9% and 38.9% in HPVassociated and HPV+ cancers, respectively

Long-term Benefit:

- Most responses durable with 4 responses having DoR >18 months and 11/15 responses ongoing at the data cutoff
- Responses to bintrafusp alfa occurred irrespective of tumor type or PD-L1 expression
- Safety profile was similar to anti-PD-(L)1 therapy^{1,5} except for SCC/KAs and low grade mucosal bleeding which are anticipated AEs with TGF-β inhibition^{8,9}

Cervical Cancer 2L study recently posted on ct.gov



Merck KGaA Darmstadt, Germany

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DNA Damage Response (DDR) Leadership in next generation assets beyond PARP



DNA Damage Response

A Core Research Innovation Cluster

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- DDR defects are an "achilles heel" of cancer cells
- ATR, ATM and DNA-PK are the trinity of targets that orchestrate cellular response DNA damage and replication stress
- Leading clinical portfolio with 6 assets (in Phases 1 and 2) targeting ATR, ATM and DNA-PK
- Rich pre-clinical and translational science driving biological innovation and patient selection
- Ideally placed to drive novel combinations within DDR portfolio and broader immuno-oncology portfolio
- Multiple early signal finding studies allow for evidence-based decision making & focus in future development



DNA Damage Response (DDR) Development is focused on three foundations

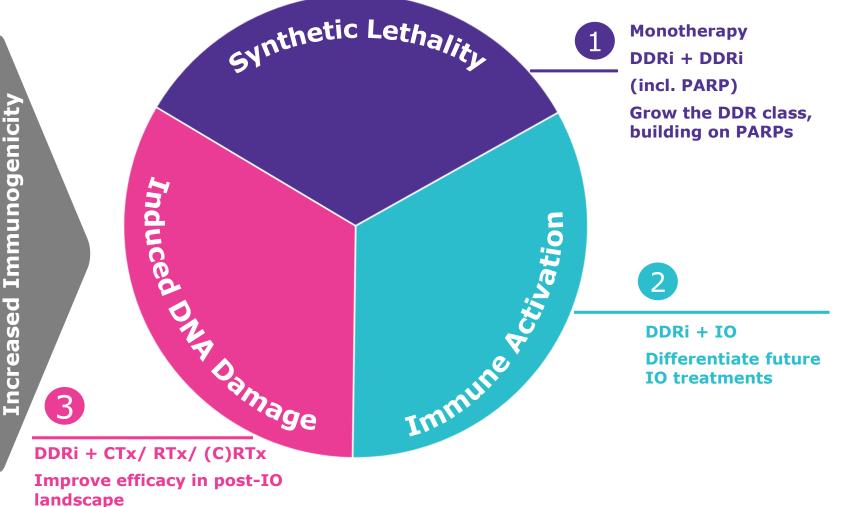
Differentiating aspects of cancer DDR that can be targeted therapeutically¹:

Loss of one or more DDR pathways

Increased levels of replication stress

Increased levels of endogenous DNA damage

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DDR

DNA Damage Response (DDR) Clinical program targets three major DDR pathways, in mono- and combination (incl. Avelumab)

... 2017 2018 2020 2021 2019 M6620 (Berzosertib) ATR-i M4344 Nov New Sep M1774 M3814 (Peposertib) Dec **DNA-PK-i** M3814 (Peposertib) Jul +Avelumab M3814 (Peposertib) Aug ATM-i M3541 Sep

Estimated primary completion¹

DDR

M6620 CT combinations in various settings; data from Ovarian cancer study recently published in the *Lancet Oncology*

Phase I dose escalation ongoing for monoand combination therapy (with CT)

Phase I dose escalation in metastatic or locally advanced unresectable solid tumors

One study completed (mono), one study ongoing (Phase I + Ib expansion, combination with RT/ CRT)

Phase I dose escalation initiated (+Avelumab with/without palliative RT), advanced solid tumors

Phase I/II study initiated for locally advanced rectal cancer (with CRT)

Development stopped, focus shifted to structure first disclosed at AACR 2019)

Neurology & Immunology

Broad portfolio positions Merck KGaA, Darmstadt, Germany as a growing Multiple Sclerosis player



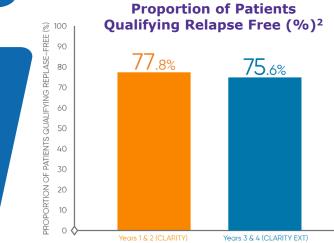


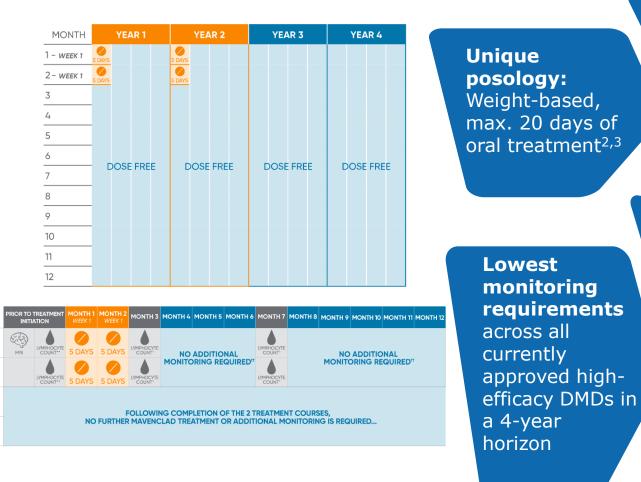
Mavenclad could change the MS treatment paradigm

Consistent efficacy: High efficacy¹ across all relevant clinical and radiological endpoints



- 58% reduction in annualized relapse rate²
- 47% reduction in 6-month confirmed disability progression³
- 86% reduction in T1 Gd+ lesions²
- 73% reduction in T2 lesions²





No evidence of disease activity \rightarrow

YEAR 1

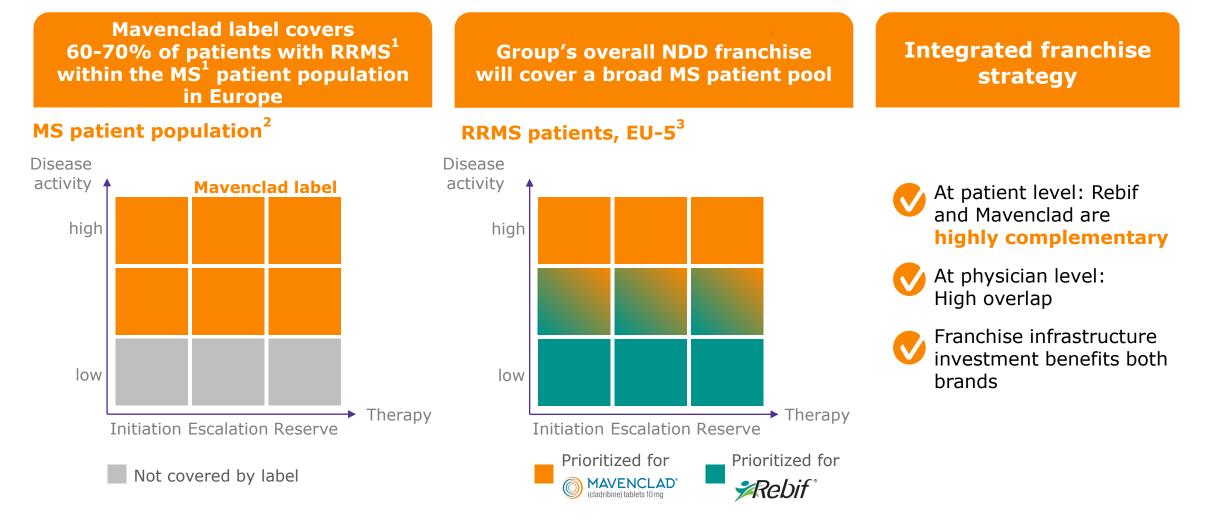
YEAR 2

YEAR 3

YEAR 4



Mavenclad's attractive label in Europe supports integrated franchise strategy



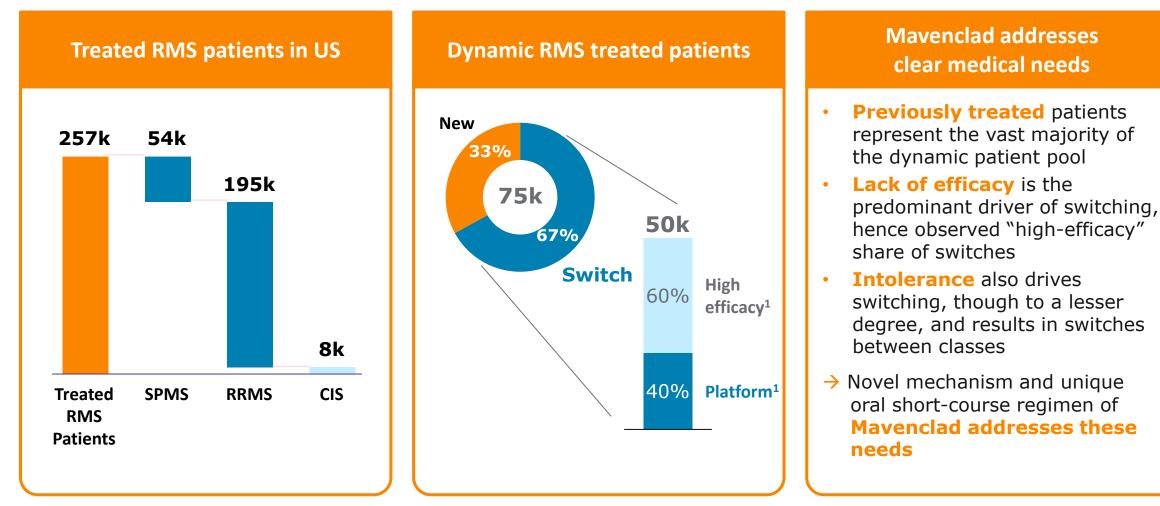
¹Approved by EMA for treatment of highly active relapsing multiple sclerosis; Abbreviations: RRMS = Relapsing-Remitting Multiple Sclerosis; ²Source: Merck KGaA, Darmstadt, Germany, Ipsos; As of May 2019, Mavenclad was approved in 55 countries globally and reimbursed in half



