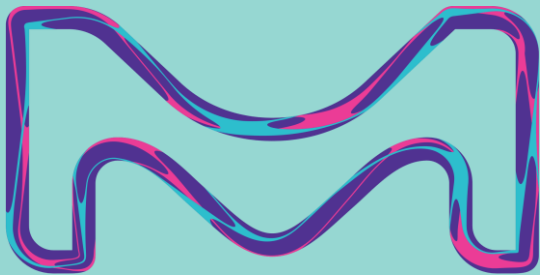


Merck KGaA, Darmstadt, Germany

# **Goldman Sachs forty- fourth Annual Global Healthcare Conference**

June 2023



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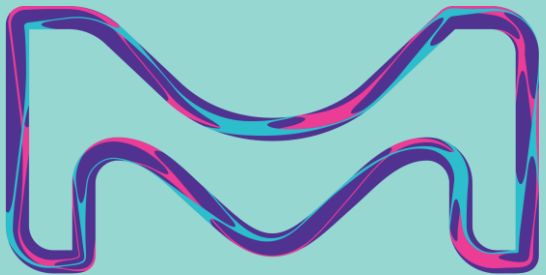


# Agenda

- 01** Business overview
- 02** Transforming the company
- 03** Life Science – Robust growth of the core
- 04** Healthcare – Focused leadership driving long-term growth
- 05** Electronics – Leveraging portfolio shift
- 06** Sustainability
- 07** Guidance & executive summary



# Business Overview



# Group

## Three innovative sectors serving patient and customer needs



**Life Science**  
Diversified industry leader

### Process Solutions

Leading product portfolio for bioprocessing, novel templates, chemicals, and formulation materials serving biopharma customers

### Life Science Services

Leading contract testing organization and emerging CDMO offering focused end-to-end services across multiple modalities

### Science and Lab Solutions

One of the industry's broadest portfolios of consumables for R&D and testing across diverse, attractive customer segments



**Healthcare**  
Global specialty innovator

### Oncology

Focused leadership in SCCHN, mUC and mCRC. R&D focus on xevinapant in Ph3, DNA damage response and ADCs

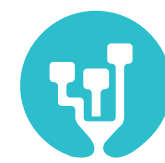
### Neurology & Immunology

High-efficacy and platform therapies in MS, potentially first-in-class BTKi treatment in Ph3. Advancing innovation in SLE, CLE, gMG

### Fertility

Broad portfolio of treatment options, devices and advanced fertility technologies

**CM&E** *Cardiovascular, Metabolism & Endocrinology*  
>90m patients using our medicines for diabetes, thyroid, cardiovascular diseases



**Electronics**  
Leading player

### Semiconductor Solutions

Integrated innovation leader with one of the strongest portfolios of materials and related equipment and services.

Supplying every player in the semi industry. Helping customers create NextGen, faster, smaller and more energy-efficient devices.

### Display Solutions

Innovative materials for light switching and modulation as well as for new technologies such as augmented & virtual reality

### Surface Solutions

Pigments and active ingredients for automotive, cosmetic & industrial markets

Share of net sales <sup>1</sup>	46%	36%	18%
Share EBITDA pre <sup>1</sup>	50%	33%	17%

<sup>1</sup>Based on FY22 Group EBITDA pre excluding Corporate&Others

5 Acronyms: SCCHN=Squamous Cell Carcinoma of Head and Neck; mUC=metastatic Urothelial Carcinoma; mCRC=metastatic Colorectal Cancer; ADC=Antibody-Drug Conjugates; Ph3=Phase 3; MS=Multiple Sclerosis; BTKi=Bruton Tyrosine Kinase inhibitors; SLE=Systemic Lupus Erythematosus; CLE=Cutaneous Lupus Erythematosus; gMG=generalized Myasthenia Gravis



Group

# What sets Merck KGaA, Darmstadt, Germany apart - insights into the Strategic Framework

## I. Foundation

Strongly resilient and diversified business model. The foundation is key for our strategy with strong cash generation



*New Strategic Framework introduced at CMD'21*

## II. Direction

Efficient growth of BIG3, further leveraged by M&A

## III. Our DNA

Long-term focus driving innovation power. Reinforced by significant sustainability effort

# Group

## Holistic approach to resilience - backbone for sustainable growth



In-depth analysis across all Enterprise Units revealed Group as **strongly resilient**, building on a solid foundation

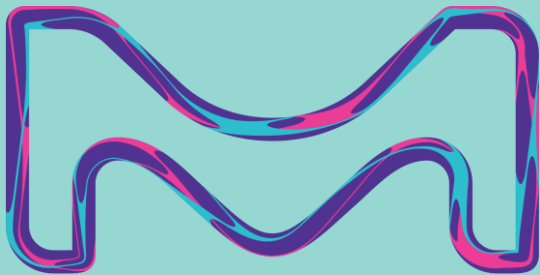
	Leading <sup>1</sup>	Strong <sup>2</sup>	Foundational <sup>3</sup>	Lagging behind <sup>4</sup>
Peer group specific	Strong balance sheet and sufficient cash reserves	✓		
	Low business cyclicalities		✓	
	Lower fixed cost exposure		✓	
	Diversified customer allocation	✓		
	Supply chain operations		✓	
	Diversified manufacturing		✓	
Holistic	Demand robustness in economic downturn scenario	✓		
	Inflation adaptability		✓	
	High entry barriers	✓		

<sup>1</sup>Leading= Areas where industry-leading capabilities and practices are demonstrated; <sup>2</sup>Strong = Advanced institutional capabilities and quality assured by effective practices consistently displayed; <sup>3</sup>Foundational = Fundamental capabilities and practices in place with repeatable processes and outcomes;

<sup>4</sup>Lagging behind = Significant gaps in capabilities and/or systematic and effective practices, high dependency on individuals



# transforming the company

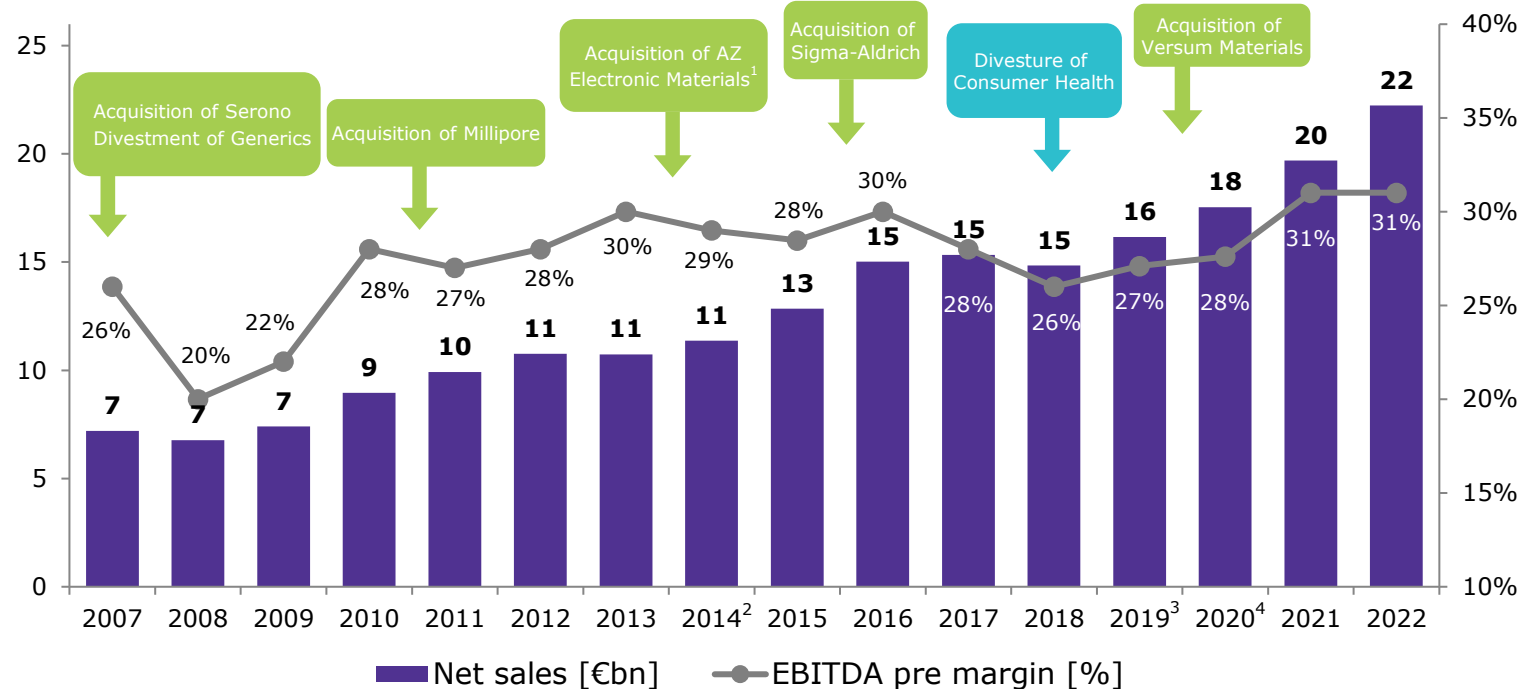




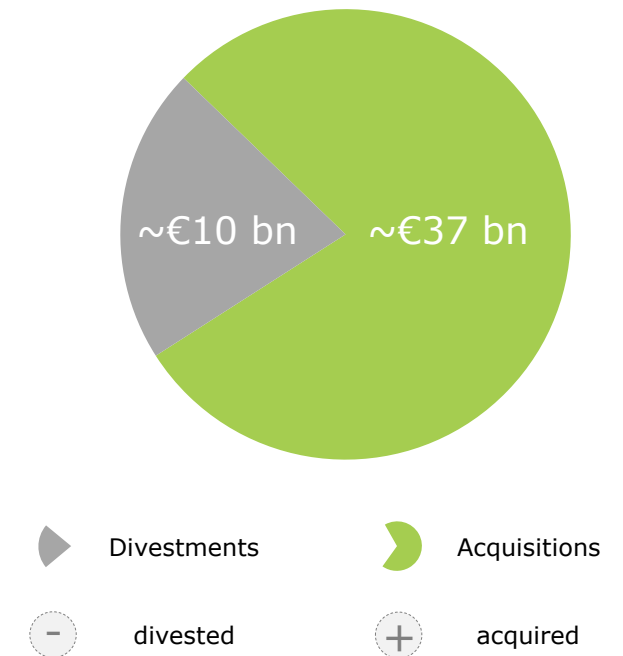
# Group

## Added scale and strengthened attractiveness of portfolio

### Growth trajectory



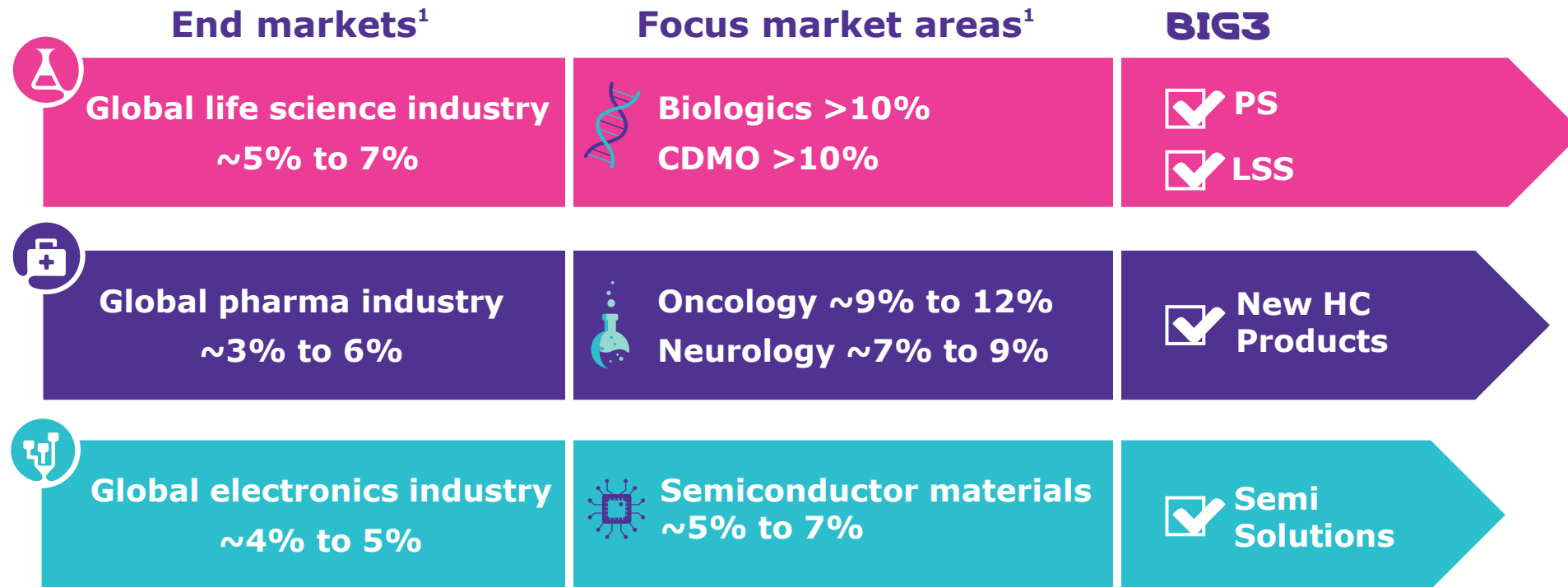
### Transformation volume<sup>5</sup>



<sup>1</sup>Included since 2 May 2014; <sup>2</sup>2007 and 2014 EBITDA pre margin adjusted for comparability; <sup>3</sup>2018 net sales reflect Consumer Health divestiture (reduction of ~€1 bn net sales p.a.)  
<sup>4</sup>2020 margin restated for €365 m patent litigation provision release; <sup>5</sup> 2007 - 2022

Group

## Uniquely positioned portfolio in fast-growing markets



Mid-term growth rates



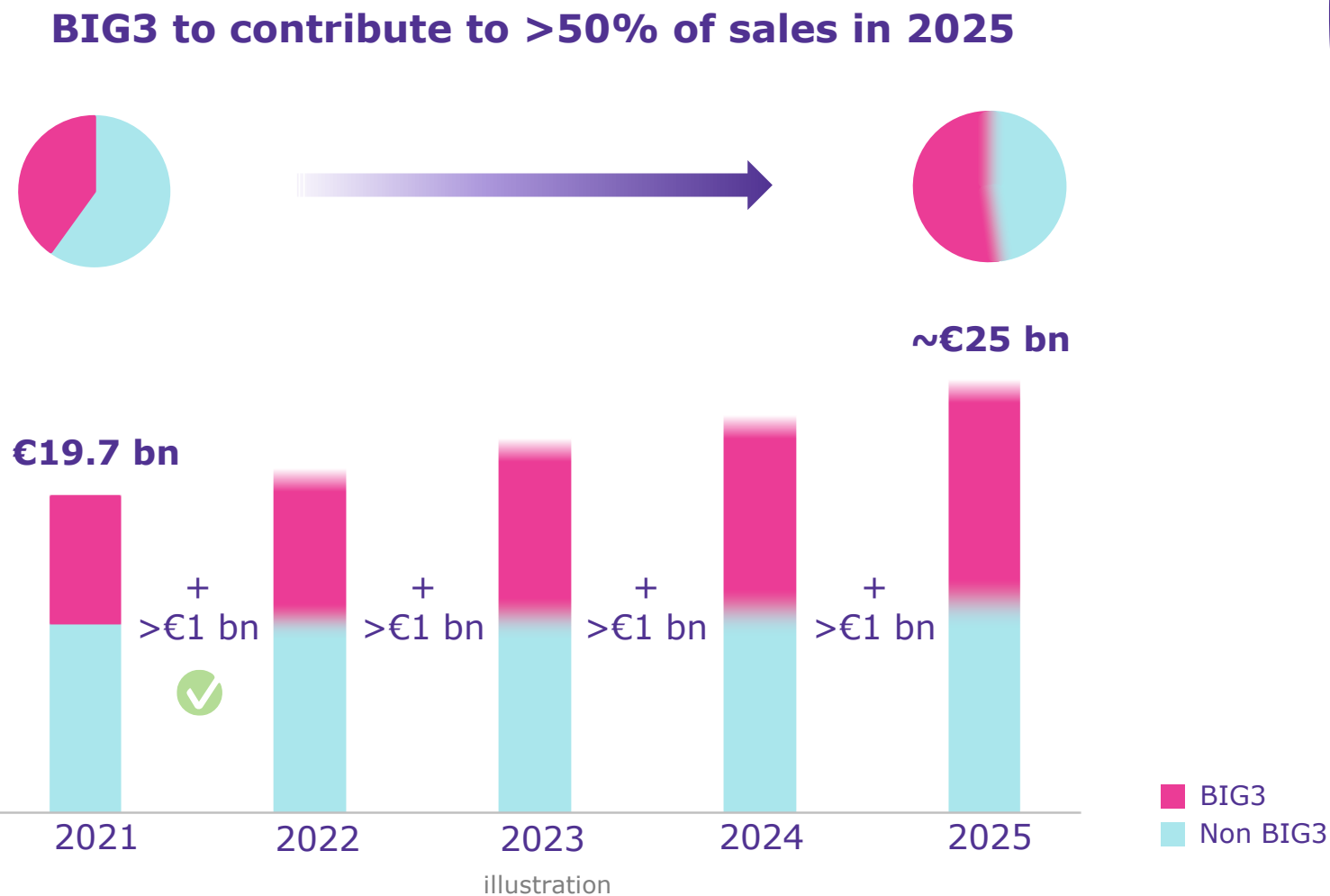
**Sustainable growth:** building on distinct megatrends, diversification and low volatility

10 <sup>1</sup>Company estimates of mid-term growth outlook based on industry forecasts and reports from public research institutes (e.g. IMF, IQVIA, Evaluate Pharma/EphMRA, Prismark, etc.)



# Group

## BIG3 represent the growth engines of the Group



- ✓ ~€25 bn sales by 2025
- ✓ M&A excluded
- ✓ Sales growth organic >€1 bn per annum
- ✓ BIG3 ~80% of growth
- ✓ CAGR organic >6% mid term

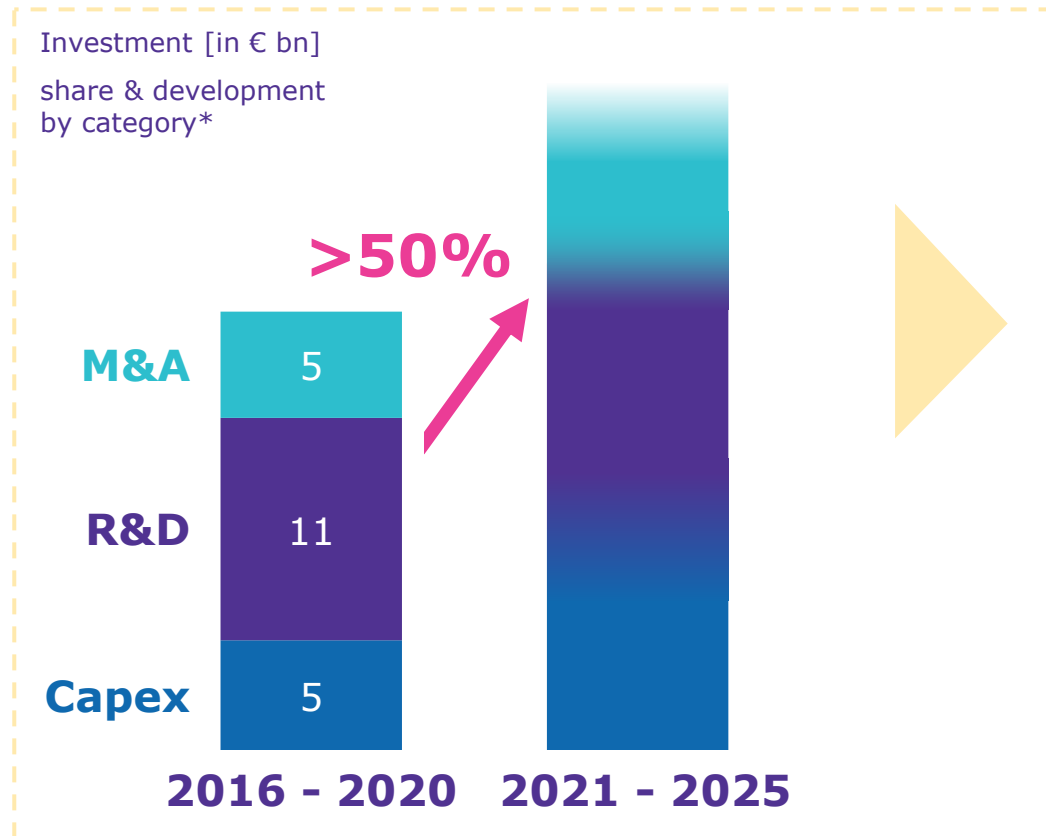


# Group

## Committing to record investments - targeted @BIG3 growth engines

Leading positions in **growth markets** fuel significant **boost in investment capacity**

**Targeted, disciplined & focused** capital allocation across **>20 enterprise planning units**



\* future M&A purely illustrative as it is deal-dependent

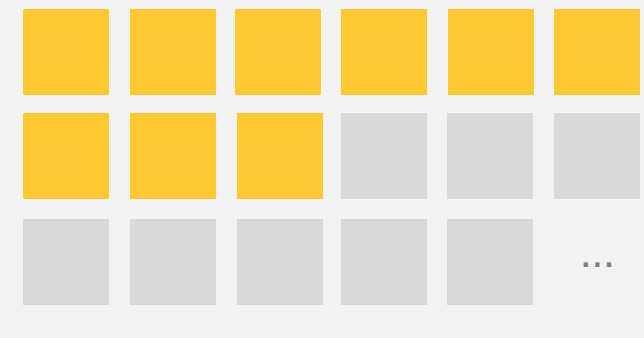
### Sectors

Life Science

Healthcare

Electronics

### Group Enterprise Planning Units (EPUs)



Illustration

Yellow BIG3

Grey Non-BIG3

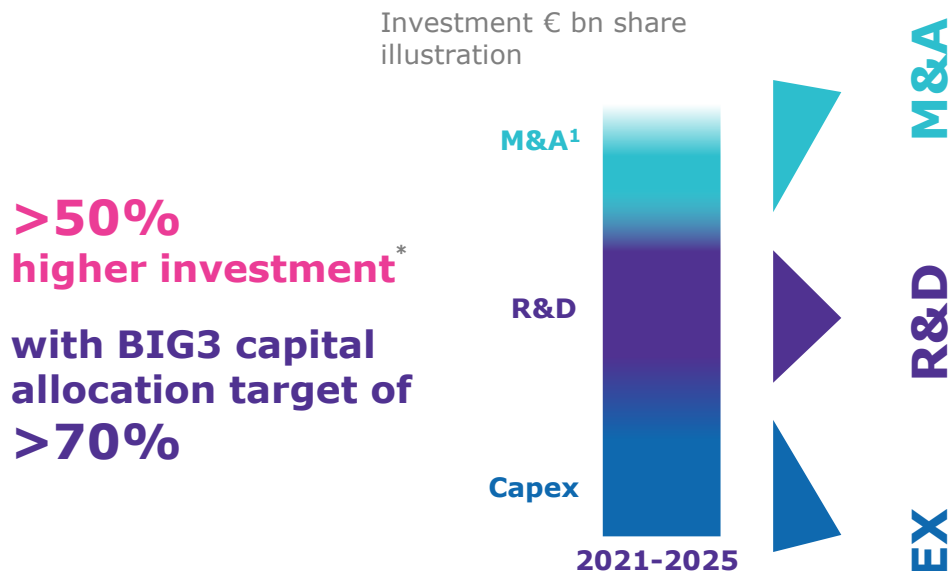
**BIG3** consist of **~10 planning units**  
with a **capital allocation target of >70%**  
between 2021 and 2025

# Group

## Financial flexibility fueling investment capacity

**Accelerated deleveraging** to <2x net debt to EBITDA pre ratio enables **unprecedented financial flexibility**

Abundant growth opportunities make **strategic capital allocation** more important than ever



- **Strong operating cash flow & increased debt capacity**

- **Financial capacity of around €15 to 20 bn**

- Continued higher likelihood of **bolt-on** vs. large transformational deals

Clear focus on **innovation** & further development of **pipeline productivity**

- **Life Science:** accelerating targeted R&D scale-up to capture trends & strengthen portfolio
- **Electronics:** continuous alignment with customer technology roadmaps incl. new R&D labs
- **Healthcare:** driving "R&D productivity" to benchmark levels with focused leadership

More **complex & multifaceted** CAPEX decisions requiring **discipline**

**Rich growth opportunities** driven by demand step changes, e.g.

- Process Solutions **capacity & network expansion**, targeted scaling of **high value CDMO/CTO services** across traditional & novel modalities
- Semi capacity expansion in line with customer demand & smart localization

► **Annual capex guidance: from ~€1.6 bn in 2022 to ~€1.8-2.0 bn by 2023**

\* future M&A purely illustrative as it is deal-dependent

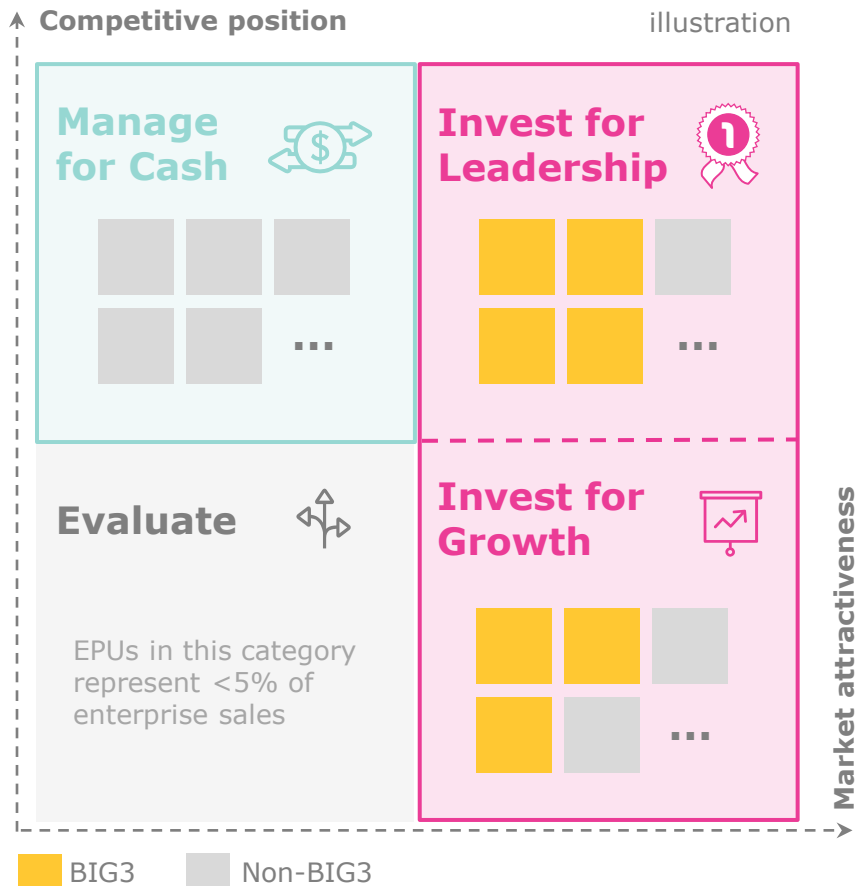
<sup>1</sup> M&A: Mergers and Acquisitions

# Group

## Optimized capital allocation through distinct portfolio roles

Roles determined by **thorough analysis** of **markets** and **competitive positions**

**Investment focus** on businesses with **greatest strengths** and **attractive opportunities**



- Segmentation in planning units allows **right level of granularity** in market & competitive analysis (vs. sector level or product level)
- Enterprise Portfolio Units (EPUs) with different roles** drive balance between **strong cash generation** & **targeted capital allocation**

- ✓ **Strong, well-positioned portfolio**
- ✓ Enterprise setup allows **boosted investment capacity and optionality** that would be unattainable to 3 standalone businesses
- ✓ **No need for further diversification** (within or across sectors) or target sector ratios