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On March 29, the FDA approved Mavenclad for the treatment of adults with relapsing-remitting (RRMS) and active secondary progressive disease (SPMS)





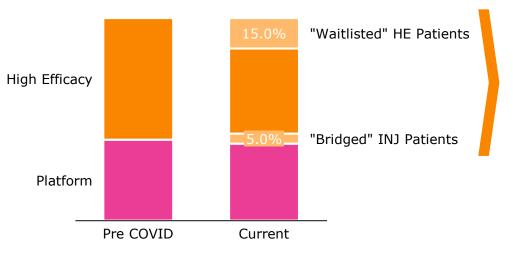


Aiming to capitalize on "waitlisted" patient opportunity amid **COVID-19** pandemic

HE MS market: Significant opportunity for rebound in H2

- Diverse guidelines published KOL debate ongoing .
- Infection risk number 1 choice driver •
- 15% of HE patient starts put on hold and a further 5% • "bridged" to platform therapies¹

US dynamic market²:



Mavenclad[®]: Profile suited to evolved choice drivers

- Lack of continuous immunosuppression³
- Transient preferential targeting of B and T lymphocytes⁴
- Specifically important for viral defense ...
 - Moderate T cell reduction with lower impact on CD8+4
 - Minimal impact on innate immunity⁵⁻⁷ •

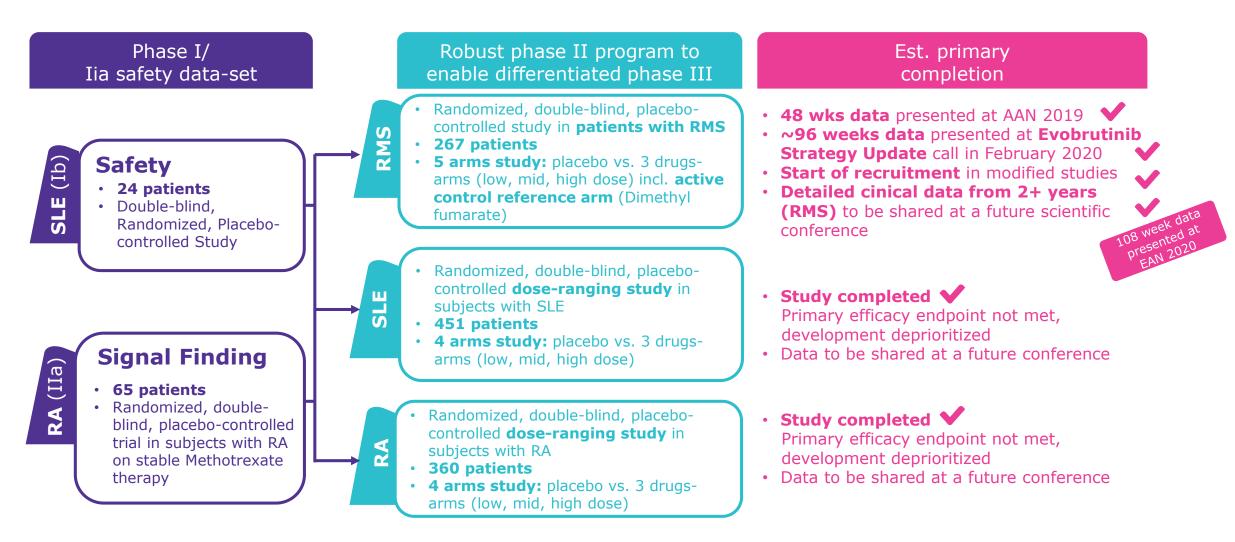
Mavenclad[®] is easy to use, with short-course at-home oral dosing and a low monitoring burden³

High efficacy that is sustained beyond total lymphocyte recoverv³

1: "Monitoring the Impact of COVID-19 on the Pharmaceutical Market", IQVIA; 2: IQVIA weekly data; 3: Mavenclad® EU SmPC, 2020; 4: Comi G, et al. Mult Scler Relat Disord. 2019;29:168–174; 5: Rieckmann P, et al. ECTRIMS 2009 [P816]; 6: Sorensen PS et al. ECTRIMS-ACTRIMS 2017 [P1141]; 7: Giovannoni G et al. N Engl J Med 2010;362:416–26 (and suppl. info).; Acronyms: HE = High Efficacy, INJ = Injectables, KOL = Key Opinion Leader

Evobrutinib

Comprehensive development plan across immune-mediated diseases



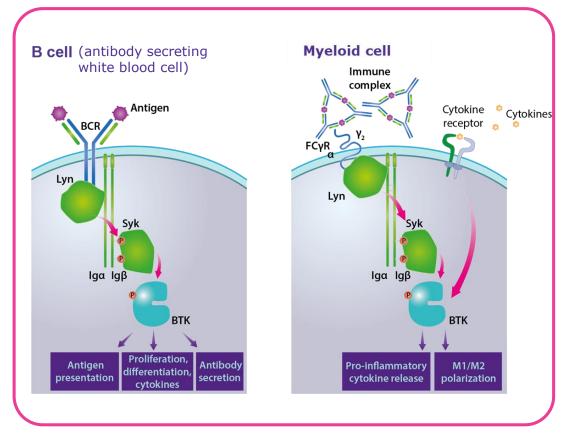
Evobrutinib

BTK inhibitor with a dual mode of action

Dual Mechanism of Action

- Bruton's tyrosine kinase inhibitors (BTKi's) are traditionally used in oncology but are now also being evaluated in immunology
- B-cell depletion studies have shown that antibody-independent B-cell functions play an important role in MS pathogenesis (development)¹⁻³
- An altered innate immune system contributes to progression in MS^{4,5}
- Evobrutinib has a dual mode of action, impacting on B-cells, macrophages and pathways involved in inflammation in MS; this has been confirmed in animal models⁶⁻¹¹

Involvement of BTK in immune cell function



¹Bar-Or A, et al. Ann Neurol 2010; ²Fraussen J, et al. Autoimmun Rev 2016; ³Jelcic I, et al. Cell 2018; ⁴Rawji KS, et al. Front Cell Dev Biol 2016; ⁵Vogel DY, et al. J Neuroinflammation 2013; ⁶Data on file: EMD Serono M2951 Investigator's Brochure July 2015; ⁷Haselmayer P, et al. EULAR 2016; ⁸Data on file: EMD Serono Internal Study Report Aug 2012; ⁹Alankus YB, et al. ECTRIMS 2018; ¹⁰Torke S, et al. ECTRIMS 2018; ¹¹Boschert U, et al. ECTRIMS 2017

Significant unmet medical need remains in RMS

Unmet needs in RMS ...

Evobrutinib in RMS

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need for new mechanisms to control disease

- Approx. 50% of patients with RMS continue to have ongoing disease activity over
 2 years even when treated with the most effective agents¹
- Therapies addressing adaptive and innate pathobiology peripherally and in the CNS

need for higher efficacy oral therapies

- 5 approved therapeutic classes considered "higher efficacy"², only 2 of which are oral
- No approved oral therapy with efficacy on progression vs. an active control

opportunity to advance on benefit-risk

- **Systemic side effects** of therapies limit patient acceptance and compliance
- All approved higher efficacy therapies **associated with elevated risk of infection**

... addressed by Evobrutinib in RMS

Well Tolerated, no new safety signals identified up to ~96 weeks

3 In

Long term exposure of Evobrutinib did **not result in increase of serious infections nor lymphopenia**, consistent with Evobrutinib's mechanism of action



Evobrutinib is **not associated with systemic side effects** (e.g. GI disturbances)



LFT elevations in a minority of patients restricted to first 6 months enabling patient management through appropriate monitoring



21,200 patient 👥

data base

¹Disease activity based on NEDA/No Evidence of Disease Activity; ²5 Higher efficacy classes: VLA-4 (Natalizumab, IV), CD52 (Alemtuzumab, IV), CD-20 (Ocrelizumab, IV), S1PR (Fingolimod & Siponimod, Oral), Cd-ATP (Cladribine tablets, Oral); Acronyms: CNS = Central Nervous System, RMS = Relapsing Multiple Sclerosis

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2 yearst in

RMS

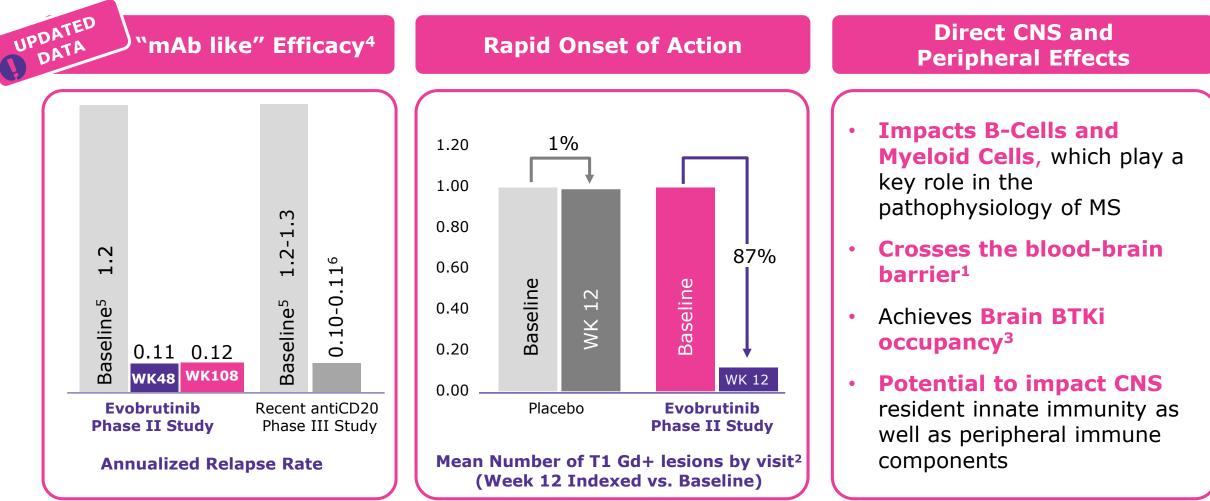
Evobrutinib

(BTK-inhibitor)c

Evobrutinib

73

108 weeks data from Phase II, presented at EAN 2020, confirms potential for mAb like efficacy with a rapid onset of action



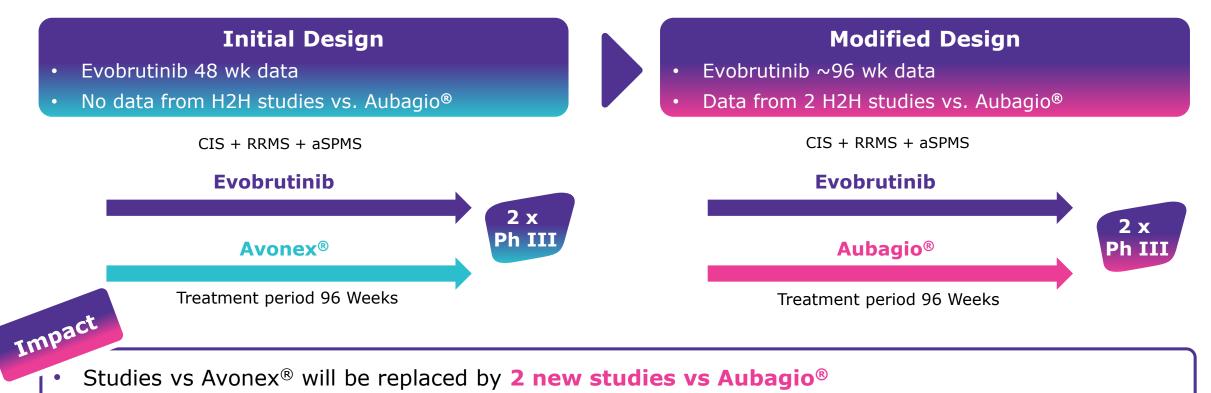
¹Experiment in Healthy Mice (Data on file); ²Exploratory analysis; ³Boschert U et al. ECTRIMS 2017 [P678]; ⁴Aspirational indirect comparison, no H2H studies performed; ⁵Mean number of relapses in last 12 months; ⁶Flexible duration, maximum duration for up to 30 months; Acronyms: BTKi = Bruton's Tyrosine Kinase inhibitor, CNS = Central Nervous System, mAb = monoclonal Antibody, EAN = European Academy of Neurology, Gd+ = Gadolinium Enhancing Lesions, WK = Weeks

Evobrutinib

Merck KGaA

Darmstadt, Germany

mAb like efficacy data drives modification of Phase III study design

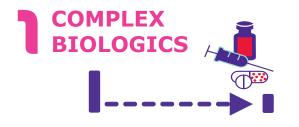


- Fundamentally unchanged study design, POS, and cost
- Broad network of sites selected for study vs. Avonex[®] ready to pivot to modified design
- Goal is to have Phase III RMS data in-house in Q4 2023, and filing shortly thereafter

Acronyms: aSPMS = active Secondary Progressive Multiple Sclerosis, CIS = Clinically Isolated Syndrome, H2H = head-to-head, mAb = monoclonal Antibody, wk = weeks, POS = Probability Of Success, RRMS = Relapsing-Remitting Multiple Sclerosis; Avonex® is a registered trademark of Biogen; Aubagio® is a registered trademark of Sanofi

Life Science

Capitalizing on three key life science trends



Single Use / End to End

Opened Wuxi site in 2018, and expanded Danvers facility

Viral Vectors

Expanded Carlsbad viral vector manufacturing site in 2016; further doubling of capacity planned for 2021

Antibody Drug Conjugates (ADC)

Launched ADC Express[™] for the rapid production of ADCs



#1 eCommerce site in Life Science¹

• **>90%** of

Millipore products on eCommerce platform

• **×2** net sales growth of eCommerce vs.

non-eCommerce²

Manufacturing/Distribution Nantong, Wuxi Single use

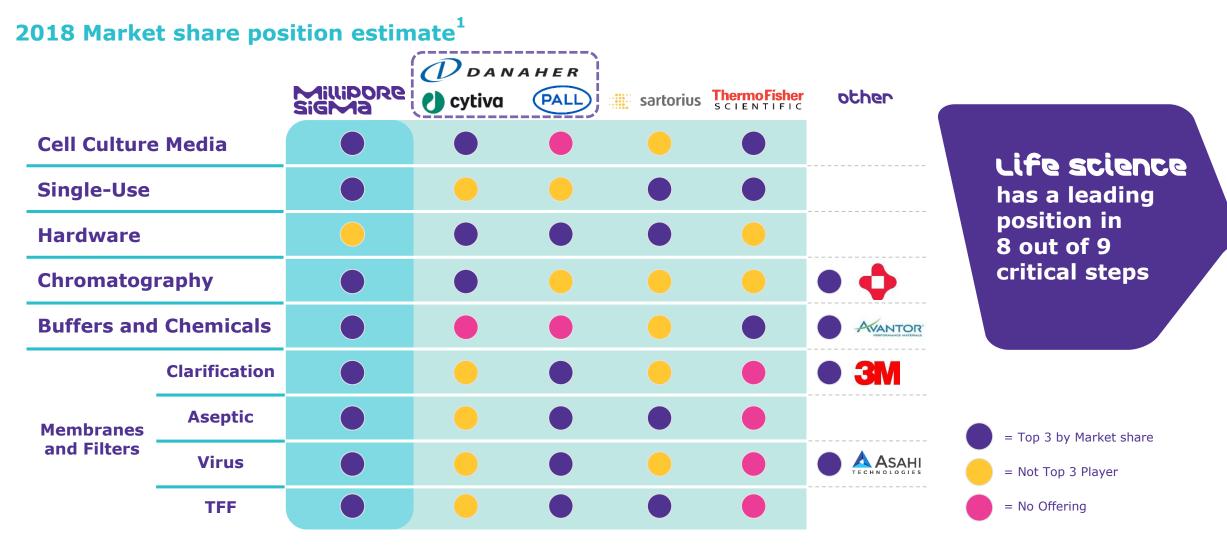
Commercial expansion Tier 2 cities

ASIA

eCommerce partnership **C**Alibaba Group 阿里巴巴集团

Process Solutions

We are the only company to span the entire value chain of our customers



Process Solutions

Next-generation bioprocessing on the cards



MAB process intensification 2017 - 2020+



continuous processing >2025



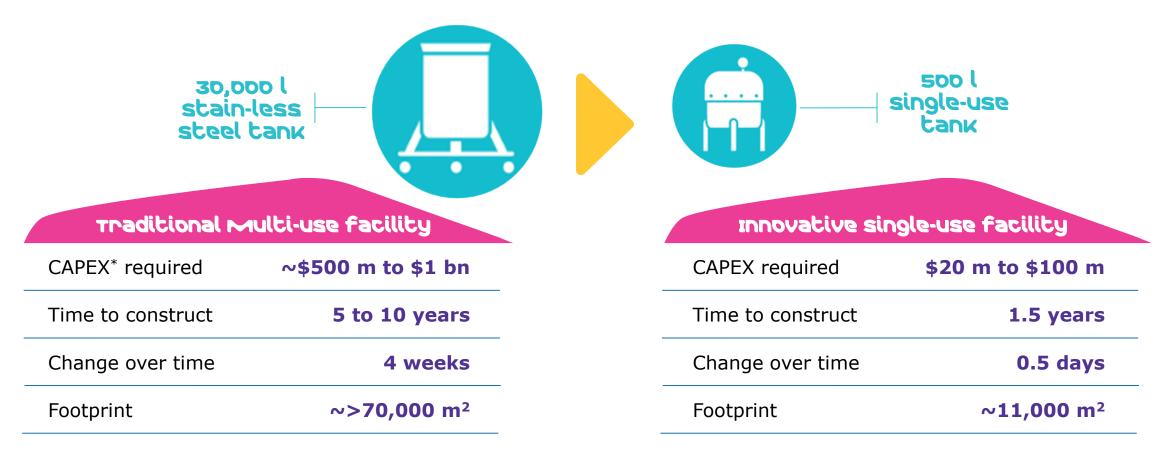
Continuous bioprocessing will ...