# Group

## Diversification of manufacturing footprint strengthened further



# Group

## Doubling down on M&A to accelerate growth



### M&A guardrails

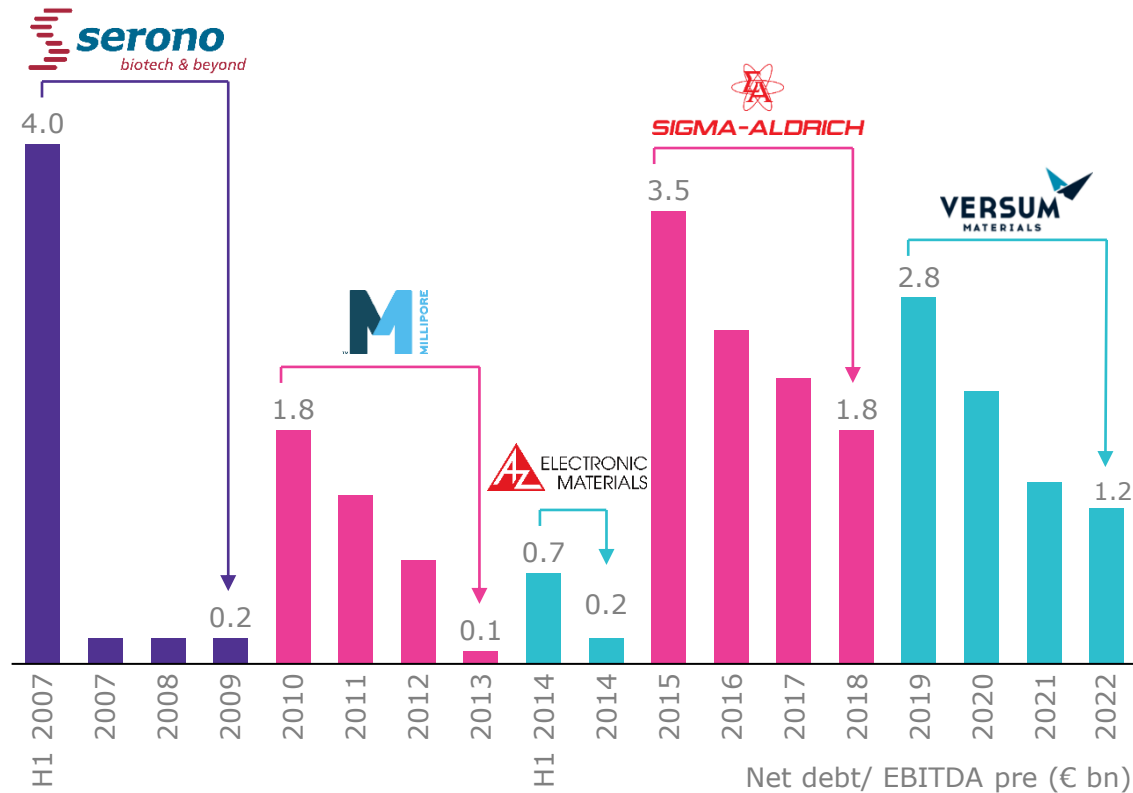
- 1 M&A will fit strategic direction of the Group, with BIG3 as high priority
- 2 Approaching financial capacity of around €15 to 20 bn, acknowledging evolving interest rate and macro environment
- 3 Larger scale M&A an option from 2023 onward
- 4 Further bolt-on acquisitions/ in-licensing to continue
- 5 Any acquisition will sync with Group sustainability targets





## Group

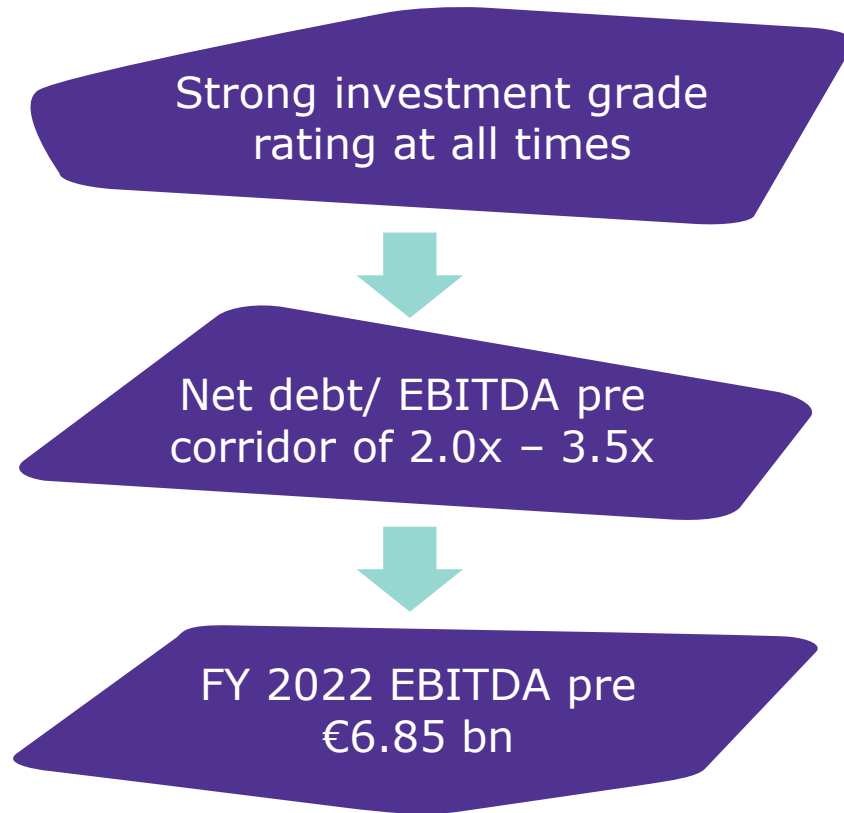
# Track record in fast deleveraging enabled by high-quality cash flow



- Resilient sources of cash, especially PS, SLS and Established Portfolio (HC)
- Solid investment grade ratings: Moody's (A3) since 2021, S&P (A) since 2013, Scope Ratings (A) since 2022
- BIG3 to be further strengthened with CAPEX, R&D and OPEX; financial flexibility is key

Group

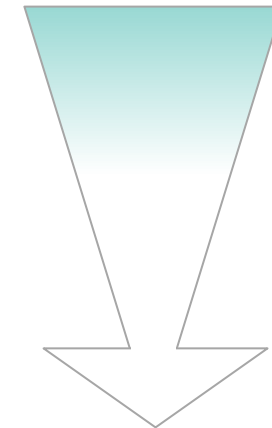
## Financial M&A framework: Group has sufficient headroom



Confirming dividend payout ratio of 20% to 25% of EPS pre

Financing options by priority

- 1 Cash
- 2 Debt
- 3 Hybrid
- 4 Divestments



Group

## Regular portfolio review remains key to success

### strong track record

- Acquisitions and divestments are part of Group's history
- Licensing and partnerships remain on our agenda
- All prior transactions earned their cost of capital



### defining portfolio guard rails

- Three strong pillars with no business marginalized
- Leading market position in attractive markets
- Focus on innovation and sustainability through science and technology



### clear financial M&A criteria

- Supporting profitable growth strategy
- $IRR > WACC$
- EPS pre accretive
- Maintain investment grade rating

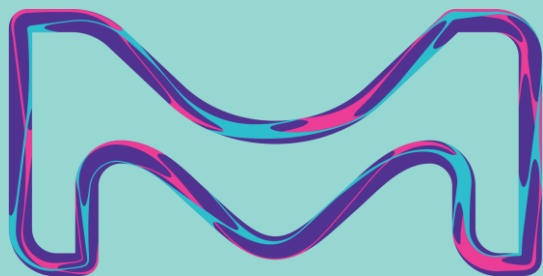


 **Current set-up is strong and organic investment opportunities are attractive**

 **Ready to pursue external growth opportunities following swift deleveraging post Versum**

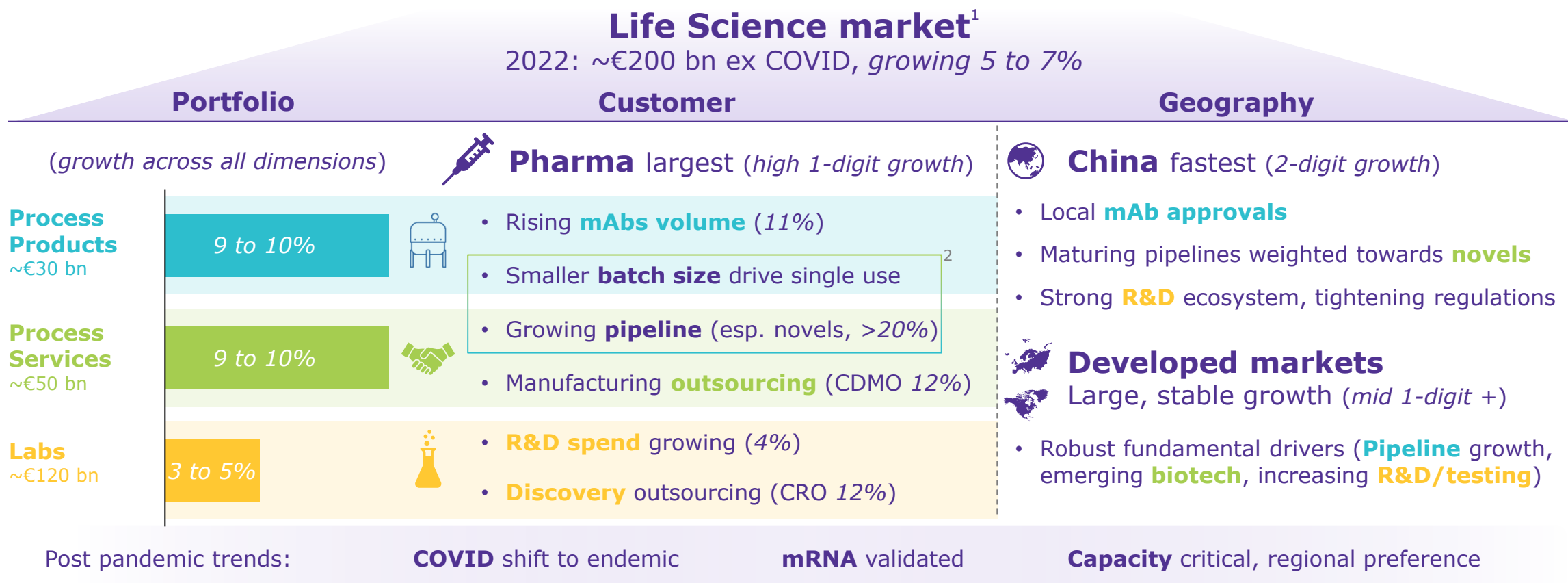
# Life science

Continuous strong growth of the core



# Life Science - Market

## Attractive secular drivers across segments create opportunities



 **We continuously pursue key growth trends as a leading diversified life science player**

<sup>1</sup> Company estimate based on industry forecast over 5-year horizon for the markets we operate in with *all growth rates marked in italic*; <sup>2</sup> Common product and service drivers; Acronyms: mAbs = monoclonal Antibodies, mRNA = messenger Ribonucleic Acid, CDMO = Contract Development Manufacturing Organization, CRO = Contract Research Organization

# Life Science – Business Sector Overview

## New organizational structure provides customer and portfolio focus

### Process Solutions (PS)

*Best in class technologies for pharmaceutical manufacturing*



**Upstream & Downstream**  
cell culture media, Durapore® filters, etc.



**Mobius® single-use**  
bioreactors, prep systems, etc.



**Biopharma materials**  
growth factors, fine chemicals



**Formulation**  
GMP buffers, salts, stabilizers

### Life Science Services (LSS)

*Focused multimodality contract testing, development, manufacturing (CTDMO)*



**BioReliance® CTO**  
biosafety, characterization, release for mAbs and novels



**Traditional modalities CDMO**  
HPAPIs, mAbs



**Novel modalities CDMO**  
viral vectors, mRNA, antibody drug conjugates

### Science & Lab Solutions (SLS)

*Broad portfolio of fit for purpose consumables for R&D and testing*



**Chemistry** for lab (Sigma-Aldrich®) and testing (Supelco®)



**Biology reagents**  
media, antibodies, filters, etc.



**Milli-Q®** ultrapure water systems

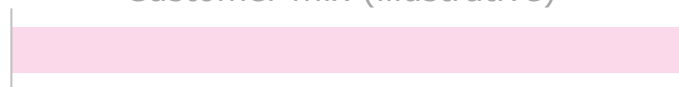


**Microbiology QA/QC**  
growth media, automated systems, etc.



**Production & regulated materials**  
high purity chemicals, membrane, antibodies

Customer mix (illustrative)



Pharma & Biotech Academia<sup>1</sup> Industrial & Testing Diagnostics

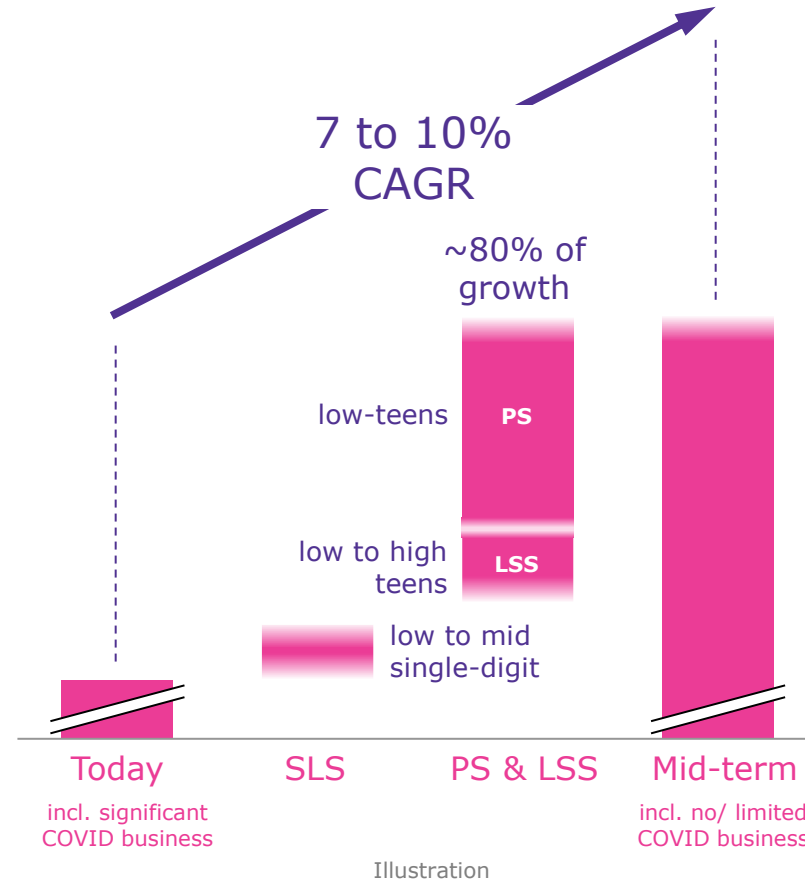
<sup>1</sup> Includes academia, government, hospitals, physicians; Acronyms: GMP = Good Manufacturing Practice, CTDMO = Contract Testing Development Manufacturing Organization, CTO = Contract Testing Organization, CDMO = Contract Development Manufacturing Organization, HPAPIs = High Potency Active Pharmaceutical Ingredients, mAbs = monoclonal Antibodies, mRNA = messenger Ribonucleic Acid



## Core business strength driving increased confidence in mid-term outlook



## Confident to deliver mid-term target corridor even if pandemic-related sales fall to zero over time



## Process Solutions

Executing network expansion & regionalization (esp. single use, filtration) and enabling customer transformation towards the factory of the future

## Life Science Services

Leveraging leading contract testing organization and scaling focused CDMO with an integrated, full-service offering across multiple modalities

## Science & Lab Solutions

## Capturing durable growth across diverse, attractive customer segments

<sup>1</sup>Acronyms: CDMO = Contract Development Manufacturing Organization



# Life Science - Outlook

## All business units contributing to attractive mid-term outlook

### Sales split<sup>1</sup>

### Mid-term outlook<sup>2</sup>

### Key differentiators



<sup>1</sup>Based on FY 2022, CAGR is organic mid-term ambition including anticipated fading of COVID contribution; <sup>2</sup>market growth rates are excluding COVID effects; <sup>3</sup>Acronyms: CTDMO = Contract Testing Development Manufacturing Organization

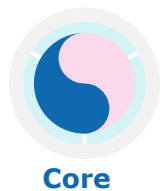




# Process Solutions – Strategic Priorities

## Strengthening local infrastructure and innovating to sustain leadership

### Strategic focus

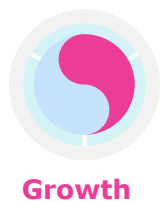


### Highlights

## Capacity Expansion & Regionalization

Key Portfolios	NA	EU	APAC
Single Use	✓	✓	✓
Filtration	✓	✓	
Cell Culture Media	✓	✓	

- Serve **regional demand**
- Improve **customer proximity**
- Reduce **network risk**



## APAC

WuXi, CN – Single use



(€100 m investment)  
Assemblies,  
custom design

Shanghai, CN – M Lab™



Train,  
Troubleshoot,  
Collaborate

- Address **unique needs & provide solutions** for local customers
- Increase **regional autonomy**
- Shorten **lead times**



## Digitalization, productivity, robustness

BioContinuum™



e.g., launch of Bio4CTM Software for process control, optimization

Products for novels



e.g., launch of VirusExpress® (suspension cell lines, media)

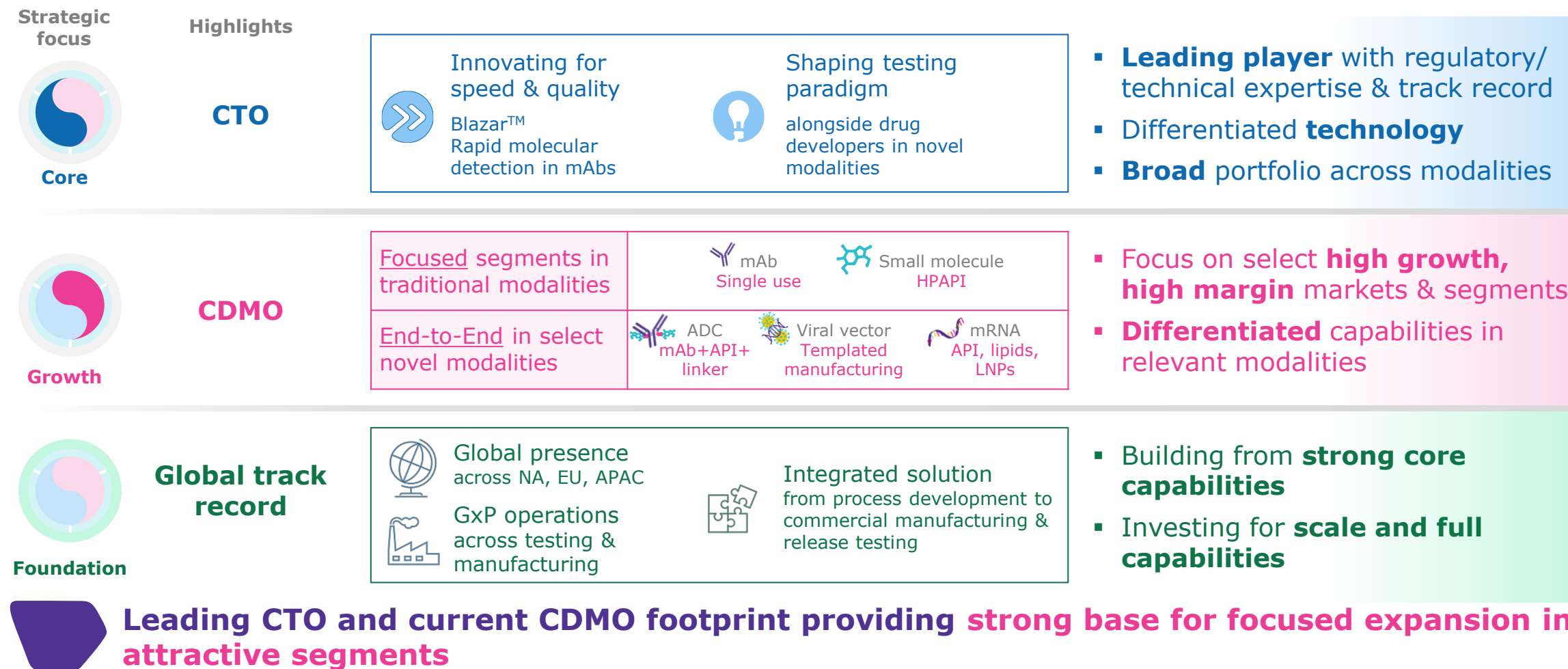
- Secure **future leadership**
- Enable **factory of the future**
- **Set the standard** in novels



**Robust supply enabling attractive core growth, APAC and innovation as accelerators**

# Life Science Services – Strategic Priorities

## Building focused end to end multimodality CTDMO



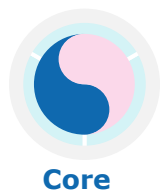
Acronyms: mAbs = monoclonal Antibodies, HPAPI = High Potency Active Pharmaceutical Ingredient, API = Active Pharmaceutical Ingredient, LNPs = Liquid Nanoparticles, GxP = "good quality" guidelines and regulations

# Science & Lab Solutions – Strategic Priorities

## Capturing durable growth across diverse market segments

### Strategic focus

### Highlights



### Portfolio enhancements

#### Chemistry



- Green chemistry
- Photo-catalysis
- Drug delivery
- Lab separation

#### Lab Water



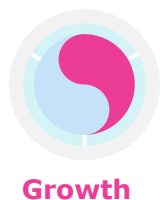
- Remote access & management
- Mercury-free, less plastic & electricity

#### Biology & BioM



- Next-generation recombinant mAbs
- Novel flow reagents
- Sustainable sterile filtration

- **Future-proofing** established podium positions
- **Enabling customers** to achieve productivity & sustainability goals



### Customers, regions, channels

#### Diagnostics



- Quality materials and services
- Custom test kits

#### APAC



- Expanding in-region portfolio access
- Tailoring go-to-market

#### Seamless buying



- Personalized cross-channel shopping experience
- Expanded self-service tools and procurement solutions

- **Expanding** portfolio in high growth segments
- **Reaching and engaging** diverse customer base



### Digital, robotics, automation

#### Automated workflows



- Technology bricks for pharma QC
- Automated environmental and sterility testing

#### Digital tools & services



- Lab informatics
- Smart consumables
- Retrosynthesis software

- **Automating** pharma QC
- **Improving connectivity** and lab efficiency for customers



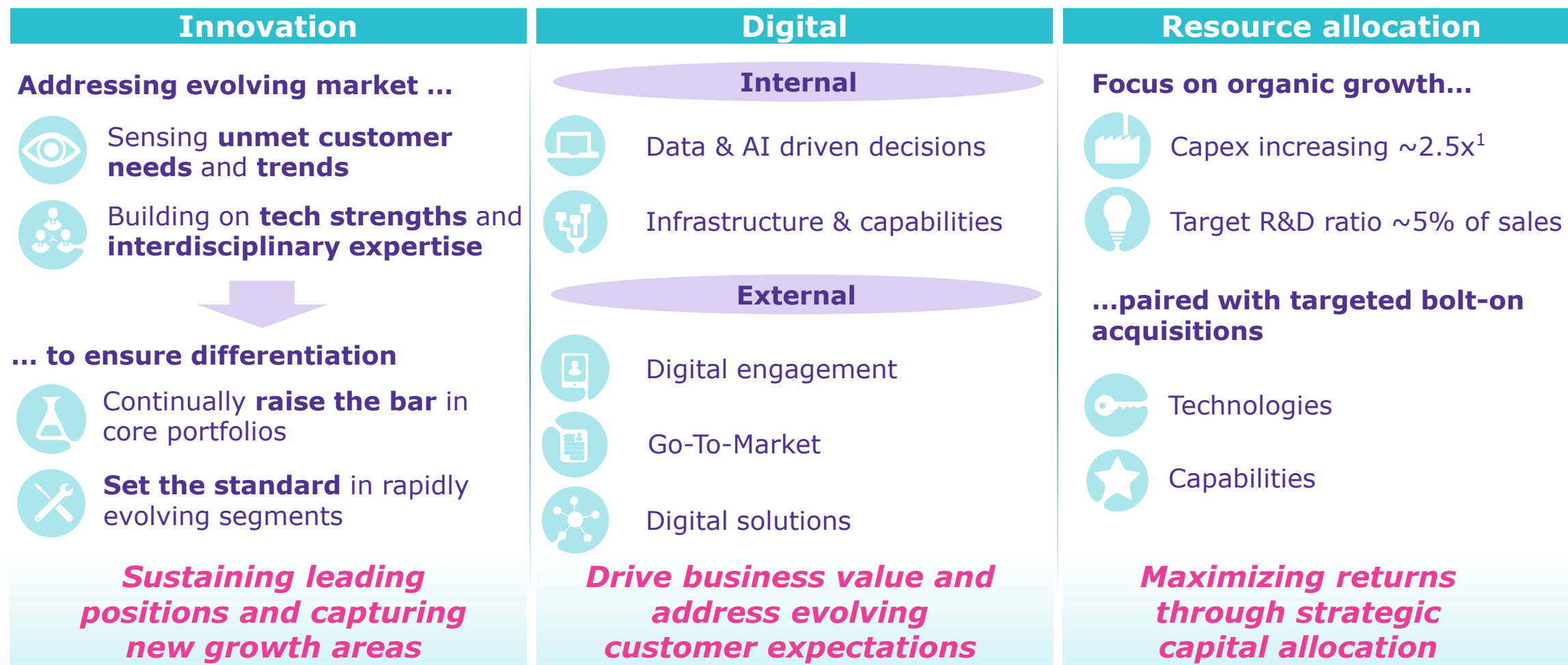
**Targeted investments to address unique customer needs and leverage podium positions**

Acronyms: BioM = Biomonitoring, mAbs = monoclonal Antibodies, QC = Quality Control



# Innovation, Digital and Portfolio

## Key supporting pillars of strategy for value creation



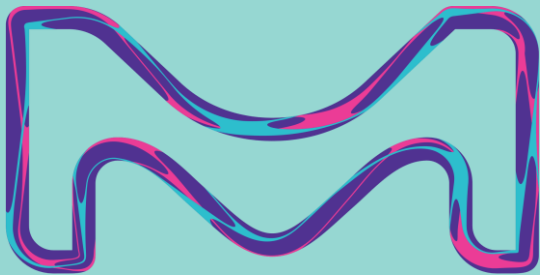
<sup>1</sup> Comparing average capex spend p.a. over the period 2016-20 with the period 2021-25; Examples: (1) Innovation: we use deep customer intimacy ( $\sim 1.6m$  customers) to target R&D and are uniquely positioned at the intersection of disciplines with  $>1,200$  colleagues in product/service development (incl.  $\sim 250$  engineers,  $\sim 400$  chemists,  $\sim 500$  biologists) at over a dozen sites;

28 (2) Digital: a) internal: supply replenishment; b) external: chat with a scientist, upgraded e-commerce platform, Bio4C™



# Healthcare

Focused leadership driving long-term growth



# Healthcare

## Well positioned to deliver significant long-term growth

### Healthy risk profile



Resilience of our commercialized products<sup>1</sup> across all TAs



Evobrutinib BTKi and Xevinapant as late-stage opportunities with strong proof of concept



Early- to mid-stage pipeline with substantial growth drivers for the Oncology and Immunology portfolio

- Early- to mid-stage pipeline NRA
  - Xevinapant Cis-ineligible NRA
  - Xevinapant Cis-eligible NRA
  - Evobrutinib BTKi NRA
  - Recent Launches
  - Established Portfolio
- NRA = non risk adjusted

illustration

2025 >>>

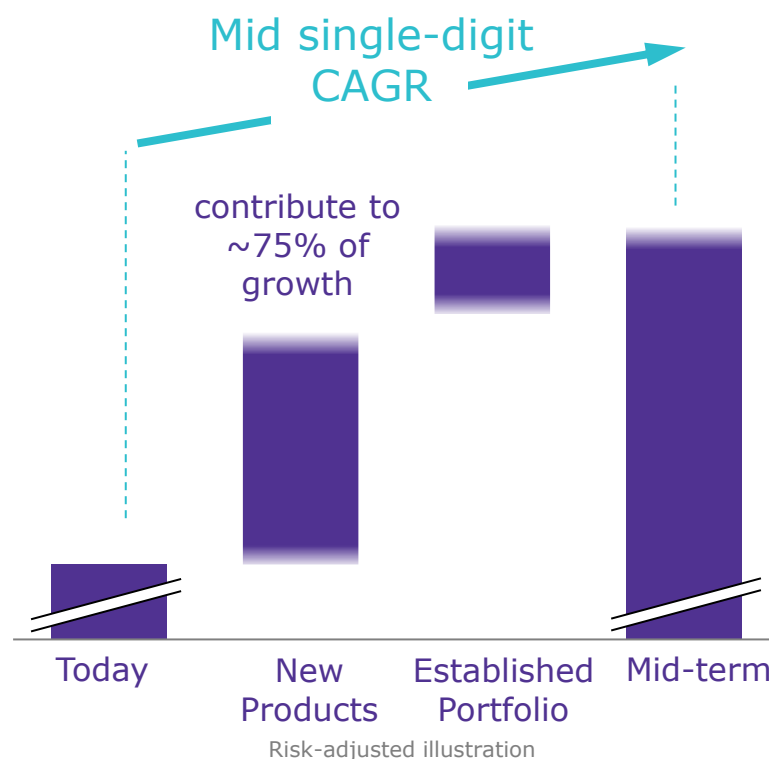
# Healthcare

## Growth driven by innovation, building on a solid established portfolio



Global specialty innovator

Profitable sales growth above global pharmaceutical market<sup>1</sup>



### New products

- Committed to drive **Wave 1** launches Bavencio<sup>®</sup>, Mavenclad<sup>®</sup> and Tepmetko<sup>®</sup>
- Wave 2** expands with evobrutinib (BTKi) with BiC potential in RMS and xevinapant (IAPi) aiming at setting up a new SoC in LA SCCHN

### Sustainable long-term growth

- New pipeline entrants in DNA damage biology, novel ADCs, TLR 7/8 underline an exciting and less risk-correlated approach in oncology and neuroinflammation

<sup>1</sup>Company estimates on pharmaceutical market growth outlook based on industry forecasts and reports from public research institutes (e.g. 3 to 6% in IQVIA Global Use of Medicines Report from January 2022).

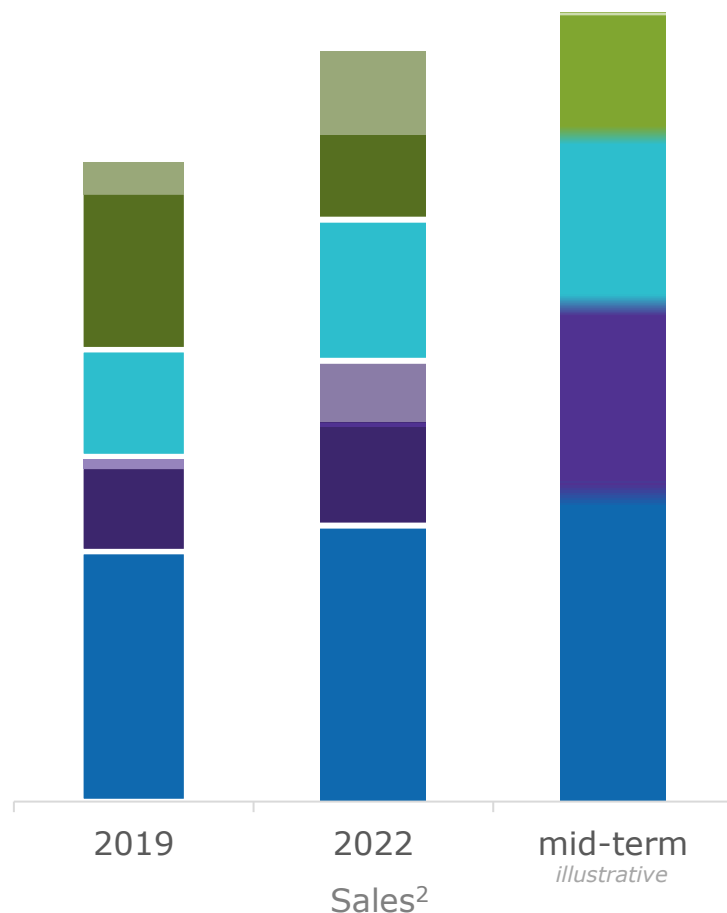
**Acronyms:** TA=Therapeutic Area; BiC=Best in Class; RMS=Relapsing multiple sclerosis; IAPi=inhibitor of apoptosis protein; LA SCCHN=locally advanced squamous cell carcinoma of head and neck; TLR=Toll-like receptors; SoC=Standard of Care



# Healthcare

## Today's commercialized products foundation for growth mid-term, fueled by recent launches; not yet reflecting further pipeline potential

Commercialized products<sup>1</sup>



### N&I

**Mavenclad®**  
MS



- On its way to become a blockbuster product. Some headwinds from IRA mid-term

**Rebif®**  
MS



- Decline in line with interferon market

### fertility



- Mid single-digit growth, capitalizing on increasing awareness and access to treatment

### oncology

**Bavencio®**  
UC, RCC, MCC



- High single-digit growth driven by mUC 1L

**Tepmetko®**  
METex14 NSCLC



- Targeted launch in niche indication

**Erbitux®**  
mCRC, SCCHN



- Stable outlook, leading in mCRC continuum of care

### CM&E



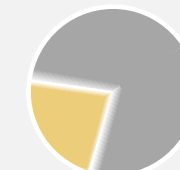
- Mid single-digit growth
- Maximizing growth in Emerging Markets
- Further expansion by increased diagnosis and access to treatment



2017



2022



mid-term

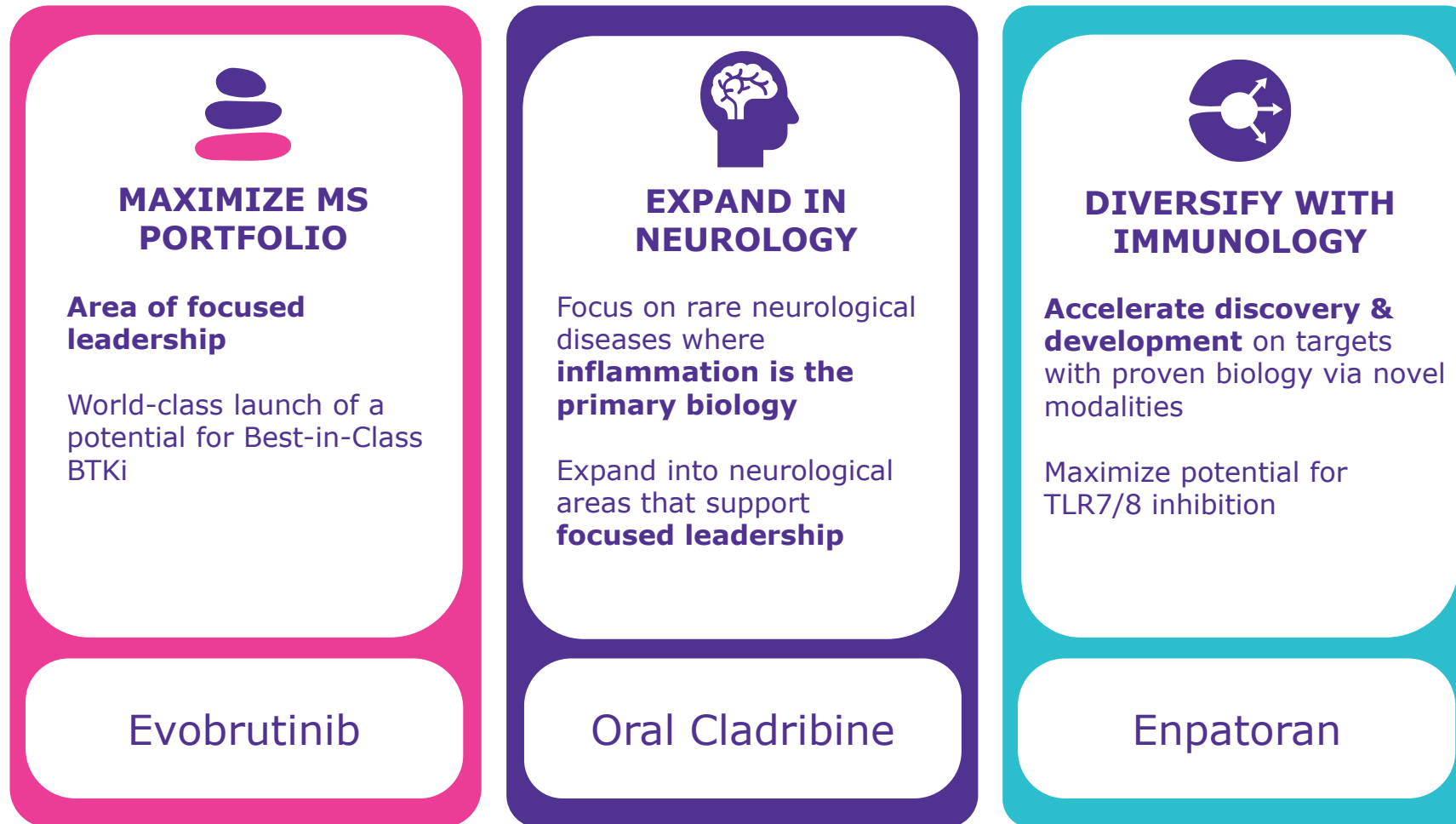
■ Established Portfolio  
■ Recent Launches<sup>3</sup>

<sup>1</sup> Commercialized products = Established Portfolio + Recent Launches, excludes future launches/indications until 2025; <sup>2</sup> Graph excludes Consumer Health Business, Biosimilars Business and others; <sup>3</sup> Includes Bavencio® (UC, RCC, MCC), Mavenclad®, and Tepmetko® METex14



# N&I - Strategy

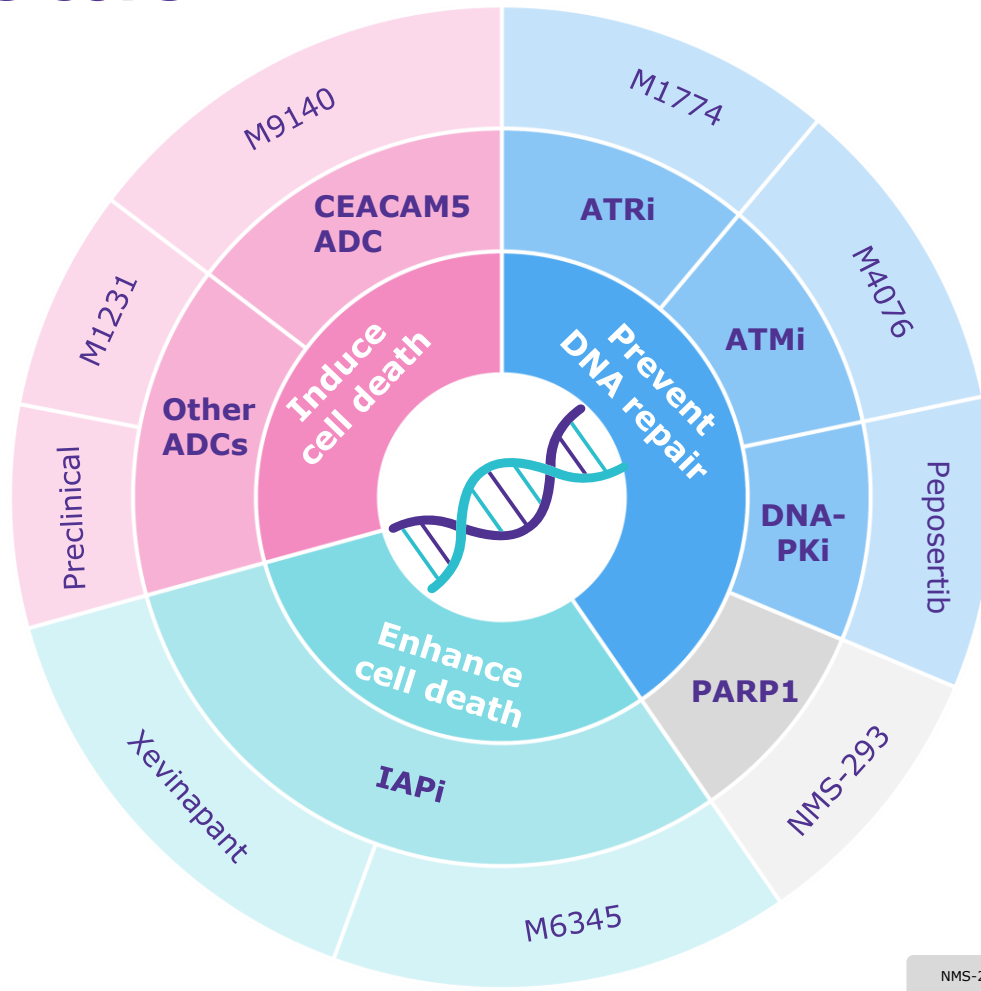
## Gradual expansion on a solid foundation



Acronyms: **BTKi**=Bruton's tyrosine kinase inhibitor; **MS**=Multiple Sclerosis

# Oncology - Cancer DNA

## Exploiting major vulnerability of tumor cells and striking them right at the core



**Validated therapeutic approaches, with strong innovation potential:**

ADC

DDRi

Chemo/radio sensitizers

**Ability to drive new standard of care:**

- In all-comer indications  
e.g. Xevinapant
- In biomarker-defined populations  
e.g. CEACAM-expressors, BRCA1 mut, ATMloss

**Combination potential:**

- With current standard of care  
e.g. IAPi+chemo, ATRi+IO
- Utilize synergy within Company's pipeline  
e.g. ATRi+ATMi, ATRi+ADC

**Guiding inorganic opportunities**

NMS-293

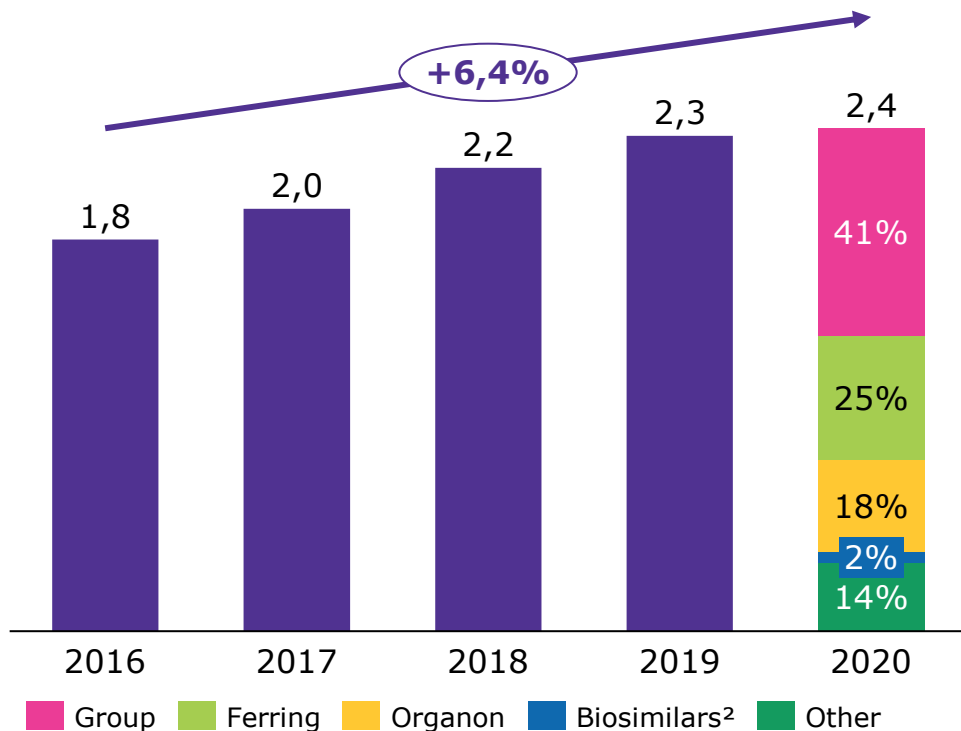
Collaboration agreement with licensing option with Nerviano Medical Sciences S.r.l.

**Acronyms:** ATRi=ataxia telangiectasia and Rad3-related protein, inhibitor; ATMi=ataxia-telangiectasia-mutated protein, inhibitor; DNA-PKi=DNA-dependent protein kinase inhibitor; PARP1=Poly [ADP-ribose] polymerase 1; IAPi=Inhibitor of apoptosis inhibitor; CEACAM5=Carcinoembryonic antigen-related cell adhesion molecule 5; IO=Immunooncology; BRCA1=Breast cancer type 1 sus

# Fertility

## Strengthening our leadership in Fertility

### Global Gonadotropin market in € bn<sup>1</sup>



### Strategies to expand our leadership position

**GONAL-f** The world's most prescribed r-hFSH treatment<sup>3</sup>

- Growing prevalence of infertility driven by delayed parenthood and lifestyle habits
- Increasing awareness and access to treatment

**Pergoveris:** Only recombinant FSH + LH product in the market

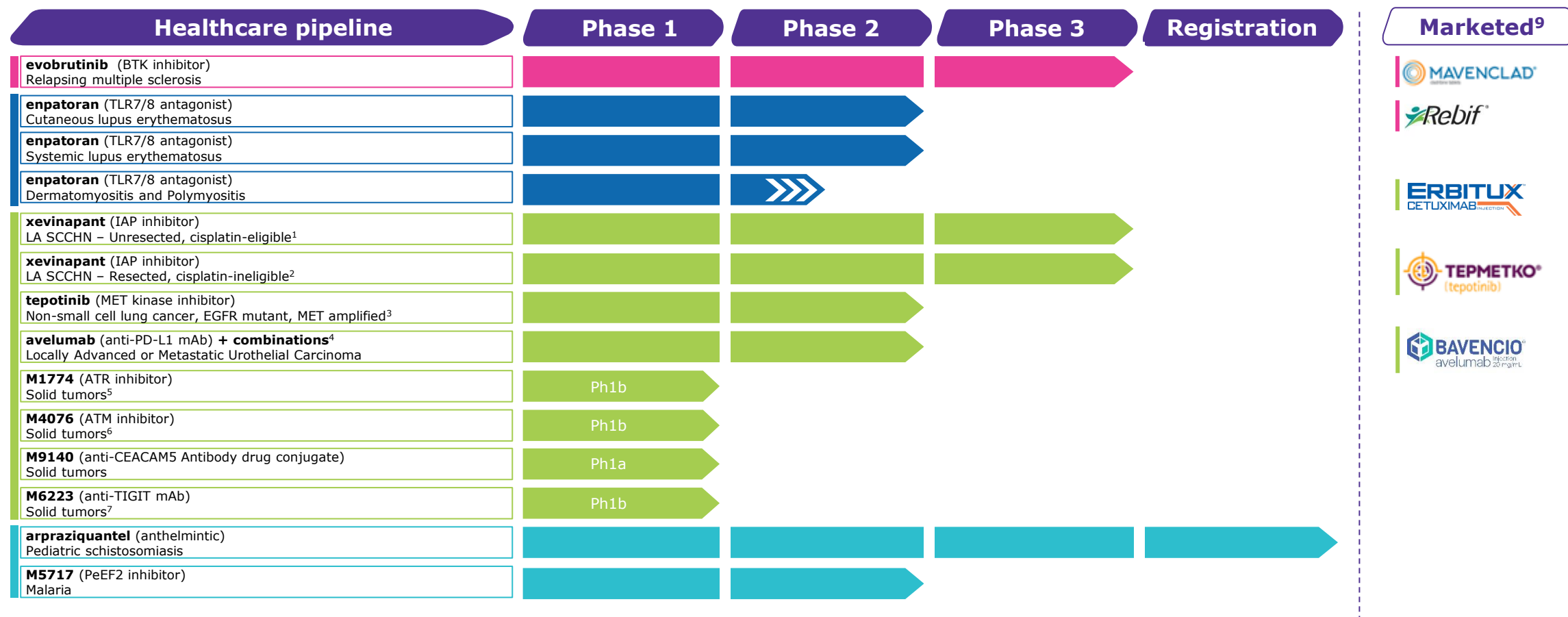
- Doubling sales and market share since 2017
- Strong growth potential by geographical expansion

**Innovations & digital solutions** (e.g. Philips partnership)

- Better treatment insights & improved convenience
- Contributing to higher live birth rates

# Group pipeline

May 11, 2023



■ Neurology ■ Immunology ■ Oncology ■ Global Health ■>>> Asset entering new phase<sup>8</sup> ■> Current phase ■ Previous phase(s)

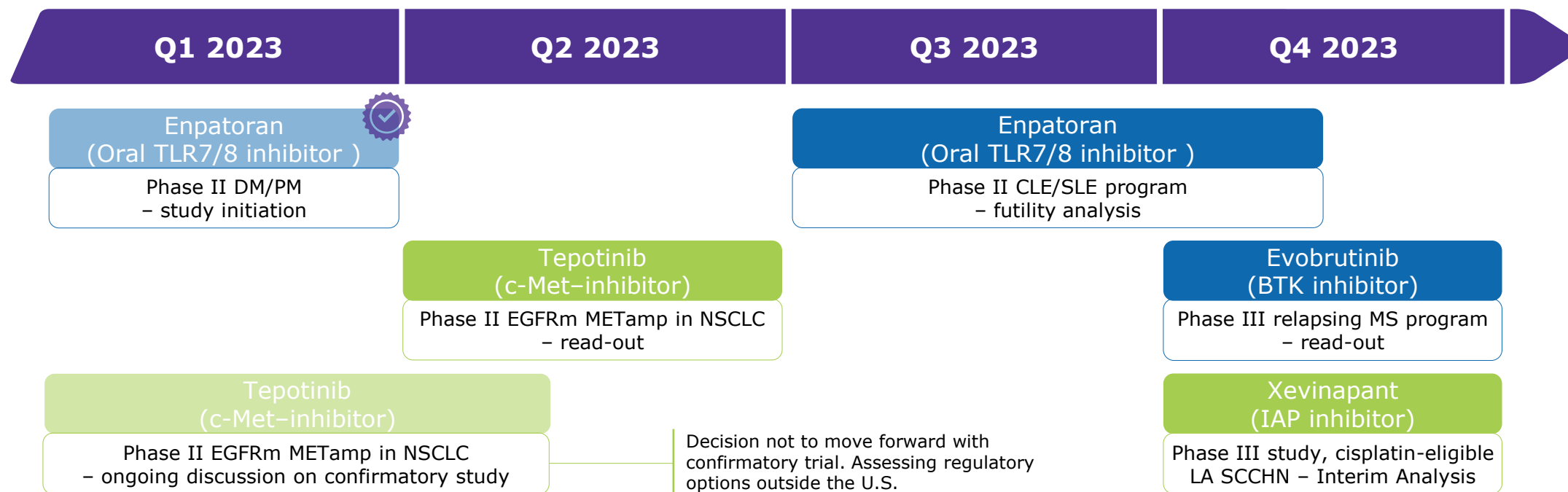
Ph1a: phase 1a, dose finding; Ph1b: phase 1b, dose escalation/expansion and signal seeking

<sup>1</sup> In combination with cisplatin and radiotherapy in unresected LA SCCHN patients eligible for cisplatin. <sup>2</sup> In combination with radiotherapy in resected LA SCCHN patients ineligible for cisplatin. <sup>3</sup> In combination with osimertinib. <sup>4</sup> Combinations include Sacituzumab Govitecan, NKTR-255 and M6223. <sup>5</sup> Studies as monotherapy and in combination with niraparib, avelumab or M4076 ATMi. Includes studies (phase I/II) in collaboration with/ sponsored by external partners, e.g. US National Cancer Institute (NCI) <sup>6</sup> Administered in combination with M1774 ATRi. <sup>7</sup> Administered in combination, including combinations other than avelumab. <sup>8</sup> Registered study with open enrollment; subjects may not yet be enrolled. <sup>9</sup>Marketed products for information only.

Unless noted otherwise, clinical programs conducted in collaboration with external partners are not shown unless Group has co-ownership of data. In such cases the indication is shown in *italics*.



# Healthcare catalysts

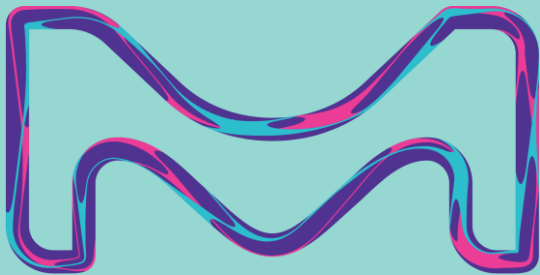


- Oncology
- Immunology

Acronyms: TLR = toll-like receptor, DM = Dermatomyositis, PM = Polymyositis, SLE = Systemic lupus erythematosus, CLE = Cutaneous lupus erythematosus, BTK = Bruton's tyrosine kinase; MS=Multiple Sclerosis, LA = locally advanced, SCCHN = squamous cell carcinoma of the head and neck, EGFR = Epidermal Growth Factor Receptor, NSCLC = non-small cell lung cancer, IAP = Inhibitor of Apoptosis Proteins

# electronics

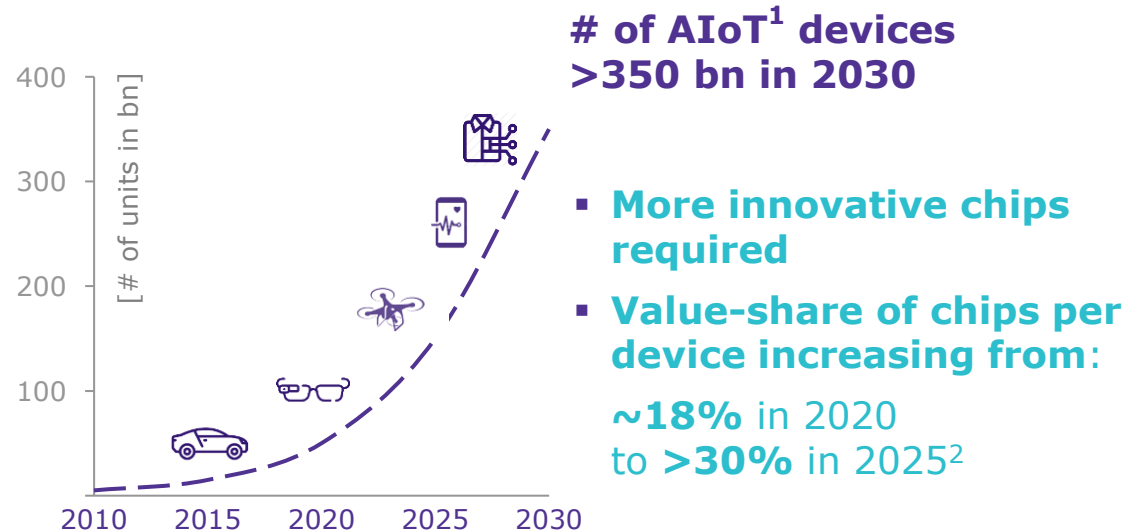
Shifting gears to growth execution



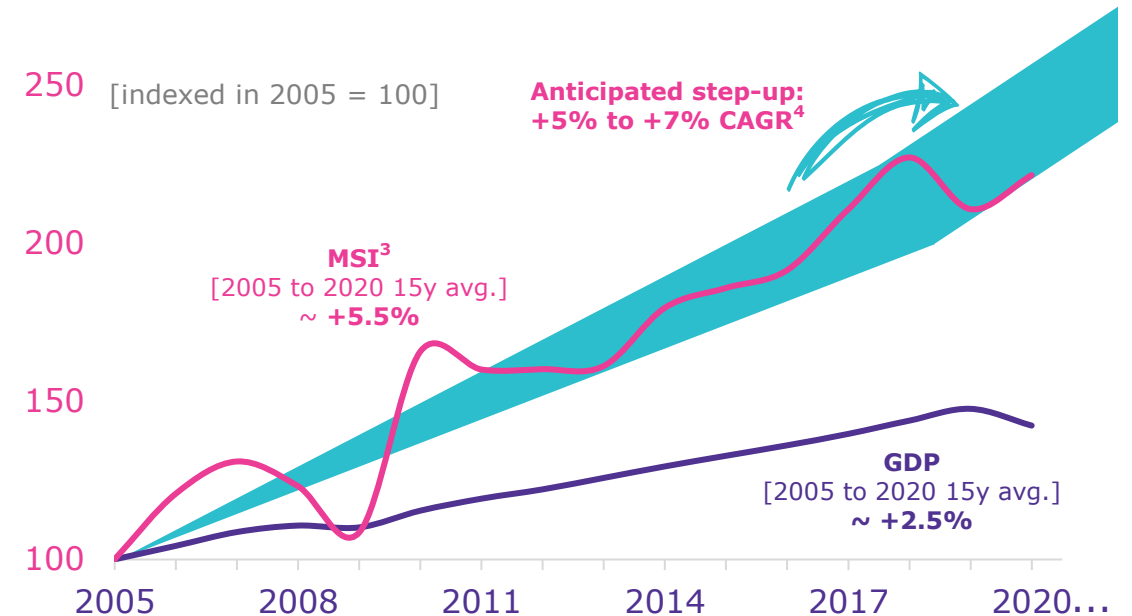
# Electronics industry has clear roadmaps with vast market potential and substantial need for materials innovation