- be an evolution in mAb bioprocessing
- take time to establish
- leverage the present
- lead to hybrid solutions

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Process Solutions

Our single-use technologies drive flexibility in modern bioprocessing



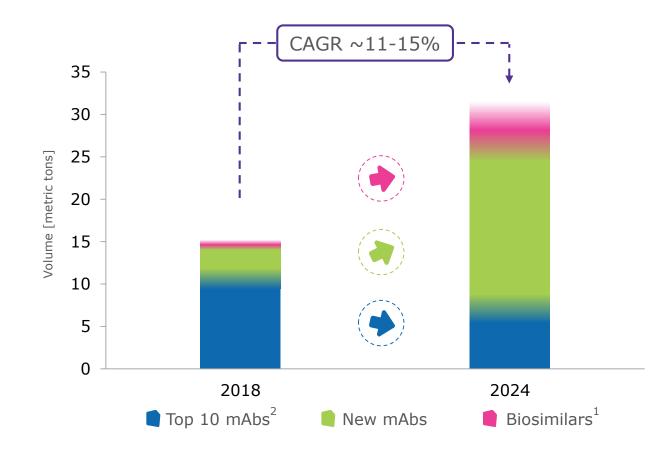
Strong demand for single-use technologies and Process Solutions' broad offering was and will remain a key source of growth for Life Science



Life Science Democratization of mAbs market will drive diversification, change, variability

mAb volume projections 2018 to 2024

79



Market development

- Overall mAbs market will grow ~11-15% CAGR
- Top 10 originator mAbs represent
 ~ 60% of market volume today and will decline to ~20% in 2024
- Biosimilars will gain share

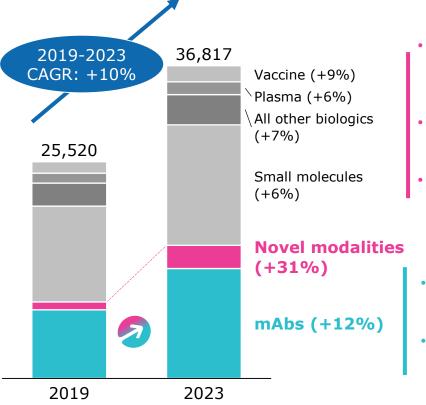
¹Biosimilars scaling factor = 2.8 based off internal estimates and McKinsey analysis; ²Top 10 mAbs by 2017 volume, includes Enbrel. Source: EvaluatePharma | Sept 2018; mAbs = Monoclonal antibodies

Life Science

80

Proccess Solutions: Growth opportunities beyond mAbs

Growth potential by segment Accessible market [€m], 2019-2023 CAGR¹



Diversifying products and services

in line with the new modalities coming to the market: fusion biologics, viral and gene therapies, cellular therapies **Leading technologies:** investments over 15 years, 26 granted CRISPR patents

- **Services:** investments in CDMO capacity for Viral Vector Manufacturing, and HP-API
- Leading technologies: Single Use and BioContinuum[™] for intensified and continuous bioprocessing
- Services: Contract manufacturing for biotechs at 3 global sites

Growth market - China

 Half of world-wide early stage mAb market by 2022

• A leading country in clinical trials

 Increased investments into Nantong and Wuxi manufacturing sites
 China's first BioReliance[®] End-to-End Biodevelopment Center opened in Shanghai in 2017

Applied Solutions

Broad offering across the dynamic cell and gene therapy value chain



Group offering

81

Develop **cutting-edge tools** for scientists to

- Uncover foundational understanding, e.g. CRISPR patent grants in 7 geographies
- Modify genetic functions, e.g. CRISPR/Cas 9 tools, library and reagents, ZFN

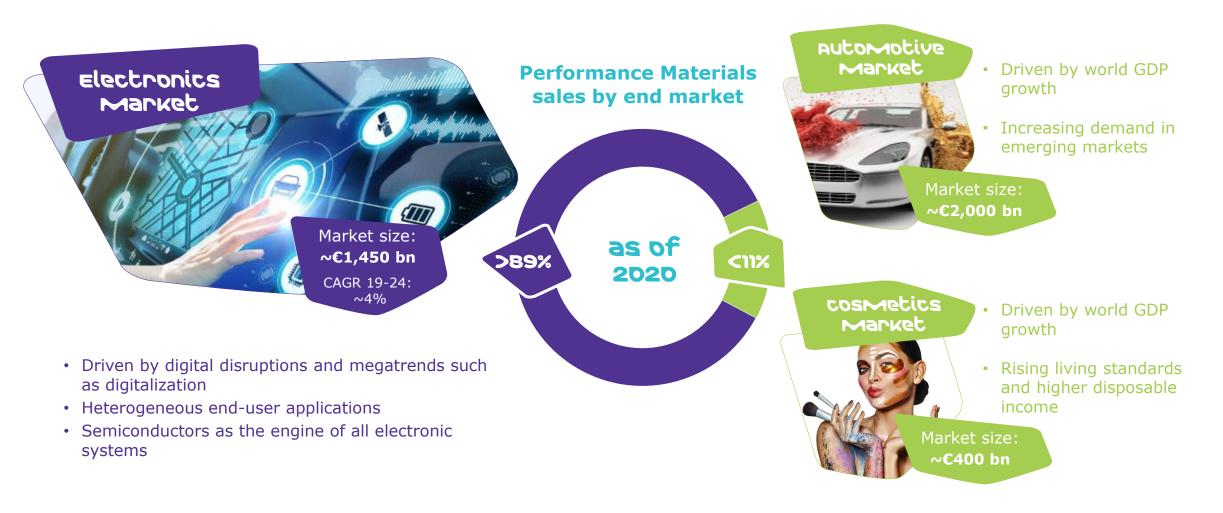
Create cell lines and cell models for testing safety and efficacy

- Pharmacokinetics (ADME)
- Toxicology testing
- Potency model
- Examples: primary human hepatocytes, Intestine, liver and kidney assays

- Offer cGMP clinical and commercial manufacturing, e.g. manufacture viral vectors
- Improve the supply chain of cell therapy, e.g. cell and gene therapy products and services

Merck KGaA, Darmstadt, Germany is a supplier of novel products and services with a strong IP portfolio to meet the rapidly growing demand for novel therapies

Performance Materials targets attractive markets – especially in the electronics space



Performance Materials Three high-tech pillars serving a diverse customer base



.56%

% of sales¹

Products

- Dielectrics, colloidal silica, lithography materials, yield enhancers, edge-bead removers
- Polyimide raw materials, printing materials and specialty gases
- Delivery equipment for gas, chemicals and CMP slurries, installation services and parts & support
- Liquid crystals (LC) and photoresists for TVs, smartphones and tablet computers
- Other display and non-display applications (e.g. LC Windows)
- Organic and inorganic light emitting diodes
- Effect pigments and functional materials for coatings, plastics, printing and cosmetics
 - Functional materials for cosmetics & special applications
 - Functional materials for electronics and energy solutions



¹based on H1 2020

~11%

Business portfolio management drives capital allocation and enables future value creation

Profitability



Invest for growth

- Strong and sustainable market growth
- Leading positions and attractive growth opportunities

Manage for cash

- Mature and lucrative market segments
- Invest in extension, while managing for profit

Build or Partner

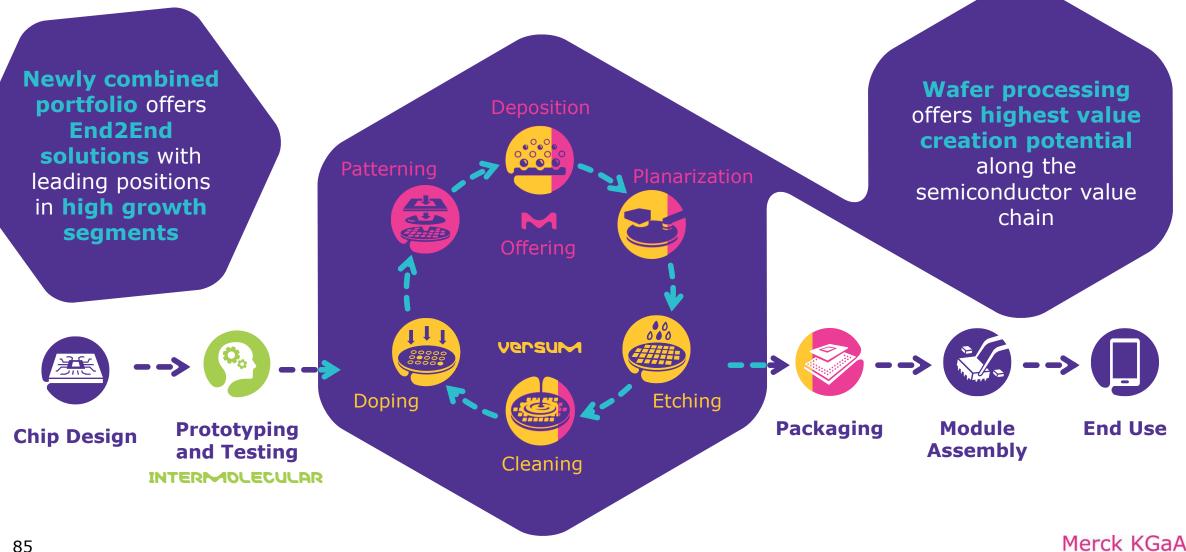
- Early industry cycles with strong potential
- Strictly prioritize and diversify risk