## More applications than ever before to fuel Semiconductor growth

- 12% Automotive
- 7% Server / Storage / Communication infrastructure (5G)
- 6% Consumer (wearables/IoT)
- 5% Industrial/Medical/Military/Aviation
- 4% PC/Computing
- 4% Mobile phones / tablets



## Growth expected to accelerate... ...with reduced upward cyclicality



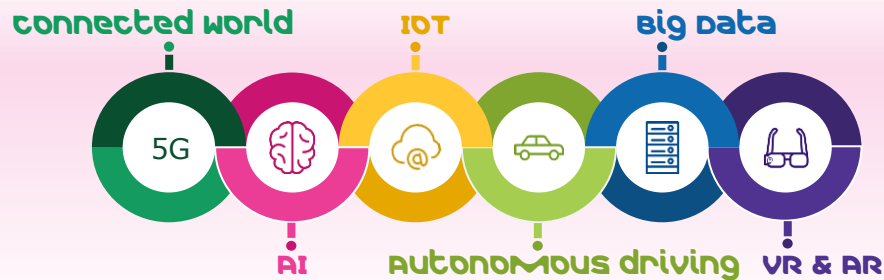
- Diverse end applications & higher capital discipline expected to reduce future cyclicality
- Semiconductor **Materials** show **lower cyclicality than Semiconductor market**

1) AIoT = Artificial Intelligence + Internet of Things; 2) McClean, Prismark Semiconductor and packaging report Q4 2020; 3) Million Square Inch of silicon wafers; 4) Group estimate based on industry forecasts

# Electronics

## Building on leading positions in semiconductor materials

### External trends drive strong demand



**Tech trends inevitably drive exponential data growth** requiring semiconductors and displays in virtually all data applications

- Customers & governments significantly **accelerating semi capacity expansions**
- **Semiconductor materials market** expected to **accelerate growth** based on **broader demand**

### Electronics well positioned to capture it

- ✓ **One of the strongest portfolios** – providing solutions necessary to **enable industry growth**
- ✓ **Enabling breakthrough technologies**, in **high value areas** of wafer processing & display innovation
- ✓ **Pioneering** in **high-throughput experimentation** and **Big Data & AI projects** with key customers
- ✓ **Shift to executing growth** accelerating **investment** and **innovation in sync** with customer plans

➤ **Confirming** mid-term financial ambition of **3 to 6% org. sales CAGR**

Abbreviations: AI = Artificial Intelligence; IoT= Internet of Things; VR = Virtual Reality ; AR = Augmented Reality

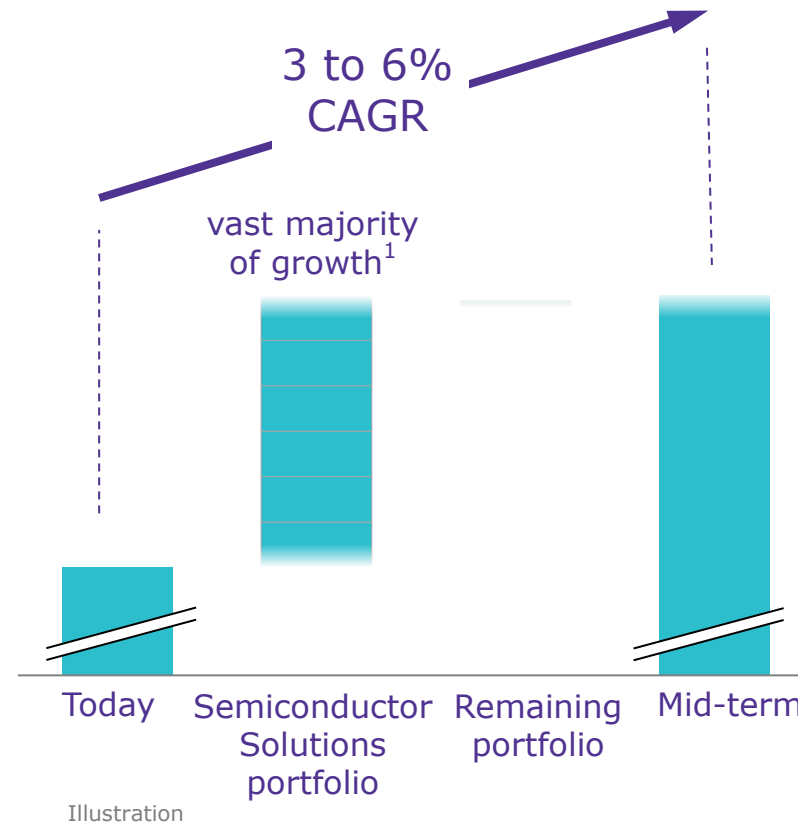


## Significant progress on “Level Up” growth execution



A leading player

Executing on growth:  
Leading positions in  
semiconductor materials  
with one of the  
strongest portfolios in  
the industry



### Semiconductor Solutions

CAGR 200 to 300bps<sup>2</sup> above underlying market of 5% to 7%

### Display Solutions

CAGR of low single-digit decline with return to growth until 2025

### Surface Solutions

Low single-digit growth CAGR

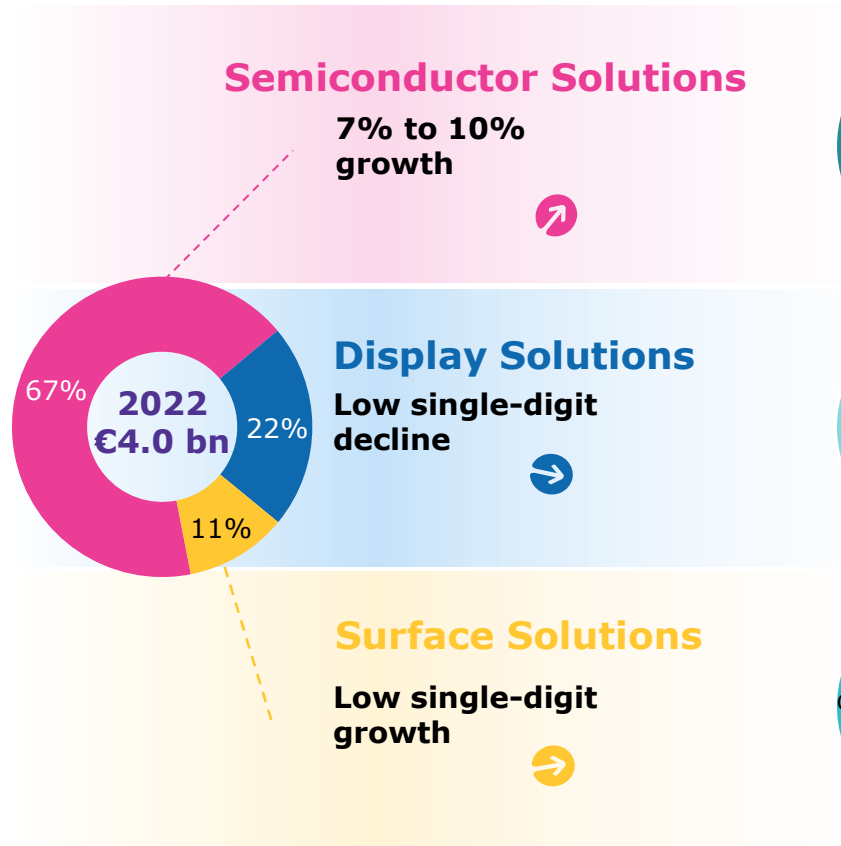
### Delivering on Level Up:

- Major capacity expansions in sync with customer CAPEX
- R&D roadmap catering to customers tech ramps
- Highly complementary bolt-on acquisitions

# Electronics

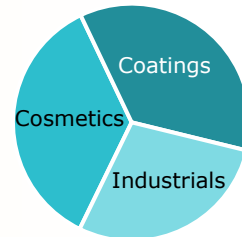
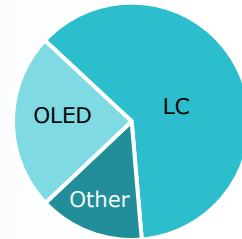
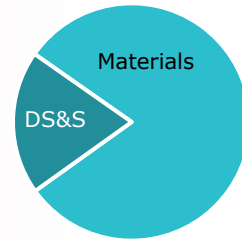
## Portfolio refocus drives mid-term guidance upgrade to 3 to 6% CAGR

### Sales split<sup>1</sup>



### Mid-term outlook<sup>2</sup>

### Business Split<sup>3</sup>



### Fundamental growth drivers

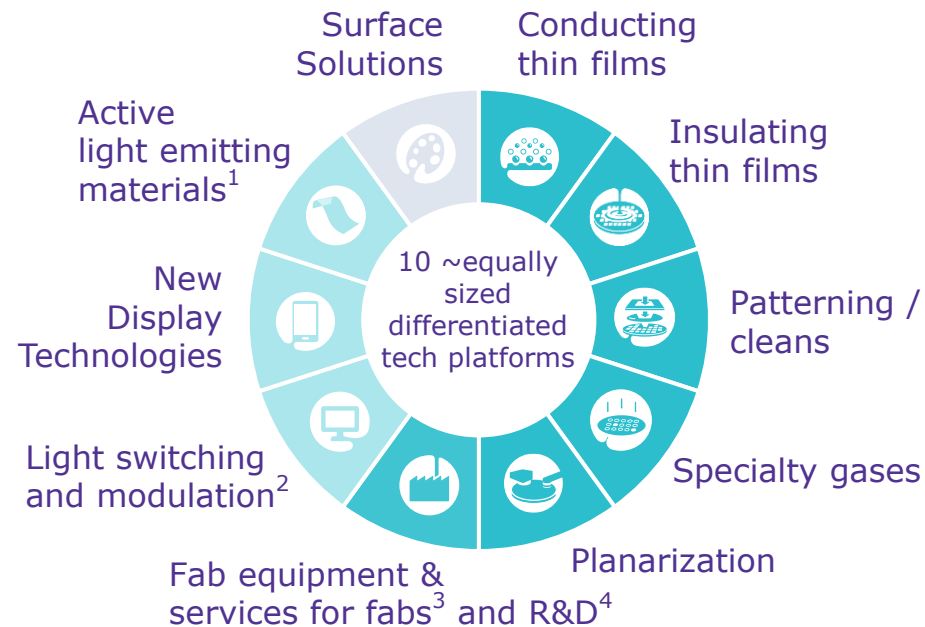
- Continued market growth due to technological advances (Artificial intelligence, 5G, Big Data and cloud, Internet of Things) serving customers in **Logic, Memory, Packaging and others**
- 5 to 7% market growth<sup>4</sup>
- 200 to 300bps above-market growth from share gains & better portfolio (incl. 100 to 150bps additional growth from integration top-line synergies)
- Driven by trend to **bigger TV size, higher resolutions, more mobile devices**
- 3 to 4% growth of total LCD m<sup>2</sup> area<sup>5</sup>, while price pressure continues
- 18 to 22% growth of total OLED m<sup>2</sup> area<sup>5</sup> with slight to moderate market share gains
- OLED material market to exceed LC material market by 2021<sup>6</sup>
- Well balanced exposure to **coatings, cosmetics** and **industrials** end market
- Drivers: rising living standards, higher disposable income in growing markets & higher demand for high value products at reasonable prices
- Light vehicle production and relevant cosmetics end markets returning to growth in 2021 and reaching 2019 levels by 2022 and beyond<sup>7</sup>

<sup>1</sup> Based on FY 2022, CAGR is organic mid-term ambition; <sup>2</sup> growth rates are organic CAGRs; <sup>3</sup> indicative only

<sup>4</sup> Source: Company estimate based on industry forecasts; <sup>5</sup> Source: Omdia Display Market Outlook, Q1 2020; <sup>6</sup> Internal Business Intelligence; <sup>7</sup> Sources: LMC Automotive Light Vehicles Forecast, Aug 2020 & Euromonitor BPC (Beauty & Personal Care) Aug 2020

# Electronics: Successful transformation, ready for accelerated growth

An integrated electronics innovation leader with one of strongest industry portfolios



INDICATIVE chart of mid-term future portfolio composition

■ Semiconductor Solutions ■ Display Solutions ■ Surface Solutions

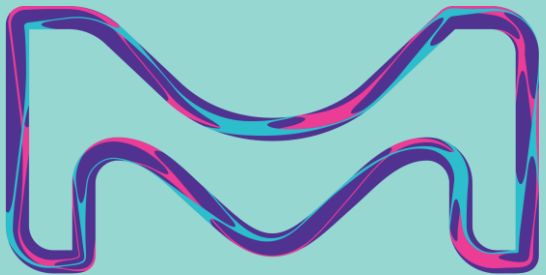
1) Incl. materials for OLED displays 2) Incl. liquid crystal displays  
3) Delivery Systems & Services 4) Intermolecular

Delivering on promises and above

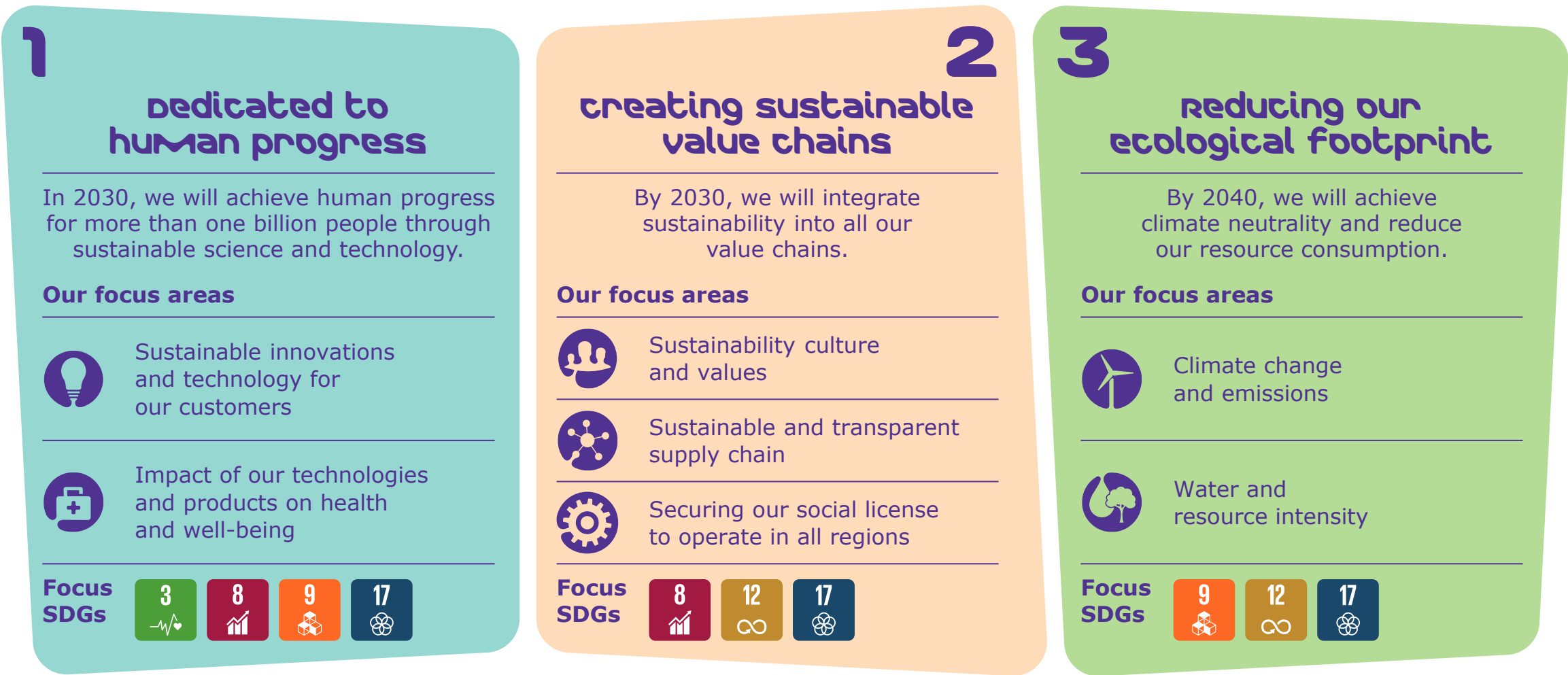
- ✓ **Bright Future program**  
key deliverables & savings
- ✓ **€4.0 bn sales with**  
**~90% of sales focused on electronics**
- ✓ **Successful integration of Versum**
- ✓ **Attractive EBITDA pre margins**
- ✓ **Display & Surface well managed**  
according to Enterprise Planning Unit role
- ✓ **Upgraded mid-term guidance of**  
**3% to 6% sales CAGR**

Everything in place to gain further speed as vital growth engine for Group

sustainability



# We are committed to three overall sustainability ambitions



# Clear Metrics to drive execution and progress towards 2030 ambition

Goal	Metric	2022 (2021)	Target
1	Percentage of newly published patent families with positive sustainability impact	27% (n.a.)	n.a.
	People treated with our Healthcare products*	174 mio (165 mio)	1 bn people ambition <sup>1</sup> : HC
2	Percentage of women in leadership positions	38% (36%)	Gender parity by 2030 <sup>2</sup>
	Percentage of employees trained on sustainability	83% (n.a.)	n.a.
	Percentage of relevant suppliers covered by valid sustainability assessment*	46%/82% (33/74) <sup>3</sup>	visible increase by 2024
	Environment, Health and Safety (EHS) Incident Rate	2.8 (3.9) <sup>4</sup>	As low as possible
	Violations of Global Social and Labor Standards Policy	68 (41) <sup>5</sup>	n.a.
	Lost Time Injury Rate (LTIR)	1.2 (1.2) <sup>6</sup>	<1.0 by 2025
3	Greenhouse gas emissions Scope 1+2*	1,667 kt (1,843 kt)	-50% by 2030 <sup>7</sup>
	Scope 3 intensity: kg Greenhouse gas emissions per € gross profit	0.48 (0.46)	-52% intensity by 2030 <sup>8</sup>
	Percentage purchased electricity covered by renewable resources	47% (30%)	80% by 2030
	Group Waste Score (WS)	-8.8% (-5.6%)	-5% by 2025 <sup>9</sup>
	Group Water Intensity Score (WIS)	-8.6% (n.a.)	-10% by 2025 <sup>10</sup>
	Wastewater quality: no harmful emission residues	Progress on track: Relevant sites identified	100% completion by 2030 <sup>11</sup>

\*LTIP relevant

<sup>1</sup>incl. HC portfolio +praziquantel don.

<sup>2</sup>considers room for non-binary people

<sup>3</sup>by a)number, b)supplier spent, restated 2021 new risk assessment

<sup>4</sup>incidents + severity vs. man-hours, restated 2021 using broader base

<sup>5</sup>confirmed violations

<sup>6</sup>accidents with min. 1 day of missed work per 1 mio. man-hours

<sup>7</sup>vs. 2020 2,028 kt CO<sub>2</sub>e

<sup>8</sup>vs. 2020 0.48 intensity ratio (kg scope 3 emissions per € gross profit)

<sup>9</sup>vs. 2016 WS 443

<sup>10</sup>vs. 2020 WIS considering local availability of water and no. of man-hours, w/o Gernsheim (regulatory obligations)

<sup>11</sup>below scientifically defined threshold

# Product portfolio shift to increase positive sustainability impact

Group  
Goal 01



Using our **innovation power** to support sustainability goals of

- Group
- our customers
- society

2022 R&D initiative – Rollout of **R&D Sustainability Scorecards** across all sectors

**+30%**  
“greener alternative”  
products in Life Science  
in 2022<sup>1</sup>



R&D  
prioritization for  
products with  
positive  
sustainability  
impact

Resulting in more  
sustainable  
operations  
and products

## Dedicated to human progress

1

Progress through sustainable  
science & technology by 2030



## Creating sustainable value chains

2

Sustainability in supply chain and  
operations by 2030



## Reducing ecological footprint

3

Achieving climate neutrality  
by 2040



# Diverse human capital: Thinking, talking, and leading differently

Group  
goal 02



Focus areas	Indicator	Status 2022 (2021)	Aspirations
Gender	Percentage of women in leadership globally	38% (36%)	Gender parity until 2030
Culture & Ethnicity	Percentage of underrepresented ethnic colleagues in US leadership	21% (21%)	Increase to 30% until 2030
	Percentage of nationals from Asia, Latin America, Middle East & Africa in leadership	16% (16%)	Increase to 30% until 2030
Inclusion	Inclusive Leadership Programs and participation of leaders across all business	64% (37%)	Participation of all leaders by 2026

<1.5%

adjusted<sup>1</sup> gender pay gap<sup>2</sup>

<sup>1</sup> The estimated difference in pay after accounting for differences in actual pay that are due to legitimate reasons (source: Mercer)

<sup>2</sup> End of year 2021 data






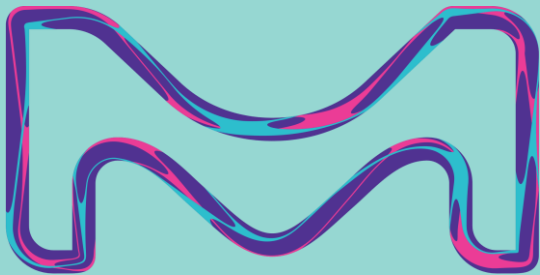
# Group is committed to achieving climate neutrality by 2040 – net-zero target under evaluation

Group  
goal 03



	SBTi <sup>1</sup> near-term target 2030	Climate neutrality target 2040	SBTi <sup>1</sup> Long-term net-zero target 2050
<b>Scope</b>	Effect of all reportable greenhouse gas emissions <sup>2</sup>	Effect of all reportable greenhouse gas emissions <sup>2</sup>	Effect of all reportable greenhouse gas emissions <sup>2</sup>
<b>Abatement</b>	<b>Scope 1+2 ambition</b> Absolute reduction of Scope 1+2 GHG <sup>3</sup> emissions by 50% (vs. 2020)  <b>Scope 3 ambition</b> Intensity reduction of kg Scope 3 GHG <sup>3</sup> emissions per € gross profit by 52% (vs. 2020)	Continue ambitious abatement pathway for all three scopes beyond 2030 targets	Aim on absolute reduction across all three Scopes ≥90%
<b>Compensation</b>	Optional	Offset residual emissions	Offset residual emissions via carbon removal
	<b>Confirmed</b>	<b>Confirmed</b>	<b>Under evaluation</b>

# Guidance and Executive Summary



# Full-year 2023 guidance

## Net sales:

Organic: +1% to +4% YoY (ex-COVID: +4% to +7%)

FX: -5% to -2% YoY

**~€21.2 – €22.7 bn**

## EBITDA pre:

Organic: -5% to 0% YoY

FX: -5% to -2% YoY

**~€6.1 – €6.7 bn**

## EPS pre:

**~ €8.80 to €9.90**

# 2023 business sector guidance<sup>1</sup>

## Life Science

### Net sales

- Organic: -2% to +2%; ex-COVID: +3% to +8%
- FX: -5% to -1% YoY
- ~€9.70 bn to €10.45 bn
- All BUs to contribute to core growth
- Total COVID-19 sales of ~€250 m (vs. ~€800 m in 2022)

### EBITDA pre

- Organic: -8% to -4% YoY
- FX: -6% to -2% YoY
- ~€3.20 bn to €3.50 bn

## Healthcare

### Net sales

- Organic: +5% to +9%; FX: -6% to -3%
- ~€7.75 bn to €8.30 bn
- Driven by recent launches
- Complemented by CME & Fertility

### EBITDA pre

- Organic: +8% to +12% YoY
- FX: -13% to -9% YoY
- ~€2.35 bn to €2.55 bn

## Electronics

### Net sales

- Organic: -2% to +3%; FX: -6% to -3%
- ~€3.70 bn to €4.00 bn
- Based on industry consensus of a Semi Market recovery in late H2 2023
- Semi expected to continuously outperform MSI
- Continued low utilization at Display customers

### EBITDA pre

- Organic: -12% to -3% YoY
- FX: -8% to -5% YoY
- ~€950 m to €1,080 m

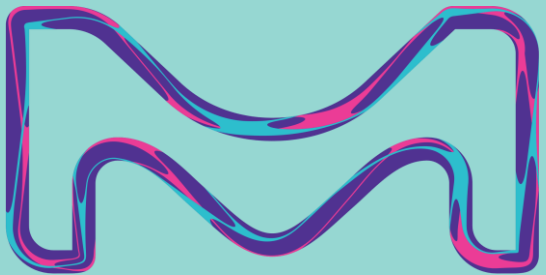
<sup>1</sup>Divisional guidances are only support to the group guidance and do not have to add up



# Appendix

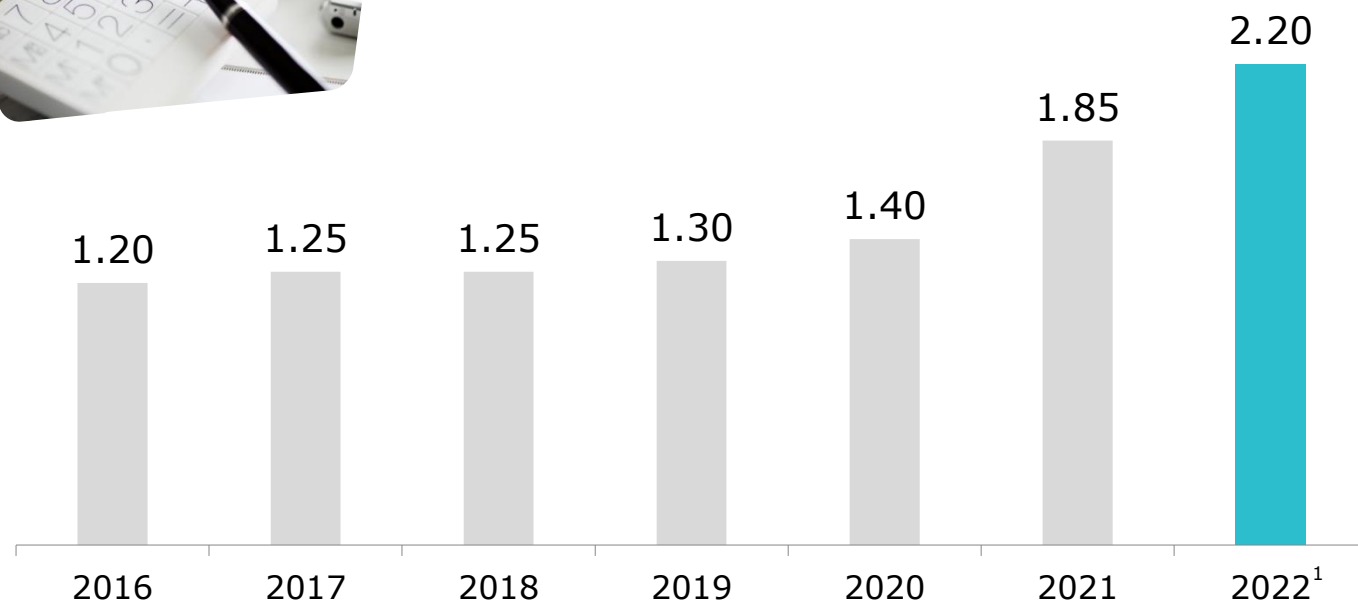


Group



# Company performance drives solid growth in dividend

## Dividend<sup>1</sup> development 2016 - 2022



## 2022 dividend

- Dividend of €2.20 (+19% YoY) per share accepted<sup>1</sup> for 2022
- Payout ratio of 21.9% of EPS pre in 2022; aiming for 20% to 25%
- Dividend yield<sup>2</sup> of 1.2%

<sup>1</sup>Decision subjected to Annual General Meeting

<sup>2</sup>Calculated using 2022 year-end share price of €180.90 per share.

# Company's ownership structure

## Shareholders of Merck KGaA, Darmstadt, Germany

- Shareholders hold ~30% of Group's total capital
- Share capital is divided into 129,242,252 bearer shares and one name share without nominal value
- Listed at German Stock Exchange's Prime Standard, member of the DAX 30
- Only bearer shares entitled to vote at Group's Annual General Meeting: **one share, one vote**

### Supervisory Board

#### Its Chairman leads AGM, representing interests of Group's shareholders:

- Approving financial statements of the Group
- Working together with Executive Board, receiving reporting on progress regarding business and financial development at Group, Containing 16 members: **8 employee representatives, 8 independent representatives** (2 family representatives and 6 elected shareholder representatives)
- 2 committees: **Nomination and Audit Committee**

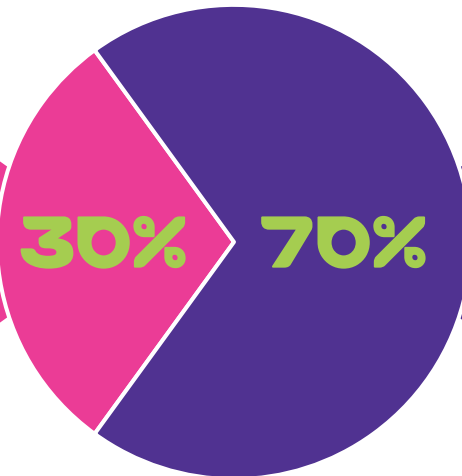
**Nomination Committee**  
Defines criteria and makes proposals for new candidates

**Audit Committee**  
Control systems, external auditing, financial statements

**Finance Committee**  
financial statements, external auditing

**Personnel Committee**  
Executive board members, contracts, compensation

**R&D Committee**  
research activities of all sectors: HC, LS, EL



## E. Merck KG, Darmstadt, Germany: Partners' Meeting & Family Board

- E. Merck KG, Darmstadt, Germany (99.9% the Family) holds ~70% of Group's total capital
- These 70% of the total capital are **not entitled to vote** at Group's AGM
- A Family Board represents the entrepreneurial interests of the Family (elected by partners' meeting)

### Board of Partners

#### Elected by Family Board, and takes over some duties of a usual Supervisory Board:

- Appointment, dismissal and supervision of Executive Board members of Merck KGaA, Darmstadt, Germany
- Approves extraordinary business transactions and annual financial statements of E. Merck KG, Darmstadt, Germany
- Contains **5 members of the Family Board and 4 external members** of the business community
- 3 committees: **Finance, Personnel and R&D Committee**



# Pay for performance reflecting the company's long-term strategy

Variable	40-50%	<b>Long-Term Incentive Plan</b> <ul style="list-style-type: none"> <li>Reflecting the long-term strategy for Group's <b>growth and (from 2022) sustainability ambition</b></li> <li><b>4 years performance cycle</b>: 3 years target achievement + 1 year holding period</li> <li>Based on virtual Group Share Units (Grant € divided through start share price, multiplied with the end share price)</li> <li><b>Financial targets</b>: 50% Group Share Price vs. DAX + 25% EBITDA pre margin + 25% Organic sales growth</li> <li><b>From 2022</b> multiplied with <b>sustainability factor (0.8-1.2)</b> reflecting KPIs from each of the sustainability goals</li> <li>Corridors for each target and achieved targets <b>published transparently</b> ex-post in the compensation report</li> <li><b>Maximum cap</b>: Maximum pay out 250%, maximum € cap for LTIP for each board member published</li> <li><b>Claw-back</b> allows to retain amounts allocated from the Long-Term Incentive Plan</li> </ul>	<div> <div>+</div> <div>Performance of Group share price vs. the DAX</div> <div>50%</div> </div> <div> <div>+</div> <div>EBITDA pre margin in relation to target value</div> <div>25%</div> </div> <div> <div>+</div> <div>Organic sales growth in relation to target value</div> <div>25%</div> </div> <div> <div>x</div> <div>0.8-1.2 Sustainability factor</div> </div> <div> <div>=</div> <div>0-180%</div> <div>of allocated units</div> </div>
	25-35%	<b>Profit Sharing</b> <ul style="list-style-type: none"> <li><b>Three-years average profit after tax</b> of the E. Merck, KG, Darmstadt, Germany, multiplied with individual permille rate</li> <li><b>From 2021 reduced individual performance factor of 0.8-1.2</b> can increase (bonus) or decrease (malus) the amount based on a set of criteria, incl. the 3 sustainability goals, disclosure of catalogue and reasons for if performance factor ≠ 1.0</li> <li><b>Individual permille rate</b> for each board member and maximum € cap for each board member published</li> <li><b>Staggered incentivization</b> and <b>minimum threshold value</b> and maximum limit for profit after tax (€0.75/2.0 bn)</li> <li>Mandatory <b>personal investment in Group Shares</b> amounting to one third of the net payment of the profit sharing (4 year holding period)</li> </ul>	
Basic	6-9%	<b>Pension Entitlements</b>	Defined contribution
	0-3%	<b>Additional Benefits</b>	Mainly contributions to insurance policies, personal security expenses, company car...
Basic	15-20%	<b>Basic Compensation</b> <ul style="list-style-type: none"> <li><b>Fixed and non-performance related compensation</b></li> <li>Paid in 12 equal monthly installments</li> <li>€1.4 million for the chairman / up to €1.1 million for the members of the executive board</li> </ul>	
<b>Maximum total compensation: reduced to €11.5 m Chairman, €9.5 m other executive board members</b>			

# Executive Board long-term incentive linked to sustainability

- Starting from fiscal year 2022, our sustainability strategy will be even more firmly embedded in the compensation system for the members of the Executive Board
- The sustainability factor encompasses three performance criteria according to the sustainability strategy and measures the performance indicators over a three-year target achievement cycle
- The sustainability factor depends on the degree of target achievement and may increase or decrease the outcome of the financial performance indicators of the LTIP (Performance Group Share vs. DAX, EBITDA pre margin, organic sales growth) in the range of 0.8x and 1.2x

## Parameters for the sustainability factor for the 2022-24 tranche of the LTIP<sup>1</sup>:

Performance Criteria	%	Performance Indicators
Dedicated to human progress	20%	People treated with our Healthcare products
Creating sustainable value chains	40%	Percentage of relevant suppliers (in terms of number and purchase volume) that are covered by a valid sustainability assessment
Reducing our ecological footprint	40%	Scope 1 + 2 greenhouse-gas emissions

# Strategic focus areas in sustainability

## Sustainability innovation and technology for our customers

- Sustainability as integral part of **product design**
- Enable **customers** to reduce sustainability footprint
- SBV as a tool to assess net sustainability **impact**

## Health and wellbeing impact of our technologies and products

- Health (Healthcare, Life Science) & wellbeing (Life Science, Electronics)-related impact of:
  - Group's **products**
  - Group's **activities**

## Climate change and emissions

- **Greenhouse gas emissions** Scope 1, 2, 3
- **Renewable energy**
- **Energy efficiency** in operations



## Sustainability culture & values

- **Diversity & inclusion** activities
- Sustainability **mindset**: Communication, trainings, incentive schemes
- **Employee engagement**

## Sustainable and transparent supply chain

- Supply chain management activities:
  - Sustainability **assessments**
  - Supplier **data management**

## Secured social license to operate across regions





- **Safe & ethical** research, **ethical & compliant** business conduct
- **Plant & process** safety, **patient & product** safety
- **Stakeholder** engagement & communication

## Water and resource intensity

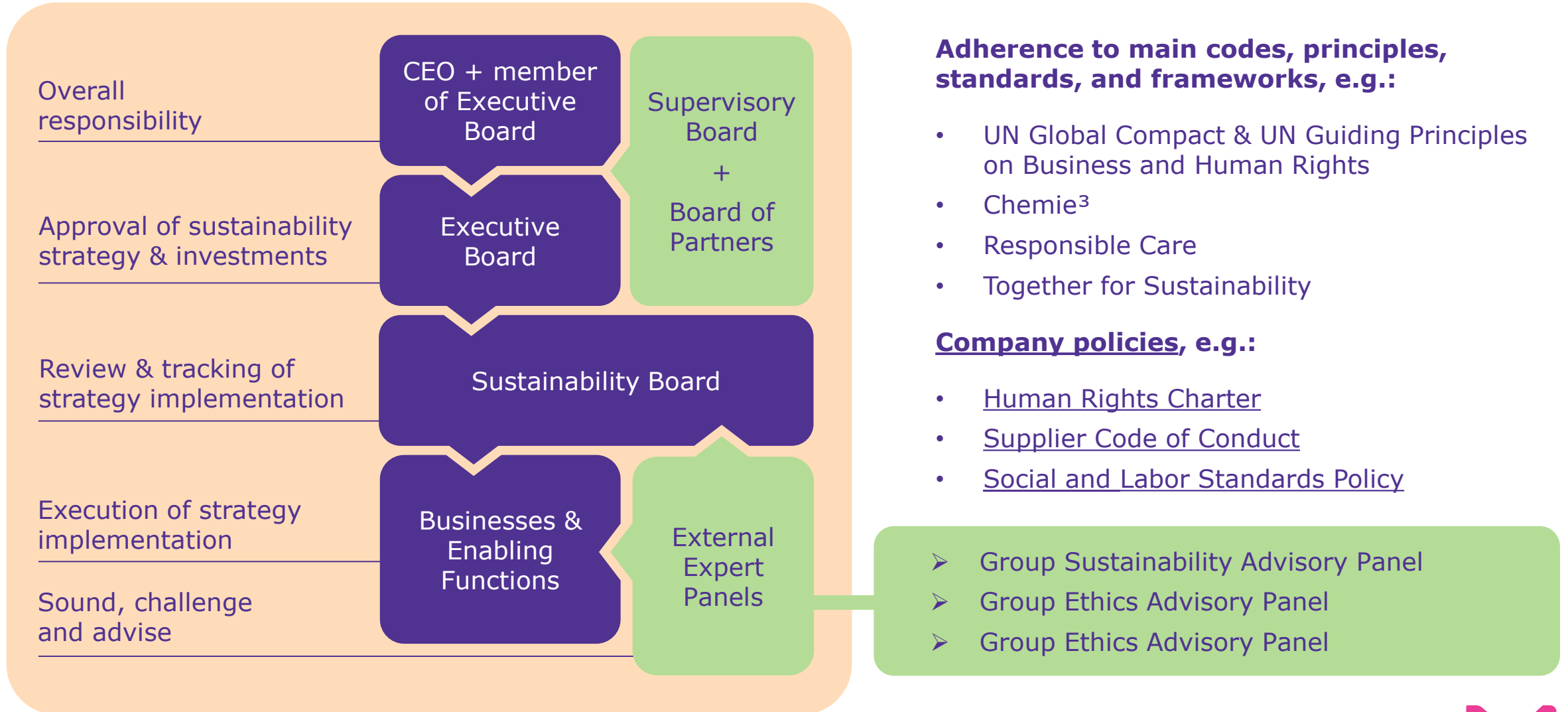
- **Waste & water** management and **recycling**
- **Circular** activities

# Reduce our environmental footprint: Emissions, Water and Waste



Goal 3	 <b>Climate neutrality by 2040</b>	 <b>Enhance water efficiency &amp; purity</b>	 <b>Reduce waste impact</b>
Target	<ul style="list-style-type: none"> <li>Lower <b>scope 1+2</b> GHG<sup>3</sup> emissions by <b>-50%</b><sup>4</sup></li> <li>cover <b>80% of our purchased electricity with renewables</b> by 2030</li> <li>Intensity <b>reduction of Scope 3</b> per € net sales by <b>52%</b> until 2030<sup>4</sup></li> </ul>	<ul style="list-style-type: none"> <li>Enhancing water efficiency: improve Group water intensity score by <b>-10%</b> by 2025<sup>4</sup></li> <li>Harmful emission residues should be lowered below a scientifically defined threshold by 2030</li> </ul>	<ul style="list-style-type: none"> <li>Based on the Group Waste Score, we have set ourselves the goal of reducing the environmental impact of our waste by <b>-5%</b> by 2025 compared to 2016</li> </ul>
Status	<ul style="list-style-type: none"> <li>➤ Scope 1+2: <b>1,667 kt<sup>1</sup></b> (1,843 kt<sup>2</sup>)</li> <li>➤ Renewable energy: <b>47%</b><sup>1</sup> (30%<sup>2</sup>)</li> <li>➤ Scope 3: <b>6,616 kt<sup>1</sup></b> (5,716 kt<sup>2</sup>); emissions/profit ratio: 0.48<sup>1</sup> (0.46<sup>2</sup>)</li> <li>➤ Scope 1-3 targets approved as Science Based Targets </li> </ul>	<ul style="list-style-type: none"> <li>➤ In 2022, we lowered the Group Water Intensity Score <b>by -8.6%</b></li> <li>➤ In 2021 and 2022, we identified the relevant sites and started to identify the relevant substances: <b>Process for reduction of residues in wastewater on track</b></li> </ul>	<ul style="list-style-type: none"> <li>➤ Reduction of waste impact (Group Waste Score): <b>-8.8%</b><sup>2</sup> (-5.6)</li> </ul>

# Effective sustainability governance structures and frameworks



# External stakeholders assess our engagement



As of 2022, Company is receiving a **MSCI ESG<sup>1</sup> Rating of AAA.**



2022 Sustainalytics rates Group with 19.8 **and low ESG risk exposure.**



Since 2008, Group is part of **FTSE4Good Index**, measuring the performance of companies with strong ESG practices, ranking percentile rank 92 (top 8%).



In the ISS corporate ESG<sup>1</sup> ranking Group achieved **prime status** and B-ranking, putting us in the 1<sup>st</sup> decile.



Since 2019, the Group share is again **included in STOXX Global ESG Leaders Index**, a sustainability index based on key environmental, social and governance criteria.



Group has been **reconfirmed** as a constituent of the **Ethibel Sustainability Index (ESI) Excellence Europe** since May 2020, based on VigeoEiris.



Group received gold status in 2022, stating Group is among the **top 4% of companies.** **EcoVadis** annually examines ~75,000 suppliers from 160 countries.



**CDP<sup>2</sup> Climate:** 2022, we scored "B" (2021: B). **CDP<sup>2</sup> Water:** 2022, we received a "B" (2021: A-).



In the 2022 **Access to Medicine Index** Company ranked **fifth place** with special recognition for R&D capacity building and IP sharing.

# Additional financial guidance 2023

## Further financial details

Corporate & Other EBITDA pre	<b>Lower costs driven by hedging</b>
Interest result	<b>~ €-90 m to -130 m</b>
Effective tax rate	<b>~ 21% to 23%</b>
Capex on PPE <sup>1</sup>	<b>~ €1.8 to 2.0 bn</b>
Hedging	<b>FY 2022 overall hedge ratio ~50% EUR/USD hedging @ ~1.07</b>
2023 Ø EUR/USD assumption	<b>~ 1.07 to 1.11</b>

<sup>1</sup>Based on gross additions to PPE on balance sheet (excl. leasing) in fiscal year to reflect planned Capex expansion more accurately

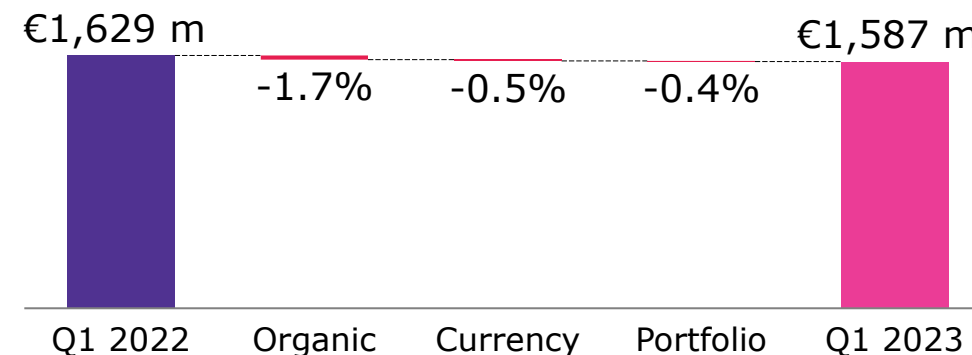
# Healthcare performance drives Group sales growth; EBITDA pre burdened by Electronics and fading COVID-19 business

## Q1 YoY Net Sales

	Organic	Currency	Portfolio	Total
Life Science	0.6%	0.9%	0.3%	1.7%
Healthcare	5.3%	0.8%	0.0%	6.2%
Electronics	-7.1%	0.8%	0.3%	-5.9%
<b>Group</b>	<b>0.8%</b>	<b>0.8%</b>	<b>0.2%</b>	<b>1.8%</b>

- Life Science: Core growth of +7% org. driven mainly by Life Science Services (+35% org.) and Science & Lab Solutions (+7% org.); COVID-19 declines as anticipated
- Healthcare: recent launches up +28% org. with continued strong Bavencio® (+31% org) and Mavencic® (+23% org.) uptake, driving +5% org. sector growth
- Electronics: Semiconductor Solutions resilient at +2% org., partially compensating for Display Solutions decline (-28% org.)

## Q1 YoY EBITDA pre

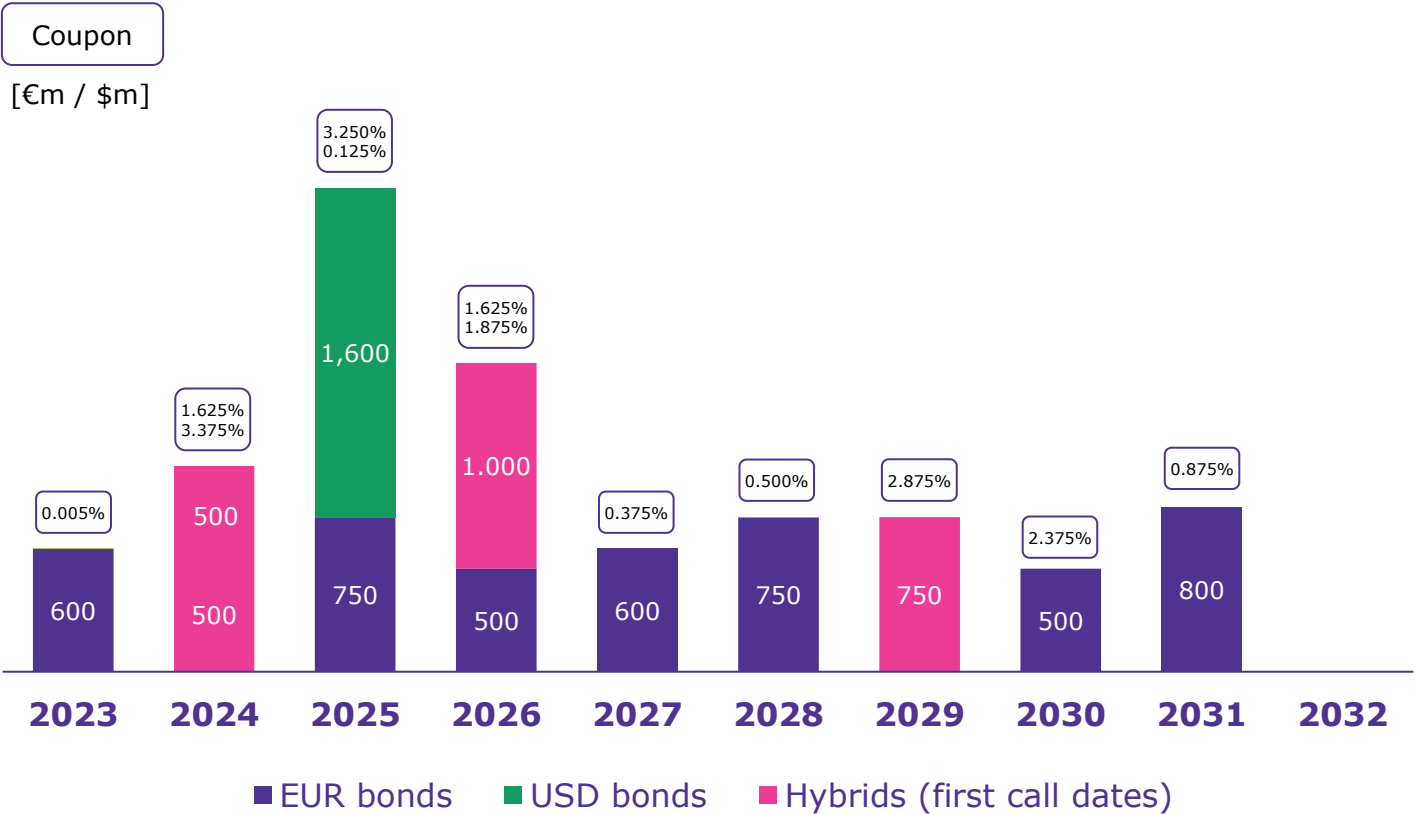


- EBITDA pre slightly down by -2% org., burdened by Electronics and decline of COVID-19 business
- Healthcare strongly contributes to EBITDA with +10% org. growth boosted by product mix and lower comps on gross profit
- Minor FX burden on EBITDA pre, mitigated by hedging



# Credit details

## Maturity profile as of December 31, 2022



## Credit rating information

	LT Rating	Last LT Rating Change	Outlook	ST Rating
Moody's	A3	21.10.21	Stable	P-2
S&P Global	A	29.05.13	Stable	A-1
SCOPE	A	17.10.22	Stable	S-1



# Q1 2023: Overview

## Key figures

[€m]	Q1 2022	Q1 2023	Δ
Net sales	5,198	<b>5,293</b>	1.8%
EBITDA pre	1,629	<b>1,587</b>	-2.6%
Margin (in % of net sales)	31.3%	<b>30.0%</b>	-1.4pp
EPS pre	2.41	<b>2.36</b>	-2.1%
Operating cash flow	840	<b>853</b>	1.5%

[€m]	Dec. 31, 2022	March 31, 2023	Δ
Net financial debt	-8,328	<b>-8,992</b>	8.0%
Working capital	5,237	<b>5,684</b>	8.5%
Employees	64,233	<b>64,012</b>	-0.3%

## Comments

- Sales up +2%, driven largely by performance of Healthcare, supported by slight FX tailwinds
- Electronics and fading COVID-19 business primary drivers of organic EBITDA pre decline
- EPS pre down slightly, about in line with EBITDA pre
- Operating cash flow slightly up due to lower increase in working capital, related mainly to trade receivables
- Working capital up mainly on higher inventories and receivables, partly offset by payables
- Net financial debt increases, mainly due to short-term investments

Totals may not add up due to rounding

From: Q1 2023 Results Presentation – 2023.05.11



# Q1 2023: Reported figures

## Reported results

[€m]	Q1 2022	Q1 2023	Δ
EBIT	1,173	<b>1,035</b>	-11.8%
Financial result	-34	<b>-23</b>	-33.9%
Profit before tax	1,139	<b>1,012</b>	-11.1%
Income tax	-255	<b>-213</b>	-16.8%
<i>Effective tax rate (%)</i>	22.4%	<b>21.0%</b>	-1.4pp
Net income	880	<b>796</b>	-9.6%
EPS (€)	2.02	<b>1.83</b>	-9.4%

## Comments

- EBIT decline -12% mainly driven by costs of efficiency initiatives at Group level and higher D&A
- Improved financial result primarily driven by higher interest income due to higher rates
- Lower effective tax rate within updated guidance range, driven by change in country mix, in particular a higher share of profit in the U.S.
- Net income and EPS drop reflect EBIT decline, mitigated by better financial result and lower effective tax rate



# Cash flow statement

## Q1 2023 – Cash flow statement

[€m]	Q1 2022	Q1 2023	Δ
Profit after tax	884	<b>800</b>	-84
D&A	430	<b>456</b>	26
Changes in provisions	107	<b>-8</b>	-115
Changes in other assets/liabilities	-234	<b>-187</b>	47
Other operating activities	-24	<b>16</b>	40
Changes in working capital	-322	<b>-224</b>	98
<b>Operating cash flow</b>	840	<b>853</b>	13
Investing cash flow	-1,089	<b>-1,231</b>	-142
thereof Capex on PPE	-413	<b>-562</b>	-149
Financing cash flow	-315	<b>124</b>	439

## Comments

- Decline in profit after tax driven by decreased EBIT, partially offset by lower effective tax rate
- Delta in other assets & liabilities driven mainly by a pension related shift between provisions and other assets
- Change in working capital mainly due to positive effect from receivables driven by sales volumes
- Slight increase of operating cash flow, mainly driven by net working capital
- Delta in investing cash flow driven by Capex on PPE
- Financing cash flow up mainly due to changes in financial liabilities



# Adjustments in Q1 2023

## Adjustments in EBIT

[€m]	Q1 2022		Q1 2023	
	Adjustments	thereof D&A	Adjustments	thereof D&A
Life Science	7	1	<b>17</b>	0
Healthcare	4	1	<b>-4</b>	-1
Electronics	11	0	<b>19</b>	10
Corporate & Other	6	0	<b>74</b>	0
Total	28	3	<b>106</b>	10

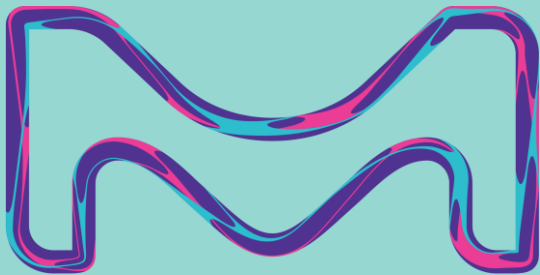


# Financial Calendar

Date	Event
May 11, 2023	Q1 2023 Earnings release
August 3, 2023	Q2 2023 Earnings release
October 19, 2023	Capital Markets Day
November 9, 2023	Q3 2023 Earnings release
March 7, 2024	Q4 2023 Earnings release

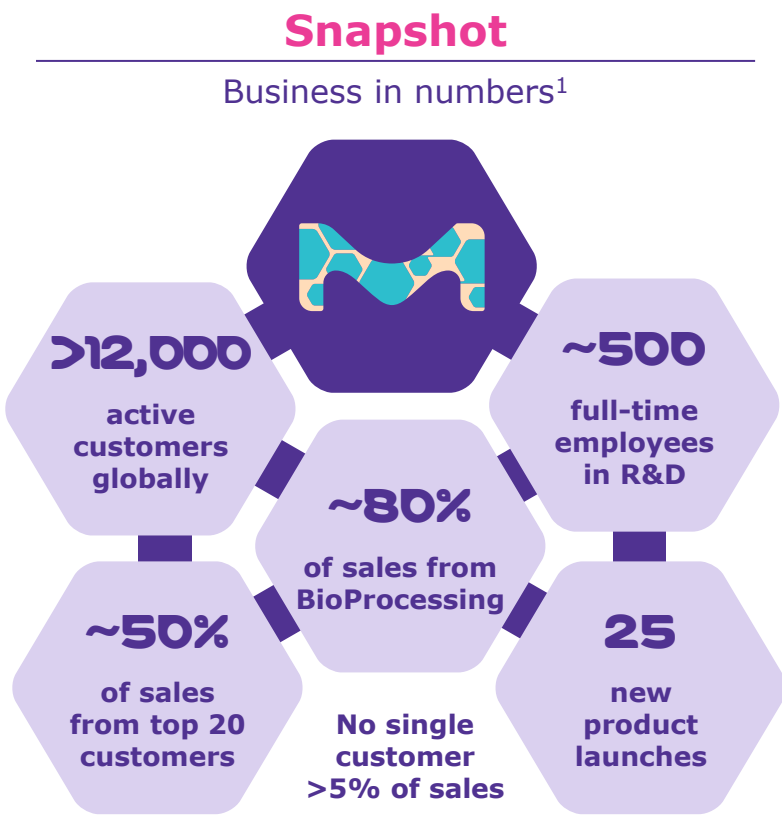
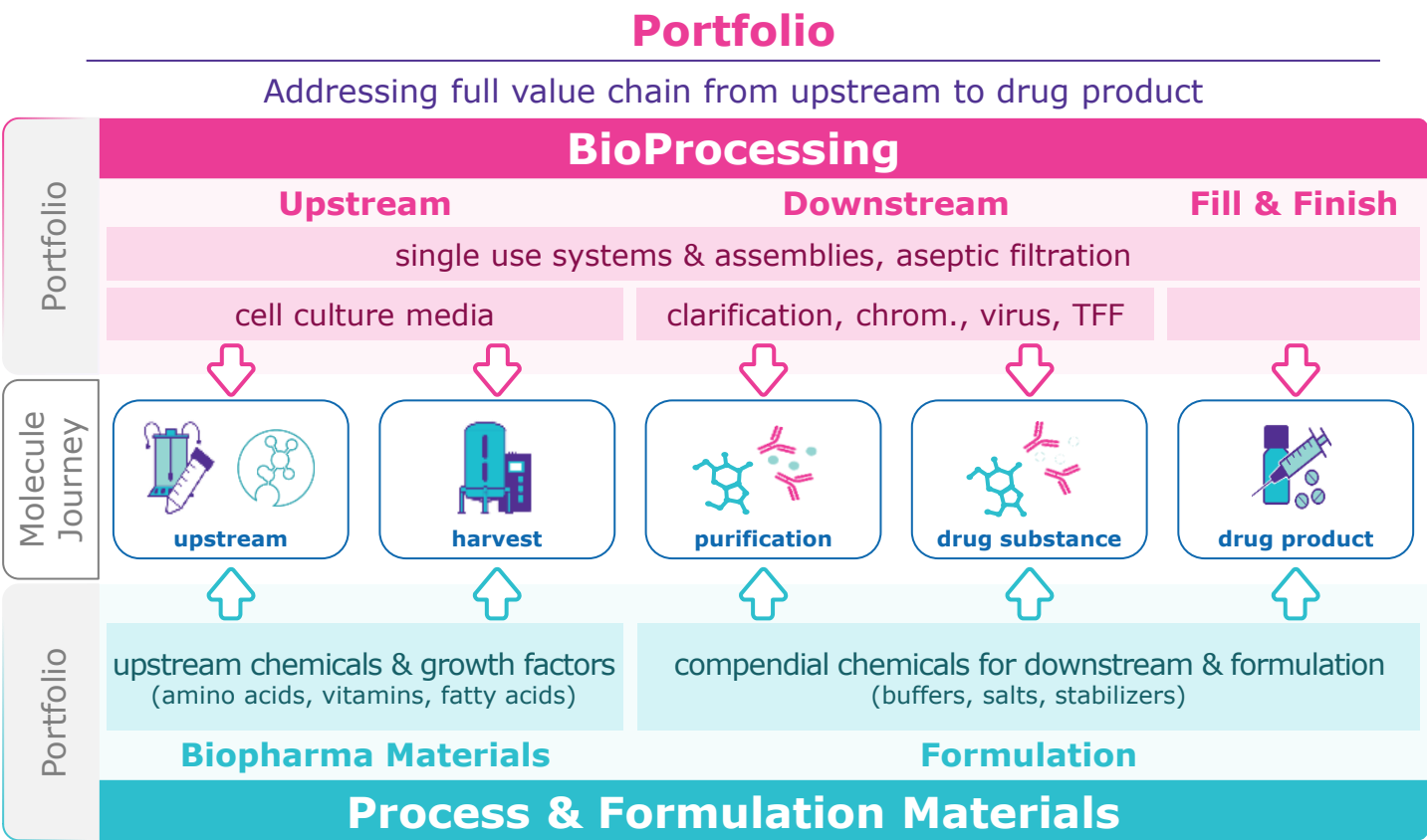
# Life science