Divest

Regular review for better strategic owner



Semiconductor Solutions even stronger with Versum and Intermolecular

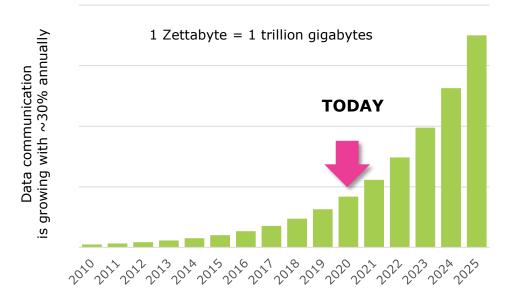


Darmstadt, Germany

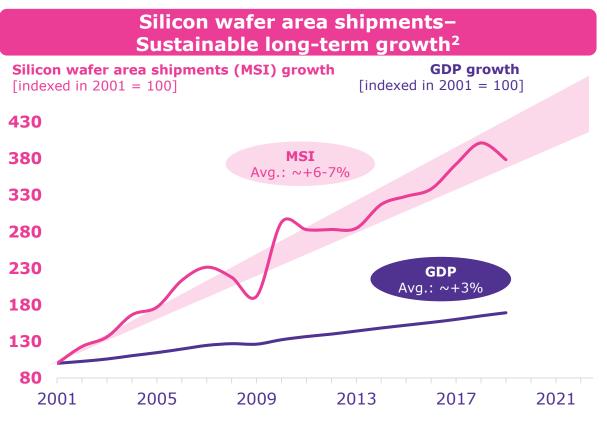
Semiconductor Solutions – Data explosion driving secular growth



Size of global data sphere in zettabytes¹



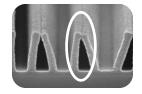
- Data volumes growing at ~30% annually
- **Driving the digital revolution** as semiconductors are required for data processing and storage



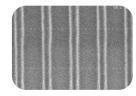
- Silicon wafer area shipments (MSI) strongly correlated with semiconductor market growth
- Opinions on MSI development during 2020 vary

Expanding the limits of how small you can go

Pattern collapse

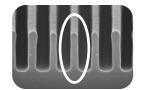


Lithography limitation



Wide features

AZ® rinse materials



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

Directed self-assembly (DSA)



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

AZ® shrink materials

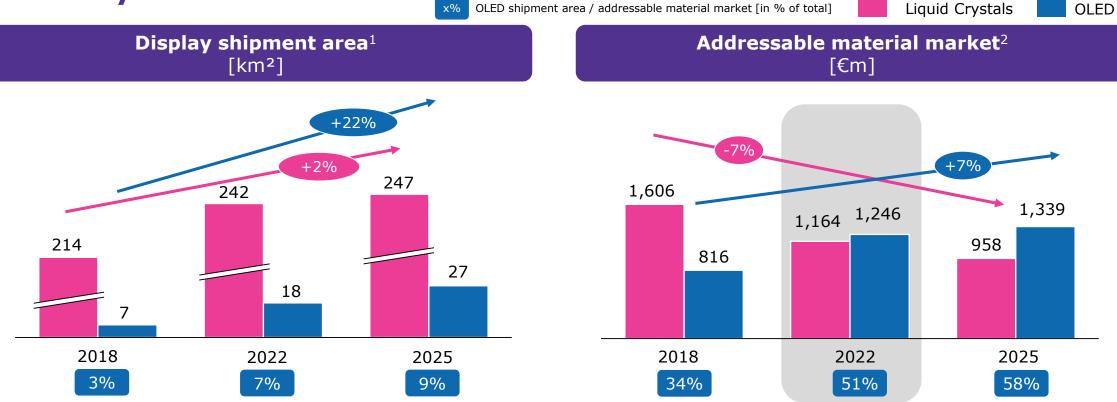


Shrink materials "shrink" the gap between lines and, hence, allow the manufacture of narrower features otherwise not possible.

Merck KGaA, Darmstadt, Germany delivers highly innovative solutions for complex customer problems



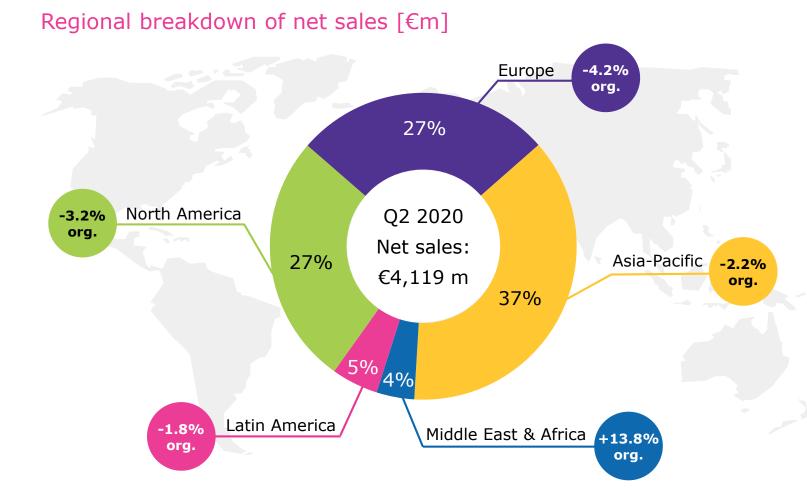
Display Solutions - OLED material market to exceed LC material market by 2022



- Continued growth across all technologies
- OLED growing faster than LCD, but LCD to command 90+% area share for foreseeable future

- Material value per OLED display higher than in LCD
- OLED material market to exceed LC material market by 2022, but market split between many more players

All regions impacted by COVID-19; signs of recovery in APAC dragged down by Display Solutions & Fertility



Regional organic development

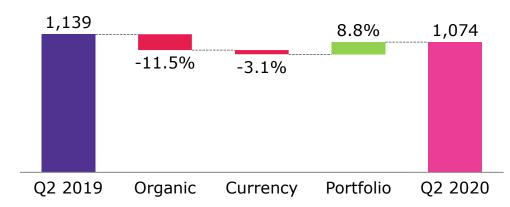
- Moderate decline in APAC as doubledigit growth in Life Science and Semiconductor Solutions offset a large part of COVID-19-driven decline in Display, Fertility and Surface Solutions
- In Europe Neurology & Immunology as well as Research Solutions were also declining due to COVID-19
- North America saw significant declines in Research Solutions and Fertility, also Applied Solutions slightly down
- Strong General Medicine & Endocrinology growth in MEA and LATAM (where it could not fully offset effects of COVID-19 in Fertility)

Versum portfolio effect and Process Solutions drive sales growth despite COVID-19 related organic decline in Healthcare and Performance Materials

Q2 YoY Net Sales	Organic	Currency	Portfolio	Total
Healthcare	-7.4%	-2.3%	-0.9%	-10.6%
Life Science	6.3%	-0.4%	0.0%	5.9%
Performance Materials	-13.7%	1.8%	50.1%	38.1%
Group	-2.5%	-0.9%	7.1%	3.7%

- Healthcare decline largely driven by COVID-19 impact on Fertility; COVID-19 also slowing down growth of Mavenclad[®] as well as General Medicine & Endocrinology (incl. destocking post Q1 pull-in)
- Process Solutions growing 20% and overcompensating flat Applied Solutions and declining Research Solutions where demand was impacted by COVID-19 related lockdowns
- Semiconductor Solutions organic growth continues at an even higher pace – however, COVID-19 impact on Display and Surface Solutions results in overall organic decline

Q2 YoY EBITDA pre



- EBITDA pre declining faster than sales organically, largely due to non-recurring Healthcare income (~ €165 m higher in Q2 2019)
- Margin accretive Versum portfolio effect
- FX tailwinds from U.S. and Taiwan dollar did not offset currency headwinds from some emerging markets

Q2 2020: Overview

Key figures

[€m]	Q2 2019	Q2 2020	Δ
Net sales	3,971	4,119	3.7%
EBITDA pre	1,139	1,074	-5.7%
Margin (in % of net sales)	28.7%	26.1%	-2.6pp
EPS pre	1.54	1.30	-15.6%
Operating cash flow	743	502	-32.4%
[€m]	Dec. 31, 2019	June 30, 2020	Δ

		June 30, 2020	
Net financial debt	12,363	12,560	1.6%
Working capital	3,944	4,474	13.4%
Employees	57,071	57,523	0.8%

Comments

- Versum portfolio effect and strong growth in Process Solutions drive sales above last year, despite materializing COVID-19 impact across most business units
- EBITDA pre and margin decline driven by lower non-recurring income components and under absorption of fixed costs due to lower sales from the COVID-19 impact
- EPS pre and EBITDA pre declining due to a lower financial result
- Lower operating cash flow driven primarily by GSK upfront payment in 2019 and higher working capital in 2020

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Darmstadt, Germany

Healthcare: Savings in M&S and R&D offset impact from lowered Fertility demand and Mavenclad[®] drag amid COVID-19