Appendix



# Process Solutions – Business Overview

## Comprehensive product portfolio and diversified customer base



**Leading product portfolio for bioprocessing operations, novel templates, chemicals, and formulation materials serving wide range of biopharma customers**

<sup>1</sup> Based on FY 2022; Acronyms: chrom. = chromatography, TFF = Tangential Flow Filtration

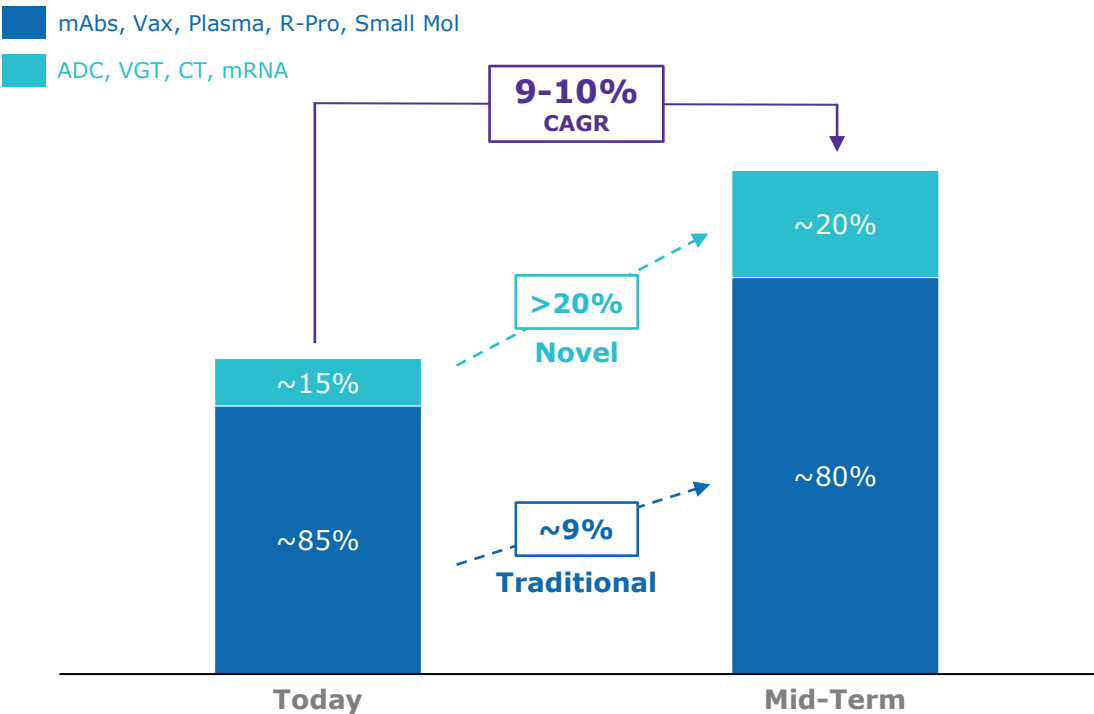


# Process Solutions – Market

## Participating in the attractive biopharma market

### Novels driving growth

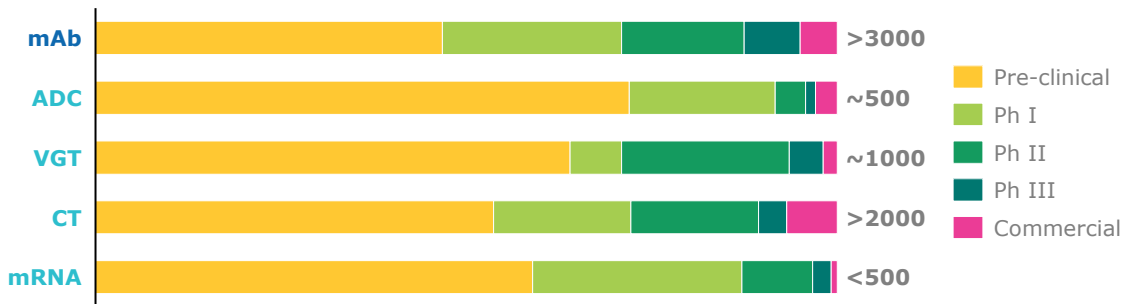
Process products market in € bn (excl. COVID-19)



### Diversified customer base

By type, geography, modality

- Customer split**  
Emerging biotechs increasing asset<sup>1</sup> ownership
- Geography**  
China regulatory environment maturing
- Pipeline & on-market**  
Deep pre-clinical funnel in multiple modalities



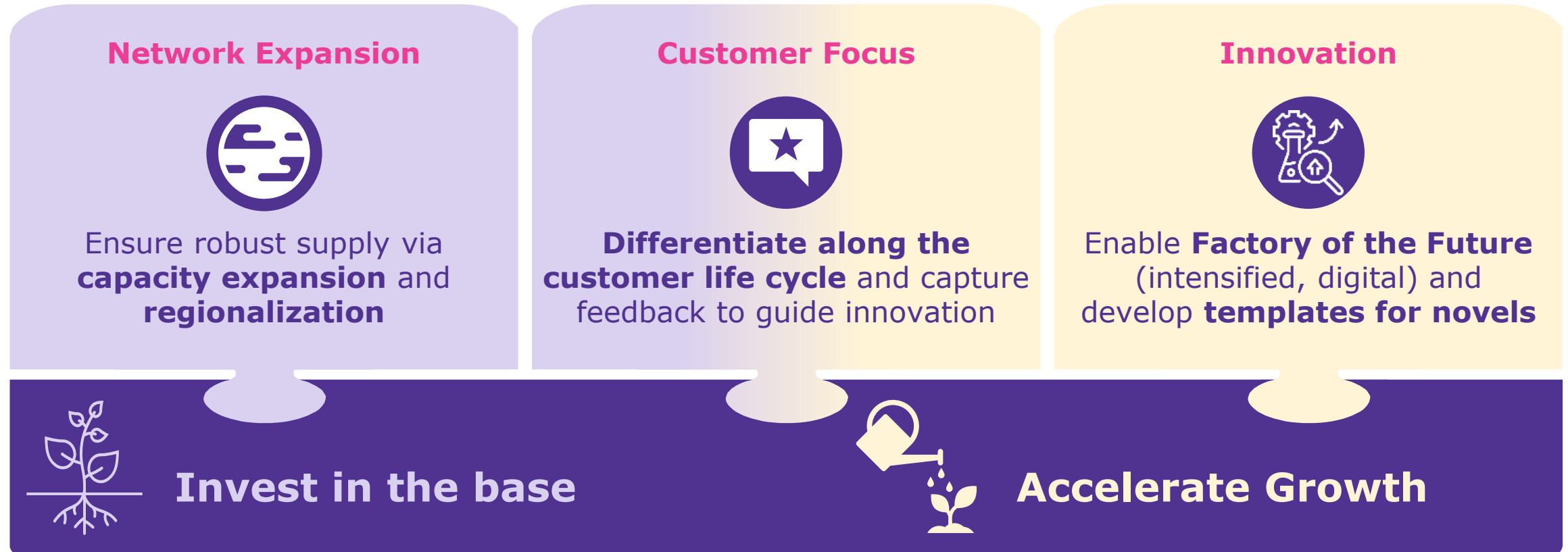
**Attractive market dominated by traditional modalities with higher growth expected in novel modalities amid structural trends and strong pipelines**

Source: internal market models, Evaluate Pharma; <sup>1</sup> Refers to pipeline assets; Acronyms: mAbs = monoclonal Antibodies, Vax = Vaccines, R-Pro = Recombinant Protein, mol = molecule, ADC = Antibody Drug Conjugate, VGT = Viral Gene Therapy, CT = Cell Therapy, mRNA = messenger Ribonucleic Acid, Ph = phase



## Process Solutions – Strategy

# Positioning the business to secure leadership as the market evolves



Network expansion, customer focus, and innovation as **key levers to drive growth**

# Process Solutions – Network Expansion

## Investing >€700 m<sup>1</sup> to increase capacity and create regional network

### Guiding principles

-  **Increase capacity**
-  **Expand regionally**
-  **Mitigate geopolitical risks**
-  **Streamline logistics**

### Investing to expand global network

#### Key growth portfolios

Single Use

Filtration

Cell Culture Media

#### Expansion plans across geographies

NA



Danvers, MA (US)

EU



Molsheim (FR)

APAC



Wuxi (CN)



Jaffrey, NH (US)



Cork (IE)



Darmstadt (DE)



Lenexa, KS (US)

*Sufficient capacity*



Capacity expansion



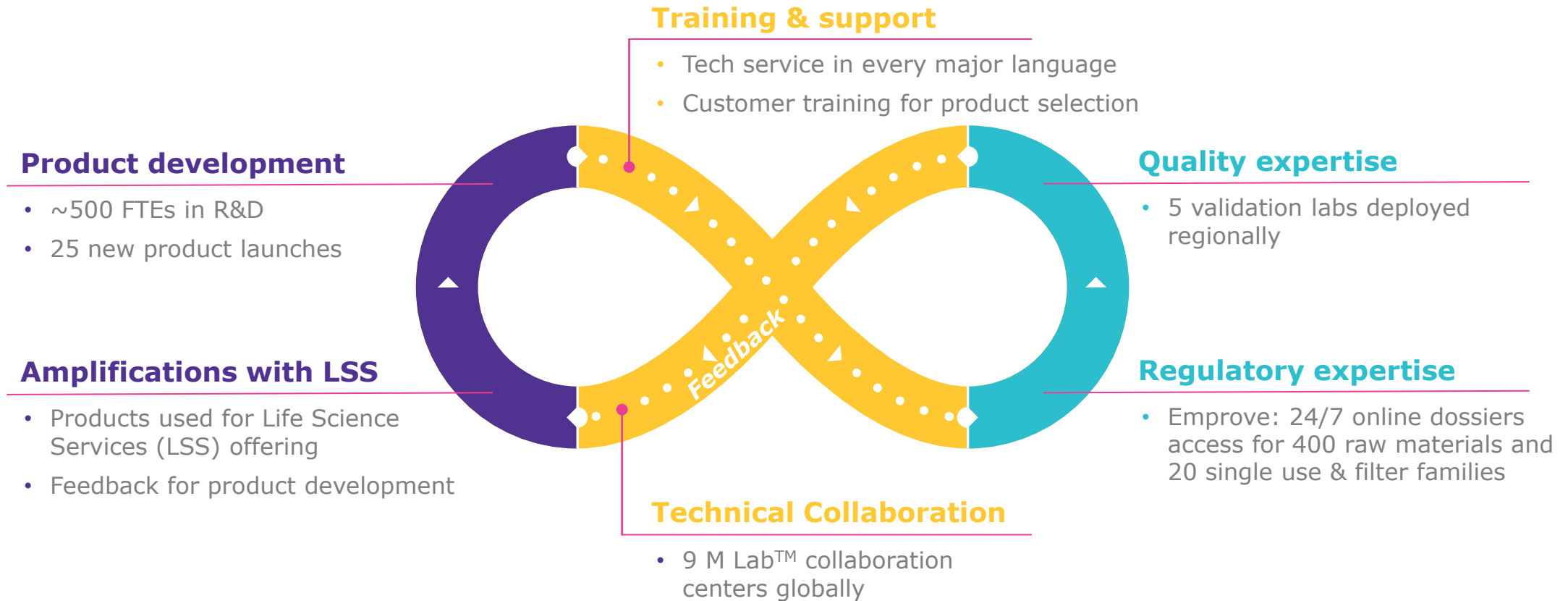
New site

**Capacity additions fueling growth of key portfolios, manufacturing lead times improving**

<sup>1</sup> Publicly announced capacity expansions since early 2021

## Process Solutions – Customer Focus

# Differentiating along the customer life cycle and capturing feedback to guide innovation









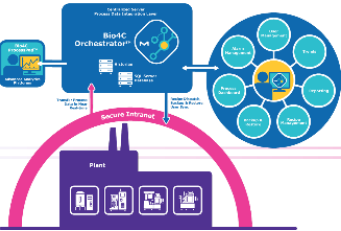
**Holistic customer engagement** an important cornerstone to **continued success** in a **dynamic market environment**

All data based on H1 2022 except product launches based on 2021



# Process Solutions – Innovation

## Enabling customers' transformation towards Factory of the Future

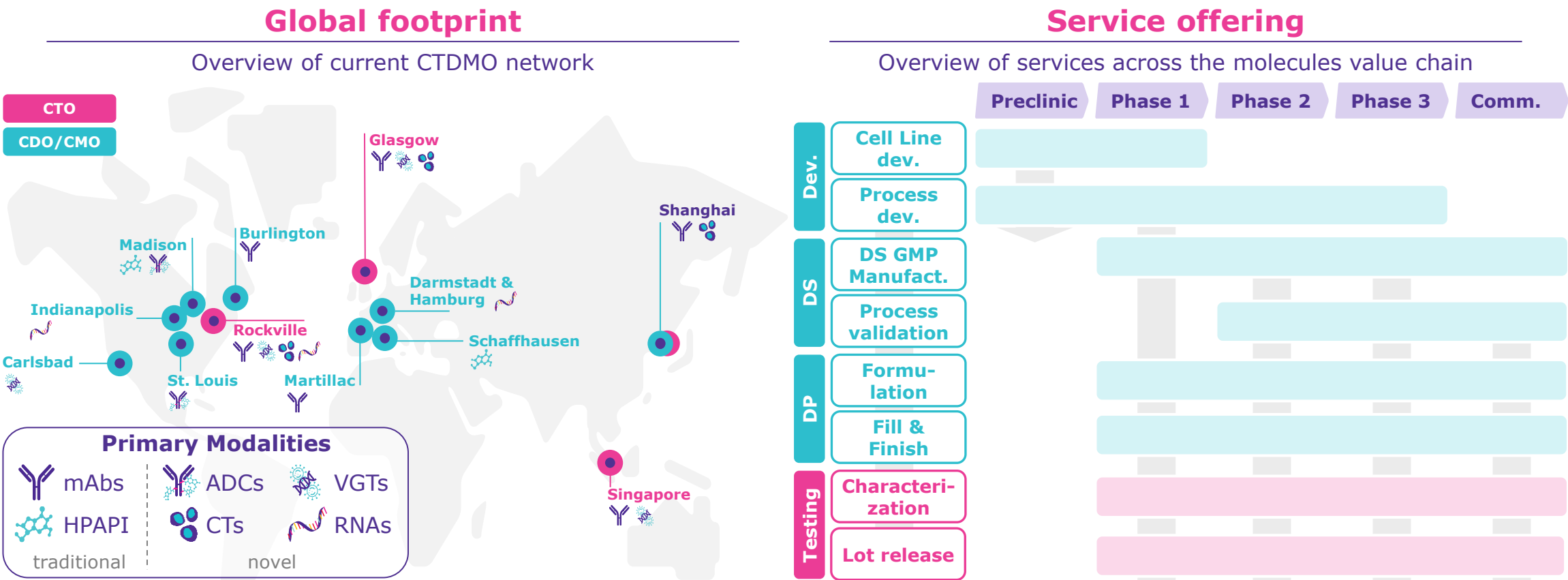
Customer goals	<b>Today</b> <i>mAbs: Templated process</i> <i>Novels: Need for template</i>	<b>Future</b> <b>Facility of the Future</b> <i>(mAbs leading, finally all modalities)</i>	Innovation examples
Execute the process	Batch mode	Intensified/continuous	 Cellicon Perfusion Filter & Control Platform  Cellvento® HEK Medium  Natrix® Q Micro
Monitor the process	Manual, offline testing	Real-time release testing	 Procellics-Raman Spectroscopy  MAST – auto sampling system
Control the process	Some automation	Predictive & Adaptive	 Bio4C Orchestrator
Optimize the process	Paper-based, siloed	Cloud-based, prescriptive	 Process Pad & Orchestrator

 **Cutting-edge innovation amplified by technology bolt-ons and partnerships paving the way towards sustained leadership**

Acronyms: mAbs = monoclonal Antibodies, HEK = Human Embryonic Kidney

# Life Science Services – Footprint and Capabilities

## Global network with the ability to offer services across all stages of the molecules value chain









Global CTDMO network with presence across key growth markets, offering scalable solutions and differentiated services across six modalities

# Life Science Services – Business Overview

## A multi-modality service offering across traditional and novel modalities

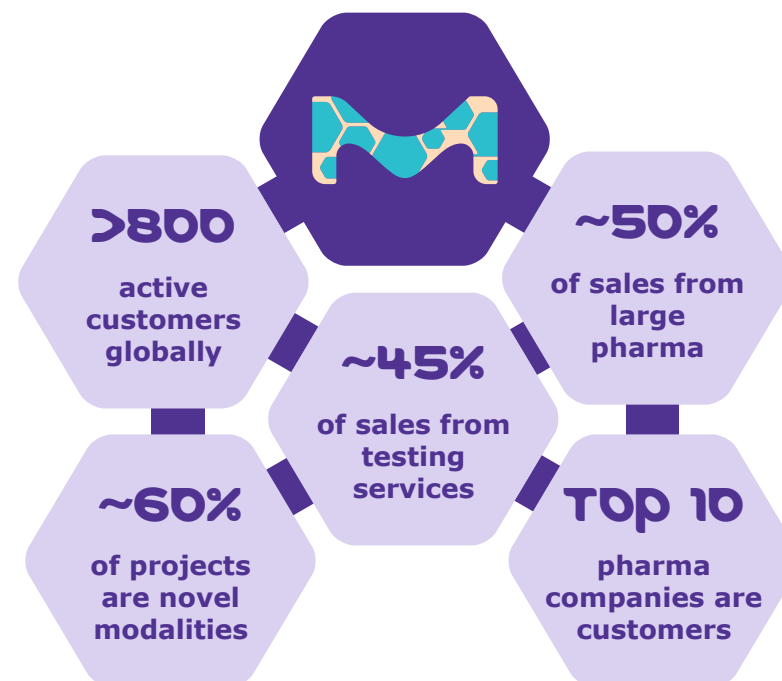
### Capabilities

Serving customers along their molecule journey

	CDMO			CTO		
	Dev.	DS	DP	Testing	Focus	Value proposition
 <b>Small molecules</b>	✓	✓			Complex and high potent	Flow chemistry and highly potent synthesis
 <b>mAbs</b>	✓	✓		✓	Single use molecules	Template speed and flexibility in single use
 <b>ADCs</b>	✓	✓		✓	Potent conjugates	Integrated supplier: payload to conjugation
 <b>VVs</b>	✓	✓	✓	✓	All virus types	Capacity and scale, with full service offering
 <b>mRNA</b>	✓	✓	✓	✓	mRNA	One-stop shop and technical track record
 <b>CTs</b>				✓	All cell types	Capacity and expertise across cell types

### Snapshot

Business in numbers<sup>1</sup>



**Well established CTO with comprehensive service offering and emerging CDMO focused on selected growth pockets with unique value proposition**

✓ Available    ✓ Limited Services    <sup>1</sup> Based on FY 2022    Acronyms: CTO = Contract Testing Organization, CDMO = Contract Development Manufacturing Organization, Dev. = Development, DS = Drug Substance, DP = Drug Product, mAbs = monoclonal Antibodies, ADCs = Antibody Drug Conjugates, VVs = Viral Vectors, mRNA = messenger Ribonucleic Acid, CTs = Cell Therapies

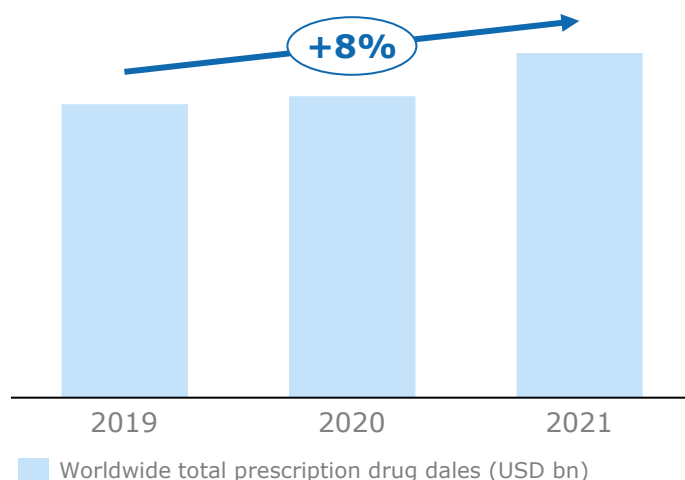


# Life Science Services – Market

## Growing end-market with emerging biotechs driving the increasing pipeline of novel modalities

### Pharma market

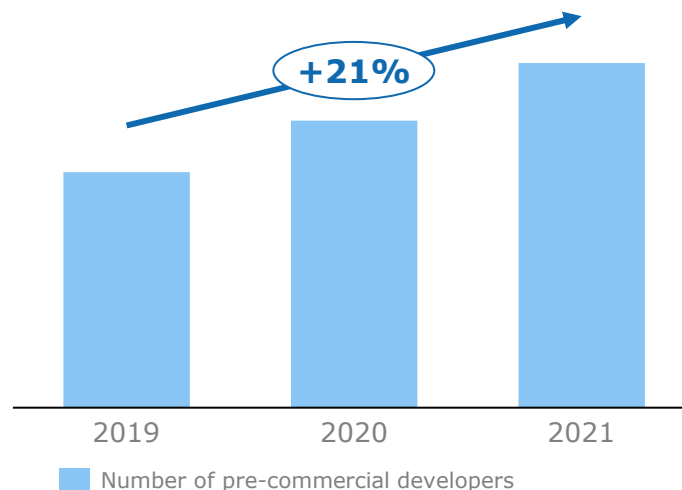
Pharmaceutical market:  
growing steadily at 8%



**High single-digit growth  
expected to continue  
until 2026**

### Customer type

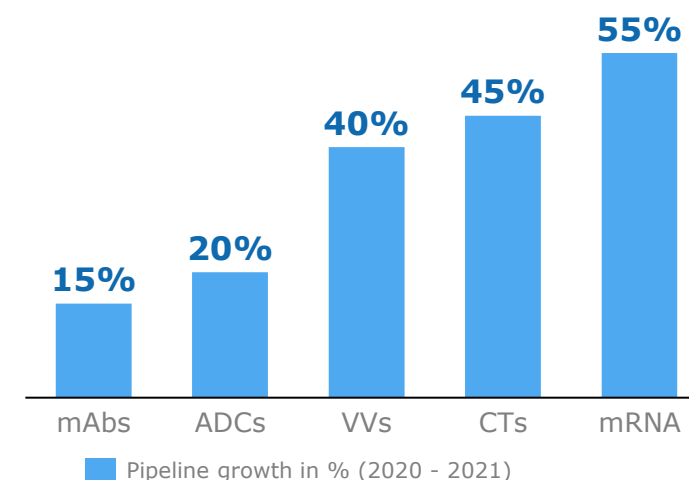
# of customers: emerging biotechs  
growing fast and driving the pipeline



**Rising number of emerging  
biotechs with typically limited  
inhouse capabilities**

### Novel modalities

# of molecules: pipeline of novel out-  
growing traditional modalities



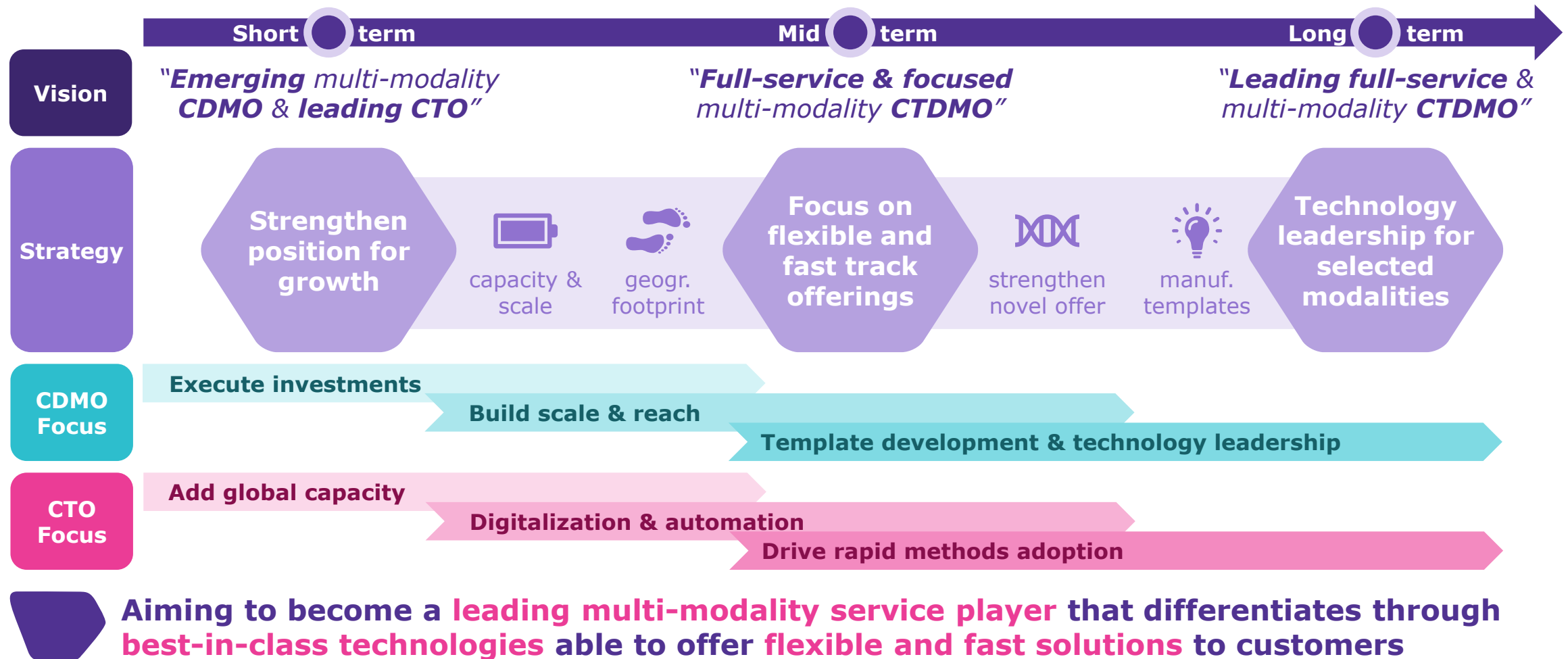
**Lack of standard templates  
for novel modalities drives  
outsourcing needs**