Healthcare P&L			Net sales bri	dge			
[€m]	Q2 2019	Q2 2020	€1,677 m				€1,499 m
Net sales	1,677	1,499		-7.4%	-2.3%	-0.9%	
Marketing and selling	-599	-409					
Administration	-84	-81	Q2 2019	Organic	Currency	Portfolio	Q2 2020
Research and development	-395	-366	EBITDA pre	bridge			
EBIT	345	269	€528 m			0.00/	CD74
EBITDA	523	359		-25.9%	-4.1%	0.9%	€374 m
EBITDA pre	528	374		-23.970	-4.1%		
Margin (in % of net sales)	31.5%	24.9%	Q2 2019	Organic	Currency	Portfolio	Q2 2020

- Mavenclad[®] 36% growth versus Q2 2019, especially in U.S.; however demand declines versus Q1 2020 due to COVID-19 as expected; Rebif® returning to the anticipated underlying trajectory
- Fertility heavily impacted across all regions due to temporary shutdown
 R&D reflecting ongoing stringent cost control of a majority of clinics
- Erbitux[®] organically slightly growing; Bavencio[®] growing strongly versus last year, but sequentially impacted by COVID-19
- M&S decrease due to rigorous cost management, further supported by significant reduction of face-to-face activities during COVID-19 pandemic, last year elevated by now expired amortization of Rebif[®]
- EBITDA pre declining faster than sales, driven largely by tough comps from Peg-Pal and Bavencio® milestones in Q2 2019

Healthcare: Organic Growth in H1 based on a strong Q1 and a portfolio that showed resilience in the COVID-19 pandemic

Not sales hridge

ricalulual e r &L			iner sales bill	ige
[€m]	H1 2019	H1 2020	€3,158 m	3.2%
Net sales	3,158	3,200		
Marketing and selling	-1,150	-832		
Administration	-172	-160	H1 2019	Organic
Research and development	-775	-783	EBITDA pre b	oridge
EBIT	473	692	€860 m	
EBITDA	852	860		-0.1%
EBITDA pre	860	846		
Margin (in % of net sales)	27.2%	26.4%	H1 2019	Organic

Healthcare P&I

Comments

- Mavenclad[®] growth versus H1 2019, especially in U.S.; however declining sequentially due to COVID-19; recovery of ramp-up starting in June; Rebif[®] returning to underlying trajectory
- of a majority of clinics
- Erbitux[®] growing organically slightly; Bavencio[®] growing strongly versus
 EBITDA pre declining faster than sales, driven largely by tough comps last year, but sequentially impacted by COVID-19
- M&S decrease due to rigorous cost management, further supported by suspension of face-to-face activities during COVID-19 pandemic versus elevated H1 2019 by now expired amortization of Rebif[®]

-1.4%

Currency

-2.0%

Currency

-0.5%

Portfolio

0.6%

Portfolio

- Fertility heavily impacted across all regions due to temporary shutdown
 R&D cost control offset by Bavencio[®] H&N study termination accrual (-€15 m)
 - from Peg-Pal and Bavencio® milestones in Q2 2019

€3,200 m

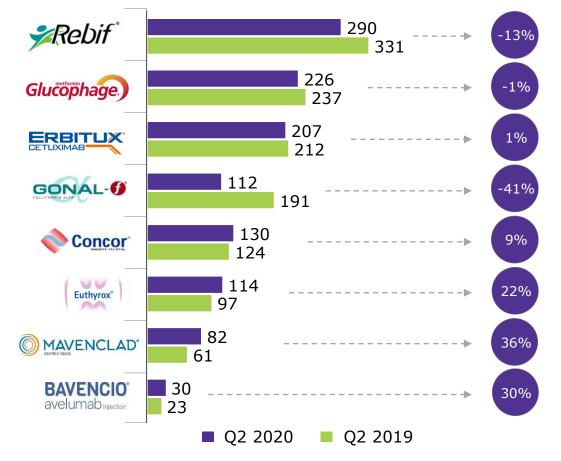
H1 2020

€846 m

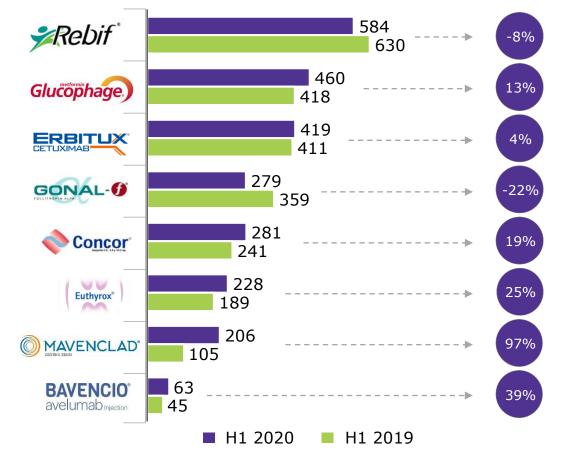
H1 2020

Healthcare organic growth by franchise/product

Q2 2020 organic sales growth [%] by key product [€m]

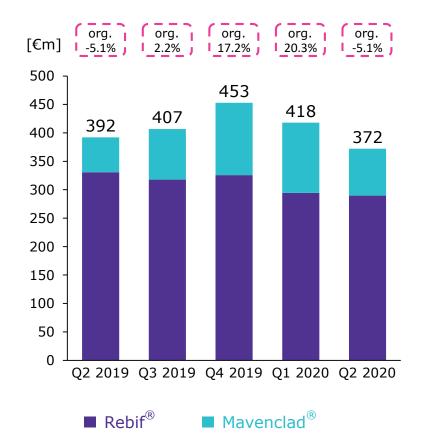


H1 2020 organic sales growth [%] by key product [€m]

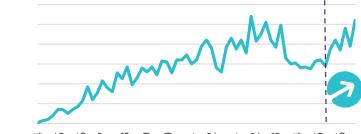


Neurology & Immunology: 7% organic growth in H1; paused Mavenclad[®] ramp-up showing signs of recovery in June

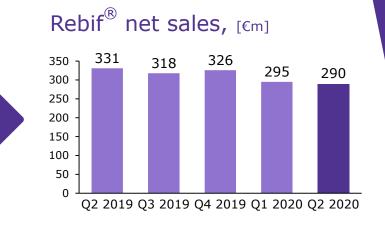
Sales development NDI, [€m]



Mavenclad[®] TRx, [IQVIA, NPA, weekly view]



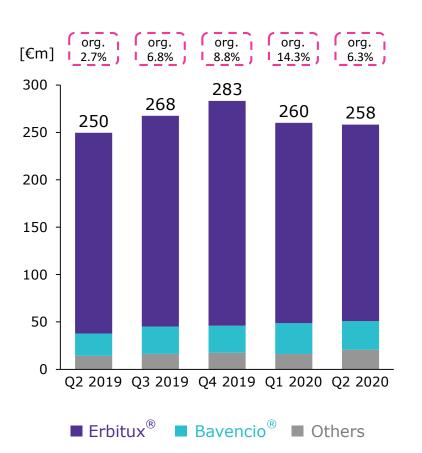
2019-04 2019-05 2019-06 2019-08 2019-08 2019-10 2019-11 2019-11 2019-11 2019-12 2020-01 2020-03 2020-06



- Mavenclad[®] recovery of ramp-up from peak COVID impact visible starting in June
- Mavenclad[®] continuing to gain market share in High Efficacy (5.3%) and Oral classes (7.8%)

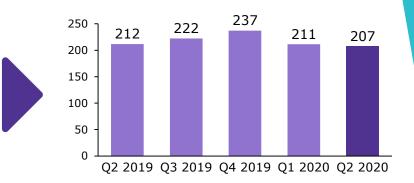
- Rebif[®] sales of €290m in Q2 `20 are returning to the anticipated underlying trajectory
- Stronger sequential decline vs. an elevated Q1 2020 due to U.S. inventory effects, and Russia tender phasing

Oncology: both Bavencio[®] and Erbitux[®] remain resilient despite impact from the COVID-19 pandemic



Sales development Oncology, [€m]

Erbitux[®] net sales, [€m]





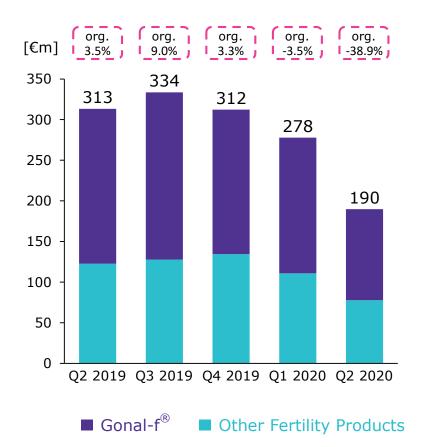


Absolute sales of €207 m reflect a resilient growth of 1.1% in Q2

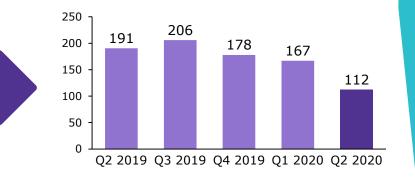
 Strong organic H1 growth of 23% in Latin America and moderate H1 growth of 3% in Europe despite COVID-19 was further supported by 3% H1 growth in MEA

> Bavencio[®] growing 30%; sequential ramp up momentum versus Q1 2020 impacted; largest opportunity will emerge in H1 2020 in UC 1L

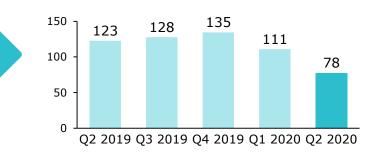
Fertility: Strongest COVID-19 impact particularly in Europe and the U.S. given short treatment duration and temporary clinic shutdowns



Sales development Fertility, [€m]



Other Fertility net sales, [€m]



Entire Fertility portfolio shows significant organic decline of -39% primarily from COVID-19 related temporary shutdowns of clinics combined with an innately short duration of treatment

- COVID-19 triggering 51% sales decline in Europe as clinics shut down due to the discretionary nature of the treatment
- Milder decline of 31% in APAC shows correlation with pandemic course, as China & others ahead of developments in Europe and U.S.

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Gonal-f[®] net sales, [€m]

General Medicine & Endocrinology: Growing organically overall despite COVID-19 impact in Q2 and a negative effect from Q1 pull-in

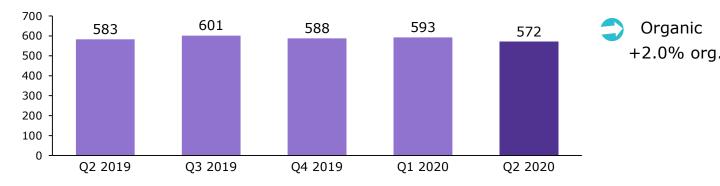
Endocrinology [€m] Organic 99 95 91 -5.4% org. 90 100 83 80 60 40 20 0 Q2 2019 Q3 2019 Q4 2019 Q1 2020 Q2 2020

Q2 2020 organic drivers

 Endocrinology was impacted in the U.S. and to a minor extent in Europe amid COVID-19 pandemic, while stable to growing in other regions



Sales evolution



 While Glucophage[®] had a minor negative impact from the Q1 pull-in, Concor[®] saw ongoing strong demand globally, despite a VBP effect in China; leading to 2% growth overall for CardioMetabolic Care & General Medicine and Others

China's VBP: Recently announced round 3 includes metformin, as anticipated, with implementation expected to follow in Q4 2020



Round 1		Round 2		Round 3		
	2019		20	020		2021
4 municipali cities in oth June/ expanse	7 pilot initiated in ities ¹ and 7 key er provinces ² (July: Provincial sion to Fujian & provinces September: remaining 25 provinces added to "4+7"	Decembe announcer (incl. Conc	ment of Round 2 cor [®]) As of April: Gradual implementation of Round 2, 2 winners granted exclusive access to 60% of total hospital market ³ , non- winners (incl. Concor) retain access to remaining 40% of hospital market at a gradient	July: Official and Round 3 (incl. Mo XR), tender para winners granted hospital market ³ manufacturers re comply with NMF NDMA testing	etformin IR and meters: up to 8 up to 80% of , all equested to PA guidance on August: Biddin gradual implen	ng scheduled for August 20, nentation anticipated as of Q4 vith company expectations
	tained confid e business		price cut ⁴ + can freely compete in non-hospital/ retail market at least stable 22		to grow >: ✓ "up to" 8 only a gu ✓ Non-hospit	market: Chinese metformin market 10% p.a. over the next 5 years 0% access and up to 8 winners idance, to be finalized post-bidding tal/retail market not subjected to

1: Beijing, Shanghai, Chongqing, Tianjin; 2: together encompasses $\sim 1/3$ of Chinese drug market; 3: hospital market for bisoprolol and metformin makes up $\sim 70\%$ of total market, this includes urban hospitals, rural hospitals, and community health centers; 4: Concor[®] price cut in the high single digit %;Acronyms: NMPA = National Medical Products Administration, VBP = Volume-Based Procurement, NDMA = N-nitrosodimethylamine, also known as nitrosamine

> Merck KGaA Darmstadt, Germany

gradient price cut

bidding strategy

✓ Company following a **carefully crafted**

Life Science: Strong resilience continues in Q2; Process growing 20%, Applied & Research impacted by COVID-19 but recovery visible in June

Life Science P&L

[€m]	Q2 2019	Q2 2020	€1,705
Net sales	1,705	1,806	
Marketing and selling	-490	-488	
Administration	-68	-100	Q2 201
Research and development	-69	-75	EBITDA
EBIT	322	386	€533 ।
EBITDA	518	584	
EBITDA pre	533	569	
Margin (in % of net sales)	31.3%	31.5%	Q2 201

Net sales bridge 6.3% 0.0% €1,806 m 5 m -0.4% Q2 2020 19 Organic Currency Portfolio pre bridge 9.7% €569 m m -2.4% -0.6% Organic Currency Portfolio 02 2020 19

Comments

- 19.8% organic growth of Process Solutions mainly driven by downstreamand single use, with COVID-19 demand contributing
- Applied Solutions about stable due to COVID-19-related effects across the full portfolio albeit clear signs of recovery in June
- Research Solutions impacted significantly mainly due to temporary slowdown in academia from COVID-19-related lab closures, also showing clear signs of recovery in June
- Lower M&S from overall cost-consciousness and lower travel expenses, partially offset by increased freight costs
- Admin increase largely driven by EBITDA pre adjustments (€12 m) and COVID-19-related cost for additional safety precautions
- Increased R&D driven by investments in strategic projects
- EBITDA pre growing faster than sales, reflecting operational leverage from strong top-line growth

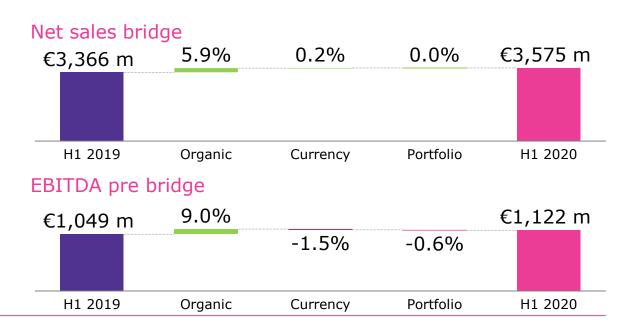
Merck KGaA

Darmstadt, Germany

Life Science: Strong resilience throughout H1; Process growing double-digit, Applied & Research impacted by COVID-19 but recovery visible in June

Life Science P&L

[€m]	H1 2019	H1 2020
Net sales	3,366	3,575
Marketing and selling	-959	-986
Administration	-156	-189
Research and development	-131	-151
EBIT	635	731
EBITDA	1,025	1,126
EBITDA pre	1,049	1,122
Margin (in % of net sales)	31.2%	31.4%



- Double-digit organic growth of Process Solutions mainly driven by downstream and single use, with COVID-19 demand contributing
- Applied Solutions about stable due to COVID-19 related effects across the full portfolio, albeit clear signs of recovery in June
- Research Solutions impacted significantly mainly due to temporary slowdown in academia from COVID-19 related lab closures, also showing clear signs of recovery in June
- Higher M&S largely from increased freight costs, partially offset by overall cost-consciousness and lower travel expenses
- Admin increase driven largely by EBITDA pre adjustments (€21 m) and COVID-19 related cost for additional safety precautions
 - Increased R&D driven by investments in strategic projects
 - EBITDA pre growing faster than sales, reflecting operational leverage from strong top-line growth

Performance Materials: Versum portfolio effect and accelerating Semi growth more than offset declining Display and Surface amid COVID-19

Performance Materials P&L

[€m]	Q2 2019	Q2 2020
Net sales	589	814
Marketing and selling	-66	-134
Administration	-25	-44
Research and development	-74	-68
EBIT	100	-30
EBITDA	161	219
EBITDA pre	190	238
Margin (in % of net sales)	32.3%	29.3%

Net sales bridge €814 m 50.1% €589 m 1.8% -13.7% Q2 2019 Q2 2020 Organic Currency Portfolio EBITDA pre bridge €238 m 51.8% €190 m 3.1% -29.7% 02 2019 02 2020 Organic Currency Portfolio

- Sales growth of 38% reflects portfolio effect from Versum and positive FX, overcompensating organic decline
- Semiconductor Solutions: further accelerating strong organic growth, cyclical recovery and outperformance continuing
- Display Solutions: COVID-19 weighs on LC's negative underlying trajectory against still elevated comps in Q2 2019; OLED also impacted
- Surface Solutions: declining significantly amid a heavy COVID-19 impact on automotive and cosmetic end markets

- M&S reflects consolidation of Versum acquisition and diligent underlying cost management as part of the Bright Future transformation and countermeasures to Covid-19
- R&D declining from an elevated Q2 2019 base including Bright Future provisions (EBITDA pre adjustments); Q2 2020 includes Versum consolidation and shows underlying Bright Future cost management
 - Increase in EBITDA pre largely reflects portfolio effect from Versum



Performance Materials: Versum portfolio effect and accelerating organic Semi growth compensate declining Display and Surface amid COVID-19

Performance Materials P&L

[€m]	H1 2019	H1 2020
Net sales	1,193	1,714
Marketing and selling	-132	-270
Administration	-49	-83
Research and development	-146	-140
EBIT	195	86
EBITDA	318	470
EBITDA pre	383	524
Margin (in % of net sales)	32.1%	30.6%

Net sales bridge €1,714 m 51.1% €1,193 m 2.1% -9.5% H1 2019 Portfolio H1 2020 Organic Currency EBITDA pre bridge €524 m 51.9% €383 m 4.1% -19.2% H1 2019 H1 2020 Organic Currency Portfolio