Sources: Left: Evaluate Pharma – World Preview 2021 Outlook to 2026; Middle: Evaluate Pharma 2022 pipeline data; Right: Evaluate Pharma custom pipeline database



# Life Science Services – Ambition

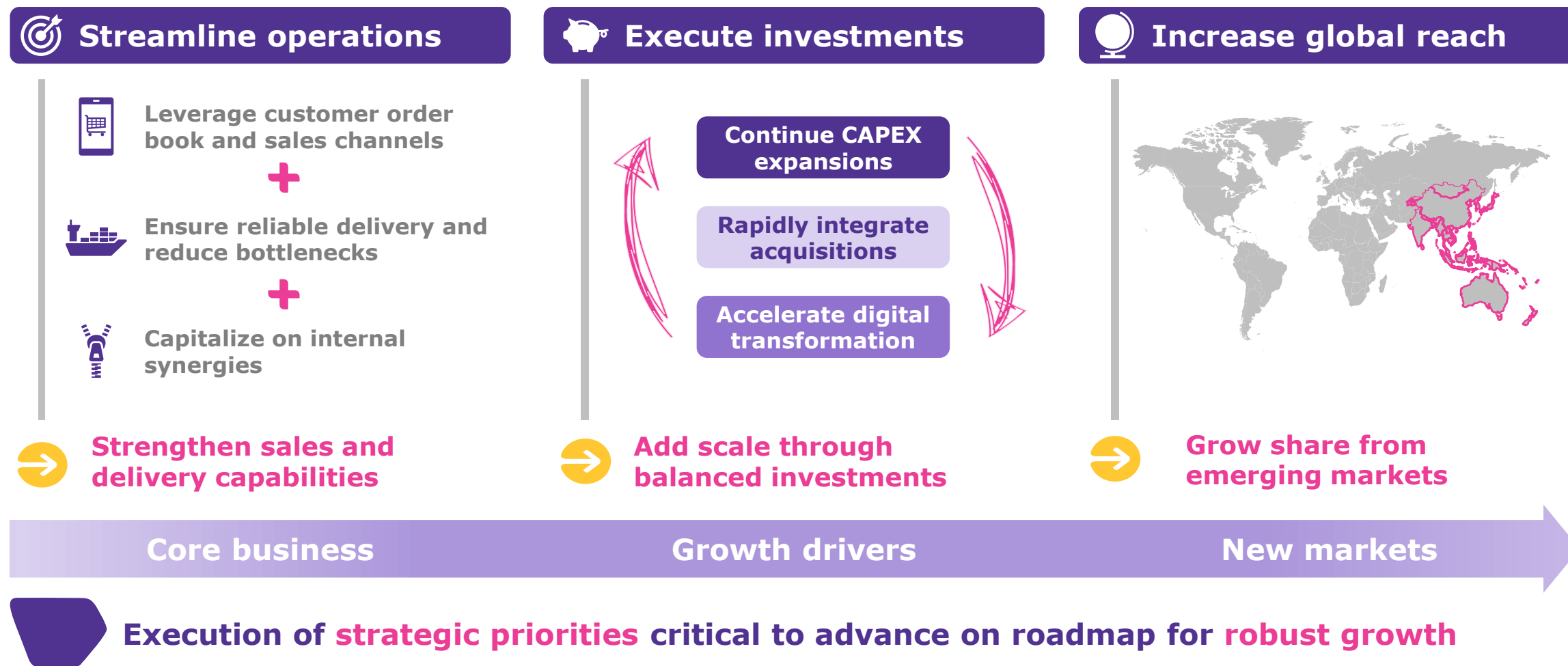
**Existing business the foundation for growth, ambition based on technology leadership across modalities**



Acronyms: CDMO = Contract Development Manufacturing Organization, CTO = Contract Testing Organization, CTDMO = Contract Testing Development Manufacturing Organization






# Life Science Services – Priorities

**Focusing on operations, investments and new markets to strengthen our position for growth**



# Science & Lab Solutions – Portfolio

**Broad portfolio consisting of five specialized portfolio units and franchises enabling a presence across workflows**

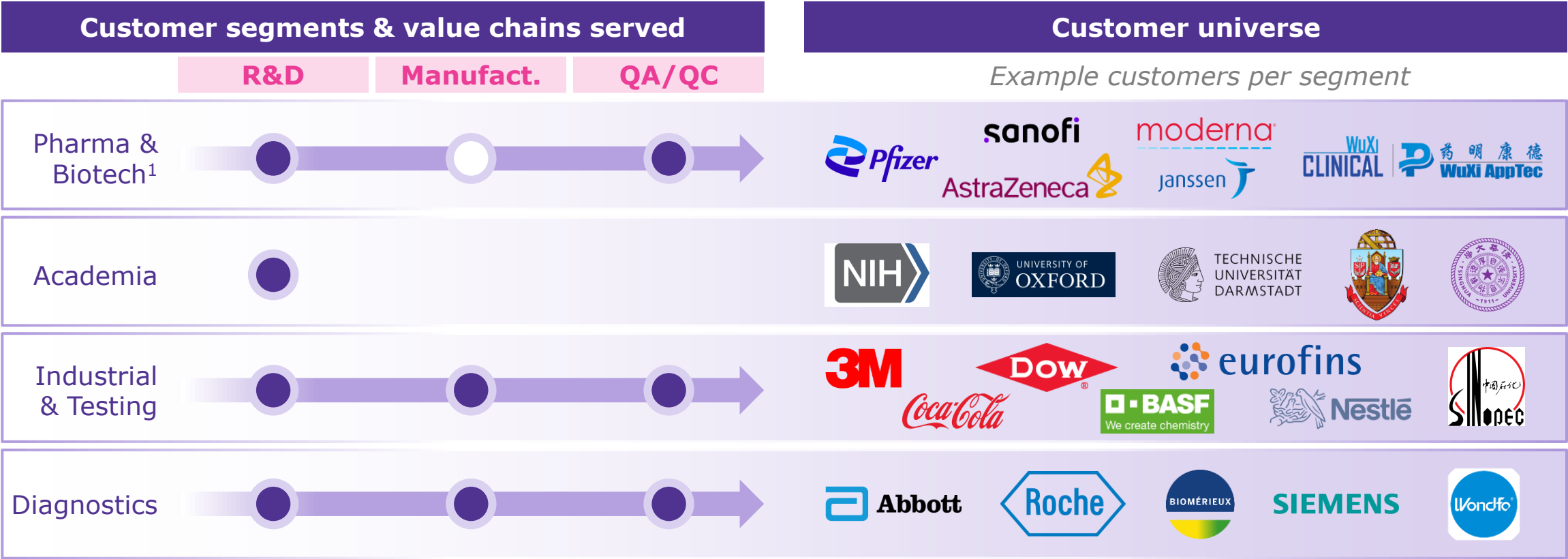
	Chemistry	Biology	DxRm	BioM	Lab Water
	Full value chain offers across segments enabled by technology-centric portfolio units				
Key products Not comprehensive	<ul style="list-style-type: none"> <li>Specialty chemicals</li> <li>Chrom. &amp; solvents</li> <li>Reference materials</li> <li>Digital solutions (Lanexo™, Synthia™)</li> </ul> 	<ul style="list-style-type: none"> <li>Multiplex kits</li> <li>Filtration tools</li> <li>Cell biology kits</li> <li>Antibodies</li> </ul> 	<ul style="list-style-type: none"> <li>Lateral flow membrane</li> <li>Critical raw materials</li> <li>Oligos &amp; proligos</li> <li>Custom products &amp; solutions</li> </ul> 	<ul style="list-style-type: none"> <li>QC and sterility testing instruments and kits</li> <li>Filters and plates</li> <li>Culture &amp; growth media</li> </ul> 	<ul style="list-style-type: none"> <li>Lab water systems</li> <li>Consumables</li> <li>Services</li> </ul> 
Sales split	30% - 40%	25% - 35%	10% - 20%	5% - 15%	5% - 15%

**Trusted, innovative brands with podium positions – driven by high-quality, customer- and application-focus, and deep sales expertise**

Acronyms: DxRm = Diagnostics & Regulated Materials, BioM = Biomonitoring, Chrom. = Chromatography, QC = Quality Control

# Science & Lab Solutions – Customers and Value Chains

## Serving full value chains of diverse customer segments with key customers including global leaders in their fields

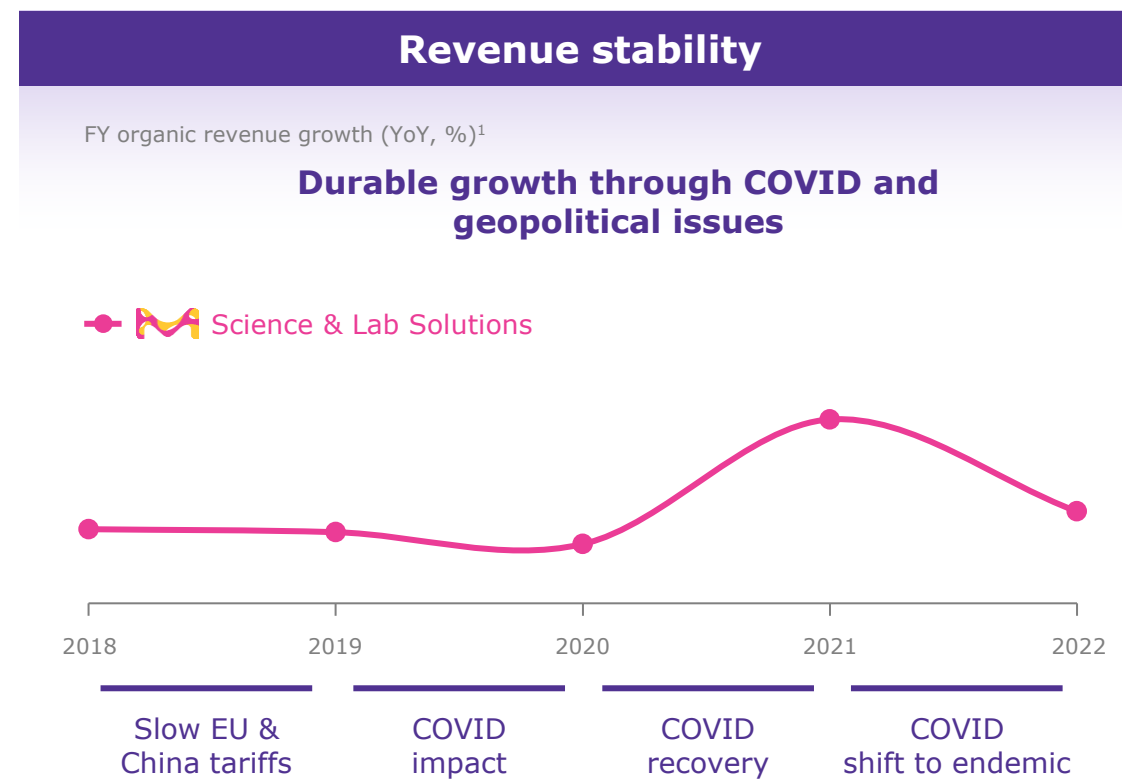
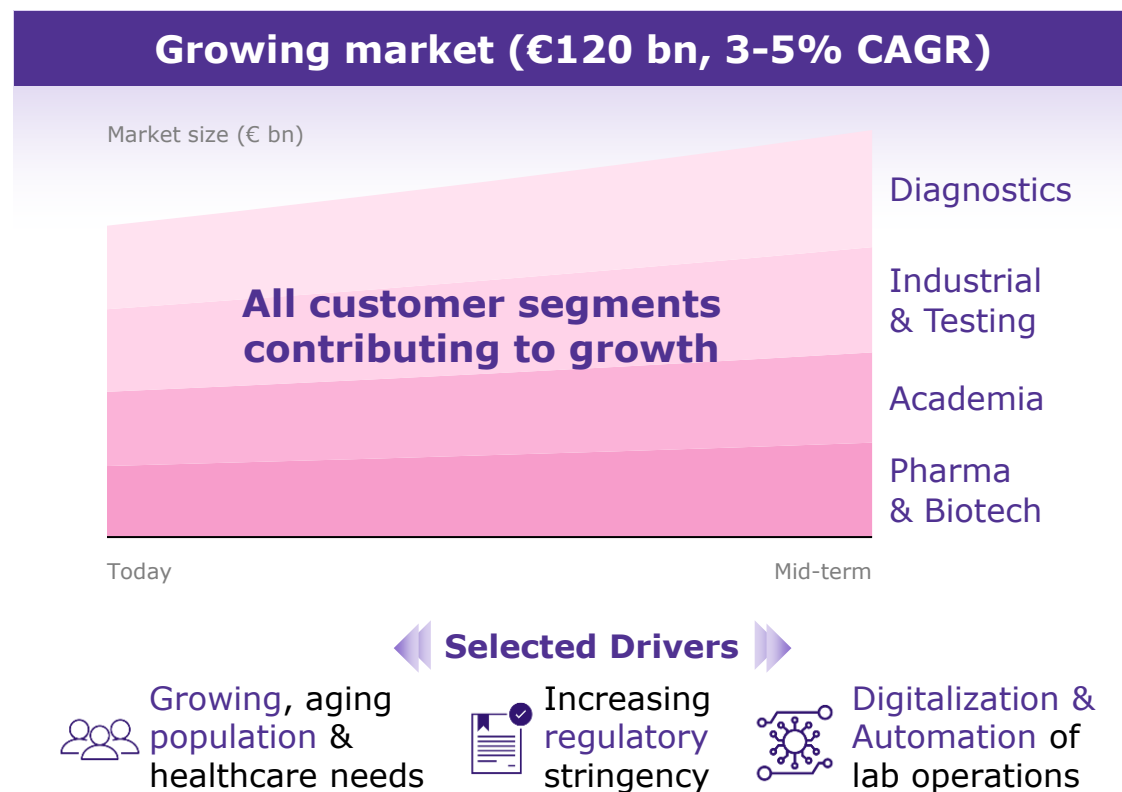


 **Innovative portfolio and broad footprint enabling to serve customers across value chains meeting needs of leading companies and organizations**

<sup>1</sup> Biopharma manufacturing applications addressed by Process Solutions and Life Science Services; Acronyms: R&D = Research & Development, QA/QC = Quality Assurance/Quality Control

# Science & Lab Solutions – Market and Performance

## Serving a large, resilient and growing market – delivering stable revenue performance



















**Serving diverse, attractive customer segments with robust growth from secular drivers protects from market shocks, fostering reliable organic growth**

<sup>1</sup> 2018-21 growth rates based on weighted average of former Research Solutions and Applied Solutions business units

# Science & Lab Solutions – Key Trends and Initiatives

## Addressing key industry & macroeconomic trends with innovative solutions and targeted investments

Secular trends	Industry trends			Macroeconomic trends		
	 <b>Digitalization &amp; Automation</b>	 <b>Regulatory stringency</b>	 <b>Sustainability</b> across value chain	 <b>Population</b> growth & ageing	 <b>Localization</b> in emerging mkts.	 persistent high <b>inflation</b>
<b>SLS offering &amp; plans</b>						
	<b>Solutions</b> automating <b>QA/QC</b> & improving <b>lab productivity</b> 	Broad <b>QA/QC portfolio</b> and <b>high-quality raw materials</b> 	<b>Integration of sustainability</b> into all products & operations 	Investment in <b>capacity</b> to meet demand <b>across portfolios</b> 	<b>Balanced global footprint;</b> regional growth initiatives 	<b>Reputation &amp; quality</b> support price increases; synergies contain costs 
<b>Most relevant customer segments</b>	<b>Pharma &amp; Biotech</b> <b>Industrial &amp; Testing</b>	<b>Pharma &amp; Biotech</b> <b>Diagnostics</b>	<b>All segments</b>	<b>All segments</b>	<b>All segments</b>	<b>All segments</b>



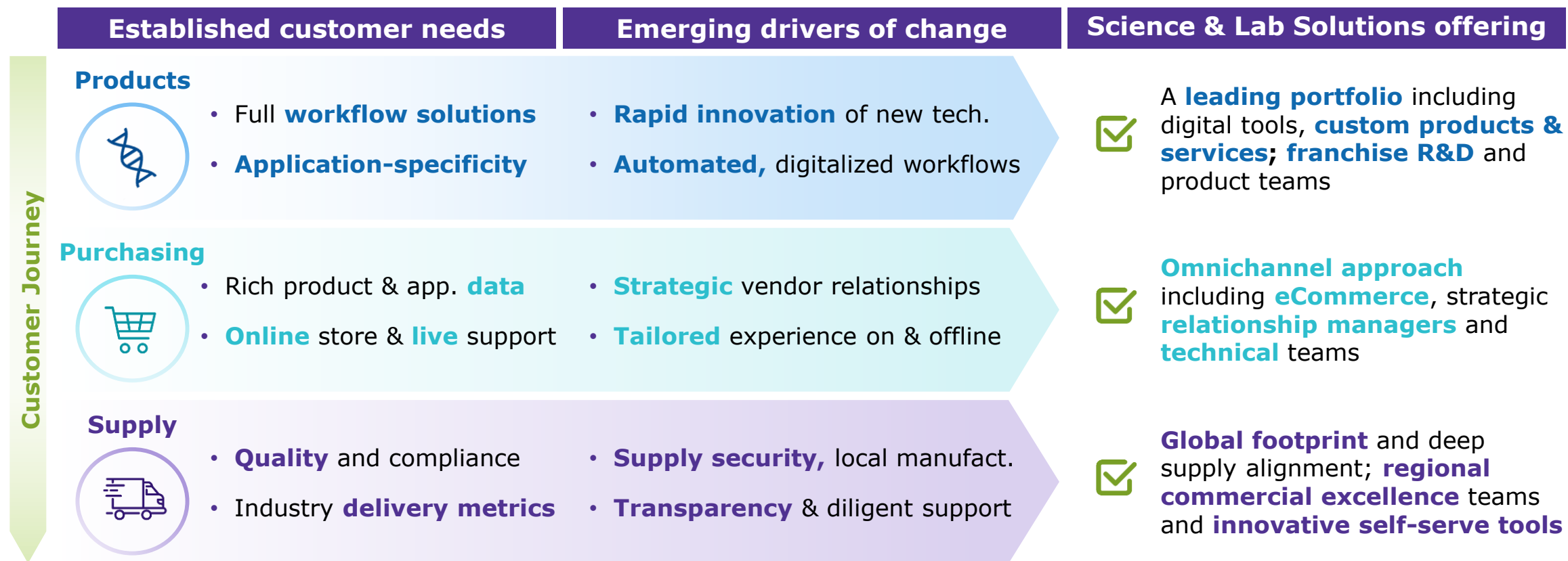
**Well positioned to deliver durable growth in a changing market environment**

Acronyms: SLS = Science & Lab Solutions, QA/QC = Quality Assurance/Quality Control



# Science & Lab Solutions – One-Stop Shop Approach

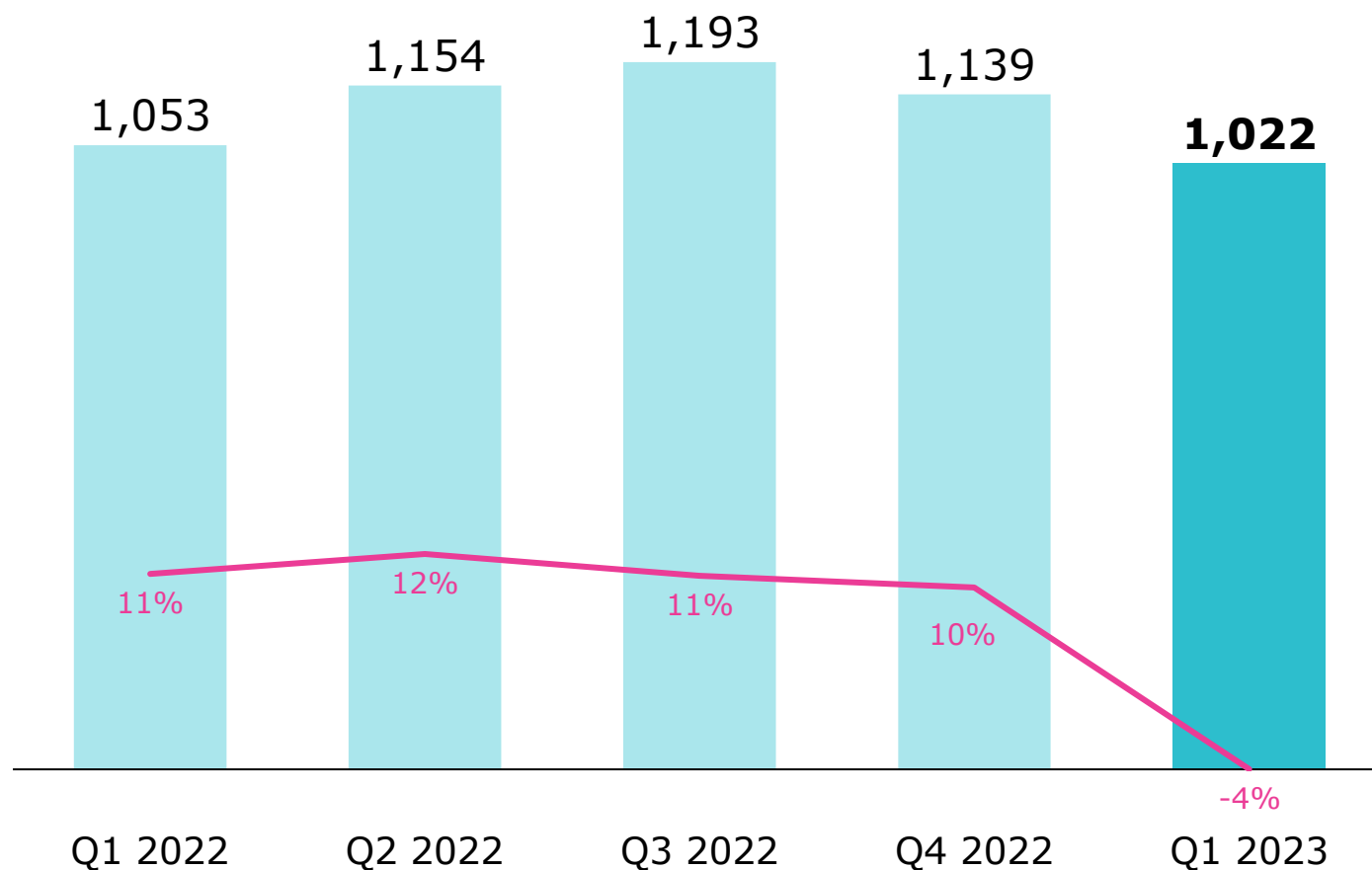
## Holistic offering to meet customer needs on their journey



**Well equipped to delight customers and strengthen position further**

# Process Solutions: Core business up despite adverse inventory dynamics

Sales development [€m] - org. growth [%]

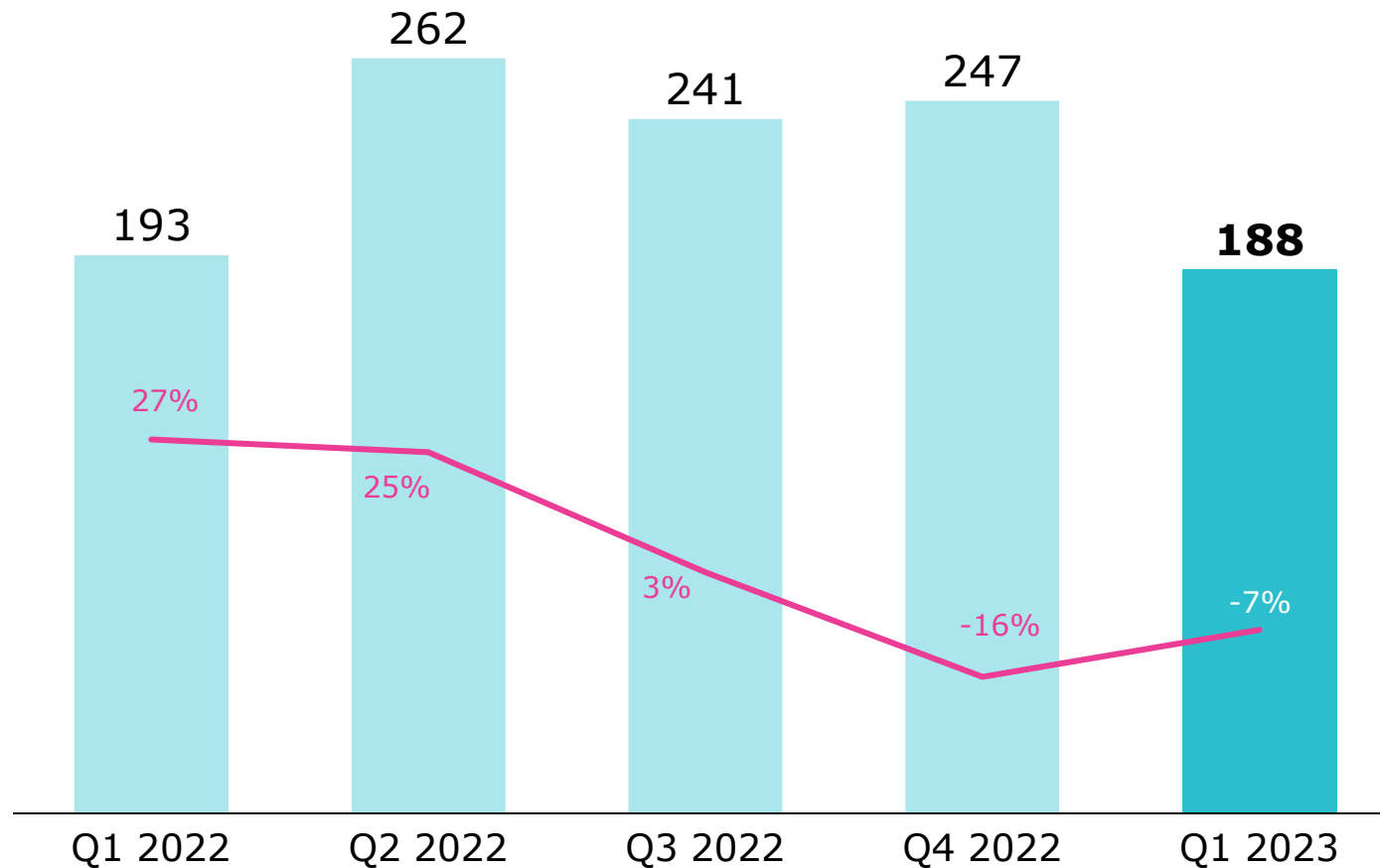


- **Temporary slowdown in core growth to +3% org.** on adverse inventory dynamics
- **Process Solutions therefore down -4% org.** amid strong COVID-19 headwind
- Improved lead times, new working capital initiatives **mainly at our large customers**
- **Over the course of Q1**, these new dynamics became visible
- **Book-to-bill remains slightly below 1** in line with our expectation of hovering below 1 for a few quarters
- **NA and APAC down**, Europe and other regions growing