- Sales growth of 44% reflects portfolio effect from Versum and positive FX, overcompensating organic decline in Display and Surface
- Semiconductor Solutions further accelerating strong organic growth, cyclical recovery started and outperformance continues
- Display Solutions: COVID-19 weighs on LC's negative underlying trajectory against still elevated comps in H1 2019; OLED also impacted
- Surface Solutions declining significantly driven by a heavy COVID-19 impact on automotive and cosmetic end markets

- M&S reflects consolidation of Versum acquisition and diligent underlying cost management as part of the Bright Future transformation
- R&D declining from an elevated H1 2019 base including Bright Future provisions (EBITDA pre adjustments); H1 2020 includes Versum consolidation and shows underlying Bright Future cost management
- Increase in EBITDA pre largely reflects consolidation effect from Versum, while EBIT lower due to sales impact in Display and Surface from COVID-19, higher D&A from Versum PPA and impairments



Reported figures

Reported results

[€m]	Q2 2019	Q2 2020	Δ
EBIT	618	491	-20.6%
Financial result	-61	-102	67.4%
Profit before tax	557	389	-30.2%
Income tax	-136	-100	-26.7%
Effective tax rate	24.4%	25.7%	1.2pp
Net income	471	290	-38.5%
EPS (€)	1.08	0.67	-38.0%

- EBIT decline driven by lower nonrecurring income, higher depreciation & amortization from Versum PPA and impairments in Performance Materials
- Financial result impacted by LTIP and higher interest expenses related to Versum financing
- Effective tax rate within guidance range of ~24-26%
- Lower net income and EPS reflects lower EBIT and higher negative financial result

Cash flow statement

Q2 2020 – cash flow statement

[€m]	Q2 2019	Q2 2020	Δ
Profit after tax	471	289	-182
D&A	453	559	106
Changes in provisions	-47	-54	-7
Changes in other assets/liabilities	-26	-166	-141
Other operating activities	-51	-13	37
Changes in working capital	-58	-112	-54
Operating cash flow	743	502	-240
Investing cash flow	-870	-216	654
thereof Capex on PPE	-162	-194	-33
Financing cash flow	1,244	-302	-1,546

Cash flow drivers

- Profit after tax driven by lower EBIT
- Higher depreciation & amortization from Versum PPA and impairments in Performance Materials
- Provisions reflect reduced litigation provisions and fluctuations in LTIP*
- Changes in other assets and liabilities primarily driven by GSK upfront payment in Q2 2019 that was deferred
- Increased working capital driven by Versum consolidation, higher inventories to secure supply in the face of COVID-19 and growing receivables
- Investing and financing cash flows returning to normal levels

*Long Term Incentive Plan Totals may not add up due to rounding

Cash flow statement

H1 2020 – cash flow statement

[€m]	H1 2019	H1 2020	Δ
Profit after tax	660	747	87
D&A	927	991	64
Changes in provisions	54	-38	-92
Changes in other assets/liabilities	-115	-189	-74
Other operating activities	-55	-24	31
Changes in working capital	-236	-468	-232
Operating cash flow	1,235	1,019	-216
Investing cash flow	-1,199	-504	695
thereof Capex on PPE	-367	-532	-164
Financing cash flow	1,241	239	-1,001

Cash flow drivers

- Profit after tax driven by higher EBIT
- Higher Depreciation & Amortization from Versum PPA and impairments in PM
- Changes in provisions reflect reduced litigation provisions and fluctuations in LTIP*
- Changes in other assets and liabilities primarily driven by a GSK upfront payment in H1 2019 that was deferred
- Increased working capital driven by Versum consolidation, higher inventories to secure supply in the face of COVID-19 and growing receivables
- Investing and Financing cash flows returning to normal levels

*Long Term Incentive Plan Totals may not add up due to rounding

Adjustments in Q2 2020

Adjustments in EBIT

[€m]	Q2 20	019	Q2 20	020
	Adjustments	thereof D&A	Adjustments	thereof D&A
Healthcare	5	0	15	0
Life Science	15	0	-15	0
Performance Materials	29	0	131	112
Corporate & Other	16	0	8	0
Total	65	0	138	112



Adjustments in H1 2020

Adjustments in EBIT

[€m]	H1 20	019	H1 20	020
	Adjustments	thereof D&A	Adjustments	thereof D&A
Healthcare	8	0	-12	2
Life Science	24	0	-4	0
Performance Materials	65	0	165	112
Corporate & Other	44	0	25	0
Total	141	0	174	114



We are working on ambitious goals

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13 climate action

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Climate

We endeavor to reduce direct and indirect emissions to mitigate our impact on the climate.

Waste

We consider it fundamental to both prevent and recycle as much of our waste as possible.

Water

For us, sustainable water management means not negatively impacting the aquatic ecosystems

12 ESPONSIBLE CONSUMPTION AND PRODUCTION	6 GLEAN MEATER AND SAMETIMEN
15 UFE ON LAND	14 LIFE BELIUM WATER



Product safety

Product safety is one of our top priorities: From safe handling of hazardous substances to ensuring patient safety.

Employees

We aim to be an attractive employer, encouraging creativity and development under ideal working conditions.

Access to Medicine

We support a variety of initiatives that improve access to health particularly for people in low- and middle-income countries.



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Governance

Growth & Profit sharing



Our growth results from innovations and acquisitions strengthening our position in important markets, supported by strong cash-flow, long-term margins of >30% and a conservative but reliable dividend.

Risk management



We are focusing on a diversified business model: Our 3 sectors have pioneering knowledge to develop products to improve life for patients, further the success of our customers and meet global challenges.

Steering



Our core values along with the external regulations lead to business-guiding charters and principles for our responsible governance, documented in our Corporate Responsibility strategy and report.



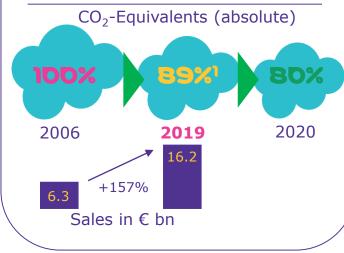
ESG

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Emissions, Water, Waste reduced despite growing business

Emission-Target:

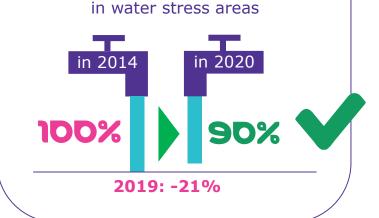
- Growth-independent reduction of Group's greenhouse gas emissions of 20% until 2020 vs. 2006
- Despite sales growth of 137% 2006 vs. 2018 we achieved a 11% reduction of CO₂ equiv.
- We still confirm our goal for 2020 expecting positive impact from latest initiatives, e.g. process optimizations and change to renewable energy



Water-Target:

- At 24 sites with relevant water use in areas of high water stress we aim to cut water consumption by 10% until 2020 vs. 2014
- 2018, we lowered our water consumption by 11% resulting from sustainable water management and re-usage
- All pharmaceutical manufacturing facilities have wastewater treatment plants

Water consumption



Waste-Target:

- We reduce waste and recycle as much as possible - we aim to reduce the environmental impact of our waste by 5% until 2025 compared to 2016
- The Company Waste Score allows us to compare the amount of waste our sites are producing
- We ensure that raw materials are recycled and that unrecyclable waste is discarded

Group Waste Score



Merck KGaA

Darmstadt, Germany

¹The figures exclude Versum Materials since the integration process is still underway. Based on the figures Versum Materials reported for the previous two years (not calculated in accordance with our metrics), we expect this to add roughly 1.3 million metric tons of CO_2eq per year to our carbon footprint.

External stakeholders valuate our engagement





MSCI rated Merck KGaA, Darmstadt, Germany, **AAA (Leader)** according to its exposure to ESG risks and how well they manage those risks relative to peers.





Since 2008, Merck KGaA, Darmstadt, Germany is part of FTSE4Good Index, measuring the performance of companies with strong ESG practices (Top 15).



In 2019, ISS Oekom rated Merck KGaA, Darmstadt, Germany "B-" which means Merck KGaA, Darmstadt, Germany has once more achieved prime status.





In 2019, the Merck KGaA, Merck KGaA, Darmstadt, Darmstadt, Germany share Germany has been was again included in reconfirmed as a STOXX Global ESG Leaders constituent of the Ethibel Sustainability Index (ESI) **Index**, a sustainability index Excellence Europe since based on key environmental, social and governance May 2020, based on VigeoEiris.



Merck KGaA, Darmstadt, Germany received Platinum status in 2020, among the top 1% of companies.

PLATINUM

2020 ecovadis

EcoVadis annually examines ~60,000 suppliers from 155 countries.



Participation in CDP (formerly Carbon **Disclosure Project**) since 2008. **CDP Climate:** In 2019, we scored "C" (2018: C). CDP Water: In 2019 we received a "B" (2018: B-).

access to medicine 💻 INDex 🗖

In the 2018 Access to **Medicine Index** Merck KGaA, Darmstadt, Germany maintained **4th place.** The ranking appreciates Group's initiatives e.g. the commitment to open innovation.

Financial calendar

Date	Event
August 6, 2020	Q2 2020 Earnings release
September 16, 2020	Virtual Capital Markets Day
November 12, 2020	Q3 2020 Earnings release



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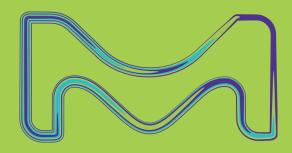


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