# Life Science Services: Strong core growth offset by decline in COVID sales

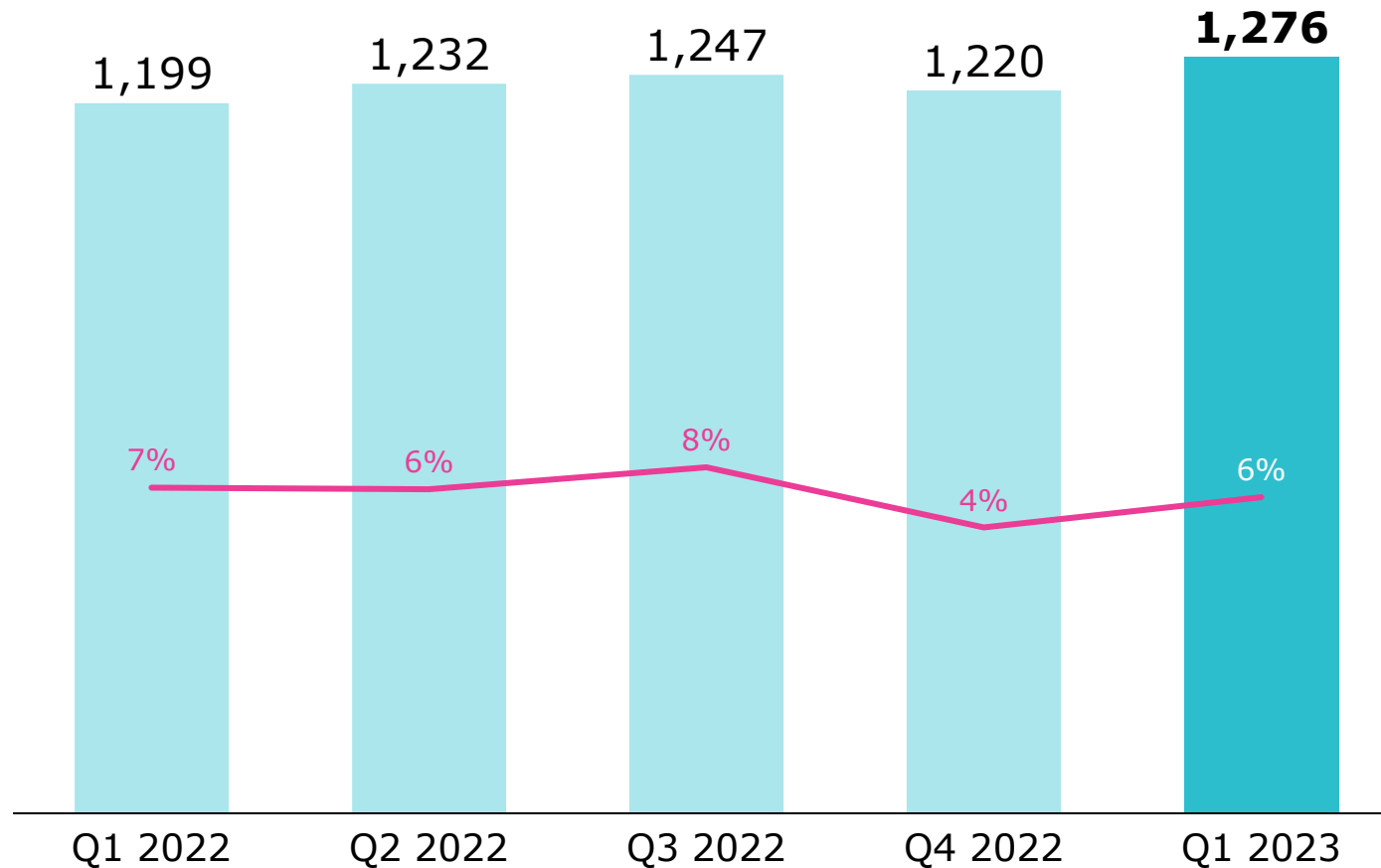
Sales development [€m] - org. growth [%]



- **Life Science Services sales down -7% org.**, very strong growth in the core offset by sharp decline in COVID-related sales
- **COVID-19 business down to single-digit €m amount** amid lower demand for COVID vaccines
- **Core business up +35% org.**, supported by both contract testing and CDMO
- **CDMO in the core very strong** amid healthy underlying trends and positive batch phasing
- **NA up, Europe and APAC down**, other regions only contribute minimally to sales

# Science & Lab Solutions: Healthy growth performance due to core business

Sales development [€m] - org. growth [%]



- **Strong core business drives +6% org. sales performance** in Q1, supported by pricing
- **Robust performance** across portfolios, regions and customer segments
- **COVID-19 business down YoY**, but only with a slight negative impact of -1%
- All franchises growing; **double-digit growth in Lab Water**; BioMonitoring up high-single digits
- **Growth in all regions** with Europe as key driver; NA and APAC with mid single-digit growth

# Life Science Q1: Robust org. growth of +7% in core business, with Process Solutions core at +3% org.; sharp decline in COVID-19 business as expected

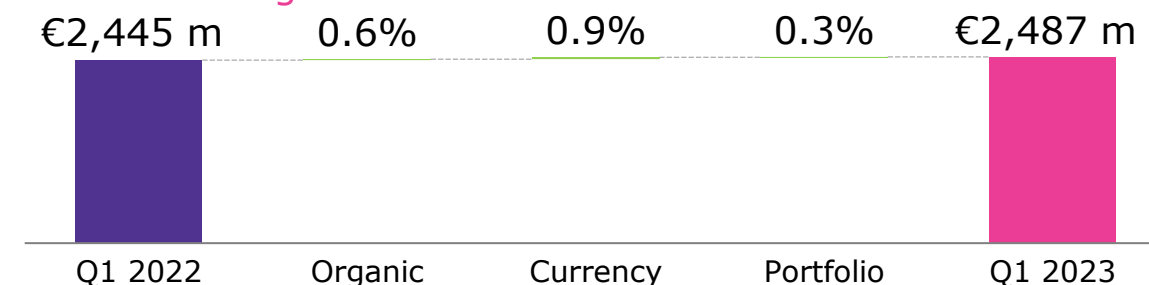
## Life Science P&L

[€m]	IFRS		Pre	
	Q1 2022	Q1 2023	Q1 2022	Q1 2023
Net sales	2,445	2,487	2,445	<b>2,487</b>
M&S*	-552	-568	-552	<b>-569</b>
Admin	-91	-105	-84	<b>-94</b>
R&D	-88	-104	-88	<b>-104</b>
EBIT	723	672	730	<b>689</b>
EBITDA	922	884	-	<b>-</b>
EBITDA pre	927	901	927	<b>901</b>
(in % of net sales)	37.9%	36.2%	37.9%	<b>36.2%</b>

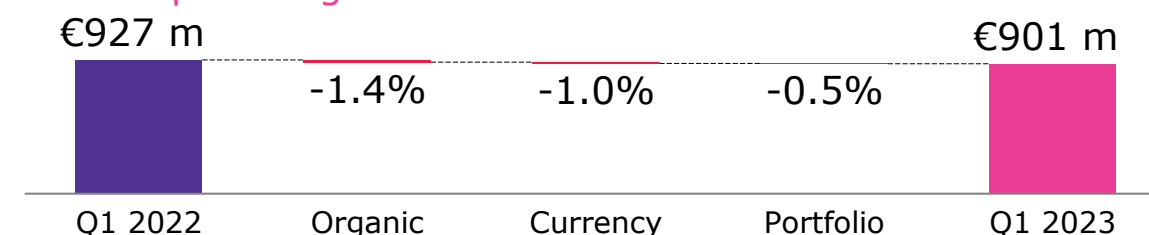
## Comments

- Process Solutions: +3% org. growth in core business partially offsets sharp COVID-19 business decline; PS sales down -4% org.
- Life Science Services: Strong performance in core business (+35% org.), pronounced COVID-19 headwinds lead to decline of -7% org.
- Science & Lab Solutions: +6% org. growth driven by strong core business (+7% org.) with slight headwinds from fading COVID-19
- M&S slightly up in absolute terms mainly due to FX and about stable in % of sales; higher R&D in % of sales due to ongoing investments in high growth & emerging segments, e.g. novel modalities
- Temporary uplift in gross profit supported by production cost efficiencies
- EBITDA pre down slightly by -1% org. on lower COVID-19 sales and strategic growth investments, e.g. increasing capacities in PS and CDMO

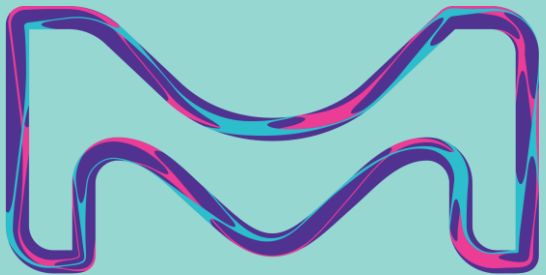
## Net sales bridge



## EBITDA pre bridge



healthcare



# Healthcare - R&D Roadmap

## Building on R&D focused leadership



**focused  
leadership**

### Focus areas of internal innovation

#### Underlying biology



- DDR
- Apoptosis
- Innate immunity
- T-cell modulation

#### Therapeutic areas



- Neuroinflammation
- Multiple Sclerosis
- SCCHN
- Colorectal cancer

#### Technologies



- Track record in NCEs, NBEs
- Antibody drug conjugates
- Protein degradation
- Bi-specifics



Minimize risks by decorrelation,  
partnerships and co-development

**Acronyms:** **DDR**=DNA damage response; **SCCHN**=Squamous cell carcinoma of head and neck; **NCEs**=Novel Chemical Entities; **NBEs**=Novel Biological Entities



# Healthcare

## Pioneering patient benefit in MS for > 30 years

**Rebif®**  
(interferon beta-1a)

- Blockbuster **platform therapy**
- Well-established clinical profile
- >1.8m patient-year experiences<sup>1</sup>
- Continued upgrading (pregnancy label, injection devices)



EMA 1998 | FDA 2002  
>100 countries

**MAVENCLAD®**  
cladribine tablets

- Oral **high-efficacy therapy** with unique posology & mode of action<sup>2,3</sup>
- Only product to demonstrate full antibody response to COVID-19 vaccines<sup>4</sup>
- Growing in HE dynamic market
- >40,000 patients<sup>1</sup>



EMA 2017 | FDA 2019  
84 countries

**Evobrutinib**  
BTKi

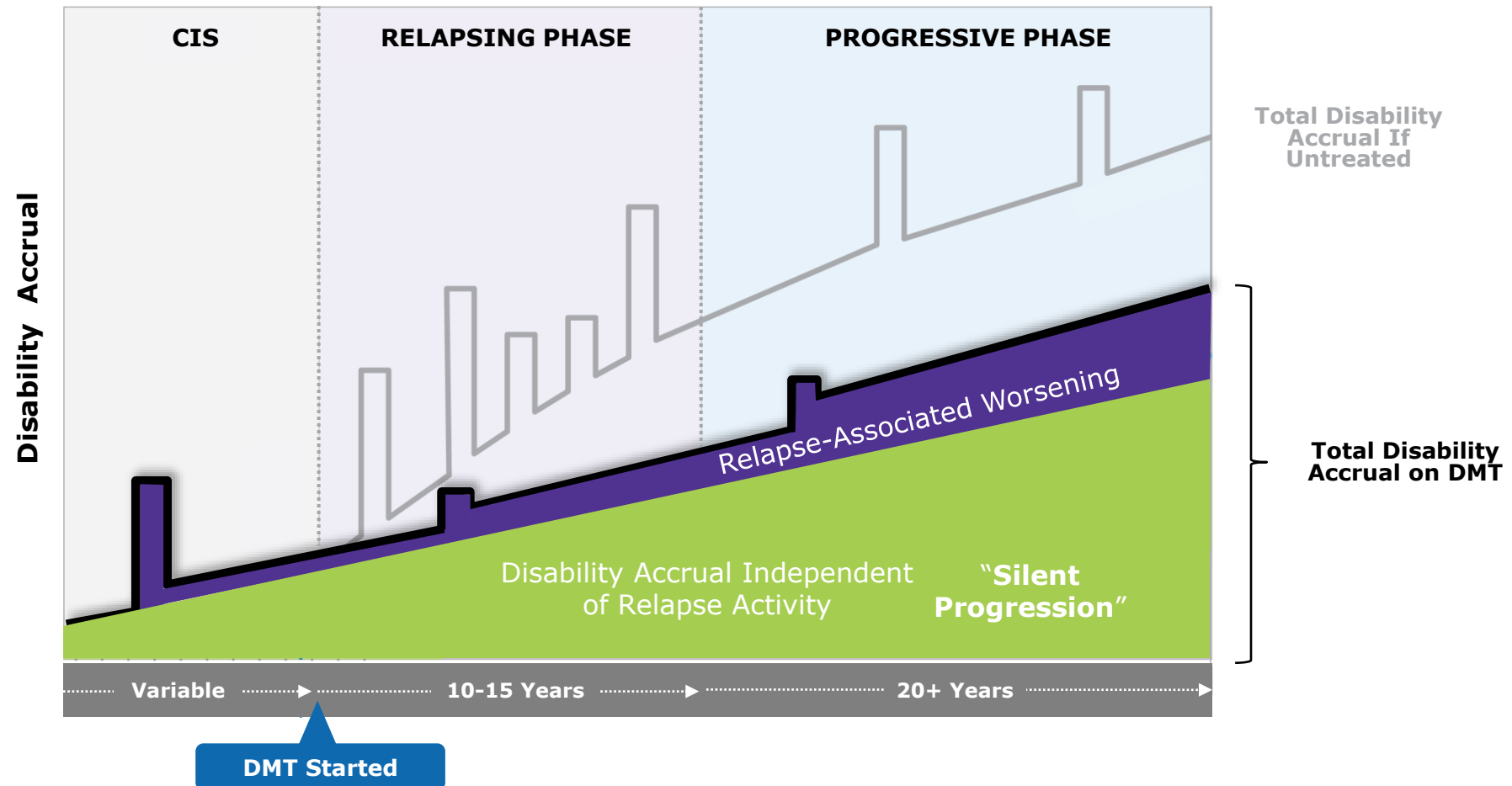
- Designed for **best-in-class efficacy**<sup>5</sup>
- Full covalent binding and dosing regimen expected to enable constant, near complete BTK occupancy<sup>6</sup>
- Dual mode of action targeting both B-cells and immune cells in the CNS and periphery<sup>6,7</sup>



Phase 3 Clinical Development

## N&I - Evobrutinib

**Silent progression - disability accumulation despite DMT in the absence of focal MRI lesions and relapses is a persistent critical unmet need in MS**



**Acronyms:** CIS=clinically isolated syndrome; DMT=disease-modifying therapy; MRI=Magnetic resonance imaging; MS=Multiple Sclerosis  
Adapted from Hauser SL, Cree BAC. *Am J Med.* 2020;133(12):1380-1390.

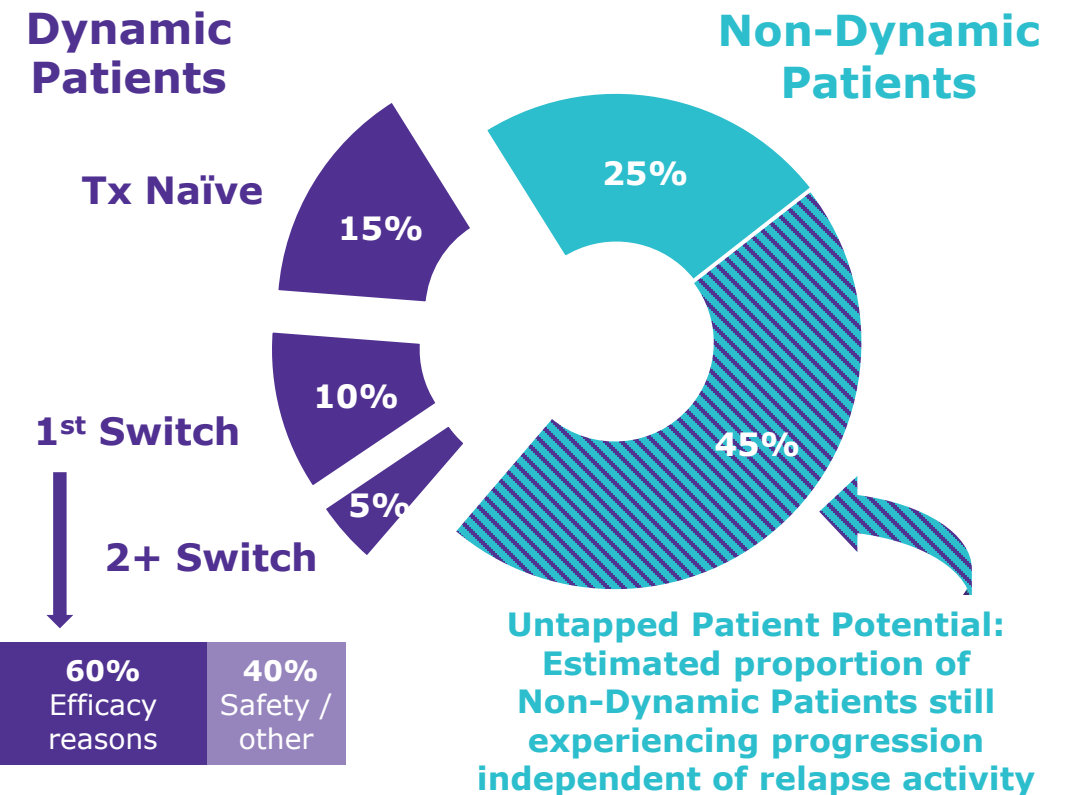
## N&I - Evibrutinib

# Evibrutinib could be the first to address significant unmet needs in RMS by tackling multiple drivers of disability progression

### Evibrutinib could address Significant Unmet Needs in RMS

- **Majority of RMS patients continue to accumulate disability** independent of relapse activity due to inflammation within the CNS that **current treatments do not fully address**
- **Optimal patient benefit is achieved** by addressing both peripheral & inflammation within the CNS at the **earliest stages of the disease**
- **Group developed Evibrutinib, a non-B cell depleting BTKi, for optimal efficacy and safety** via the largest Ph2 dose-finding study of any BTKi investigated in RMS
- **Aspire for Evibrutinib to be a market leader** due to high efficacy, addressing both relapses and drivers of PIRA, and a well-characterized safety profile

### Treated RMS Patients (US RMS; 235k Treated Pts)\*



**Acronyms:** RMS: Relapsing-remitting MS | PIRA: Progression Independent of Relapse Activity

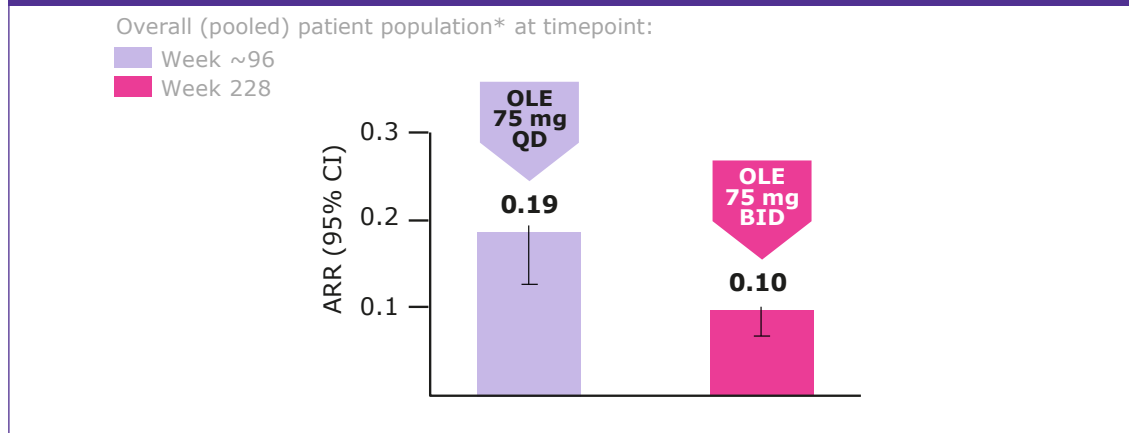
\*Chart based on estimated RMS patient populations in the US sourced from IQVIA & IPSOS; Non-dynamic patient estimate informed by:  
1. Lublin F et al. BRAIN 2022;145:3147-3161 2. Portaccio E et al. Brain 2022;00:1-10; 3. Bayas A et al. Mult Scler Relat Disord 2022;68:104166, 4. Ipsos US MS Monitor Report, Q2 2022, N = 111 physicians, 826 RMS patient records



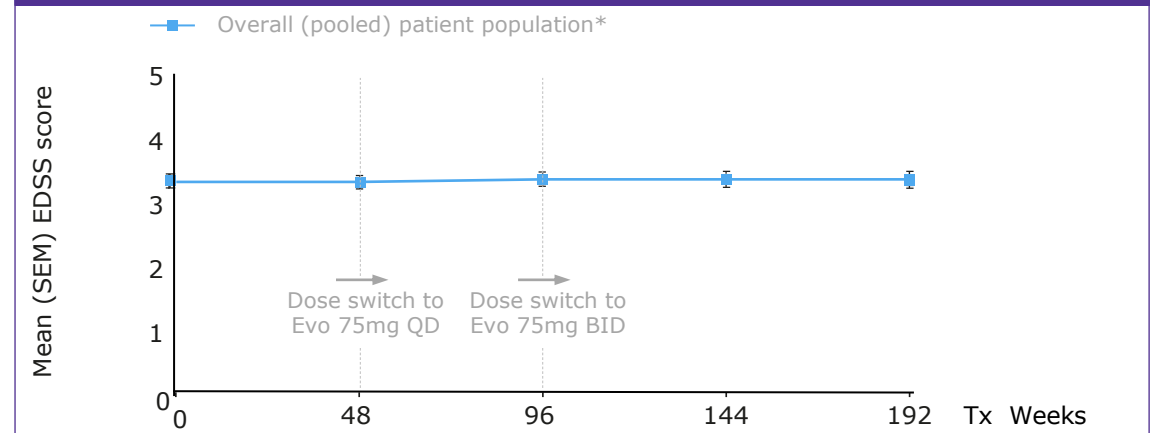
# N&I - Evobrutinib

## Largest and longest Phase II dataset supports dual efficacy in RMS for Evobrutinib

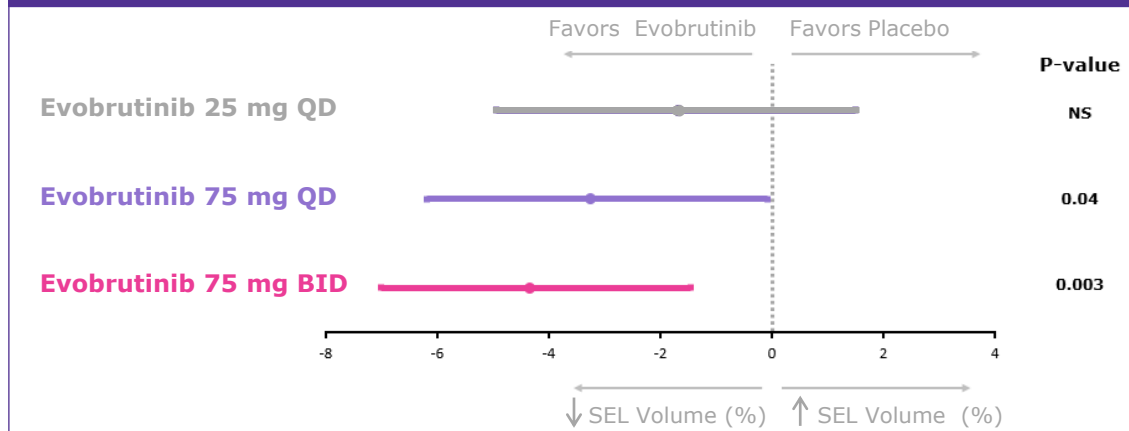
### Long-term (up to Week 228) Control of Relapses in Ballpark of anti CD20's<sup>1</sup>



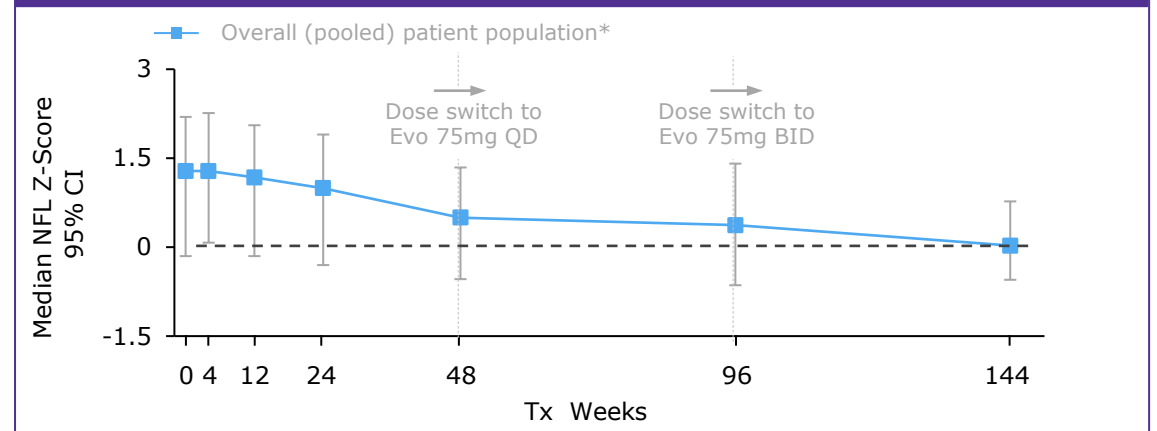
### Stable EDSS over Time (up to Week 192)<sup>2</sup>



### First to Show Reductions in SEL Volume, a Marker for PIRA<sup>3</sup>



### Complete Reduction of sNFL, a Marker for Neuronal Injury<sup>4</sup>



**Acronyms:** **ARR:** Annualized relapse rate | **BID:** twice daily dosing | **DBP:** Double blinded period | **EDSS:** Expanded disability status scale | **QD:** once daily dosing | **NfL:** Neurofilament light polypeptide | **OLE:** Open label extension | **SEL:** Slowly Expanding Lesions | **PIRA:** Progression Independent of Relapse Activity | **sNFL:** Serum neurofilament light chain

\*Five treatment arms during DBP (placebo with switch to Evobrutinib 25mg QD after 24 weeks; Evobrutinib 25mg QD; Evobrutinib 75mg QD; Evobrutinib 75mg QID; Dimethyl fumarate 240mg BID) of 48 weeks with subsequent switch of all patients to Evobrutinib 75mg QD (for a duration of 48.9 weeks) and another switch at week ~96 to Evobrutinib 75mg QID until final readout. DBP treatment arms were pooled for overall population depicted.

1&2. Xavier Montalban et al. ACTRIMS 2023 (Left graph: ARR: DBP and OLE (W0~228) OLE cut-off date: January 28, 2022 | Right graph: Mean EDSS score: DBP and OLE (W0~192) OLE cut-off date: January 28, 2022; 3. Arnold DL et al ECTRIMS 2021 [115]. 3. Arnold DL et al. AAN 2022 [S.14.009] 4. Kuhle J et al. ACTRIMS 2023

From: Q4 2022 Results Presentation – 2023.03.02



# N&I - Evobrutinib

## Summary

### Potential FIC BTK inhibitor designed for BIC efficacy

- **Pioneering development** of breakthrough MoA with potential to rewrite SoC in RMS
- Aiming to **address chronic inflammation and progression between relapse** in addition to **reducing acute inflammation, delivering BIC ARR**
- **Confidence in BIC profile supported by compelling clinical data from our comprehensive PhII program**

- ✓ Best ARR was achieved at BTKO of 95%; ARR of 0.11 at 48 weeks is supportive of BIC efficacy
- ✓ Importantly: Achieving 95% BTKO requires BID dosing of a covalent BTK inhibitor with short half-life due to continuous turnover of BTK protein
- ✓ Evobrutinib concentrations achieved in CSF of RMS patients support an effect on microglia
- ✓ Dose dependant reduction of SEL, a biomarker for disease progression is first evidence of Evobrutinib effect on chronic inflammation and progression
- ✓ De-risked profile based on safety analysis in >1000 patients

- **PhIII studies** (Evolution MS 1&2) **ongoing** (Sept 2021), aiming for read out in Q4 2023

## N&I - Enpatoran

# Targeted inhibition of important lupus mediator aiming for improved efficacy with low infection risk

- **For lupus patients, precise intervention for improved efficacy at low infection risk remains an unmet need in lupus**
- Enpatoran is an oral small molecule inhibitor of TLR7/8
- There is **evolving genetic evidence for TLR7 as a critical driver of lupus pathologies**

**Inhibition of TLR7/8, a important lupus mediator** is expected to result in

- broad inhibition of lupus-relevant effectors
  - with potential for improved efficacy compared to strategies targeting single effectors (pDC, IFN, B-cells)
  - at low risk of infection
- **Compelling MoA, functional and safety data from PhI HV and COVID PhII study**
  - **Innovative PhII in CLE and SLE initiated in H1 2022, aiming for first analysis results by H1 2023**

# N&I - Enpatoran

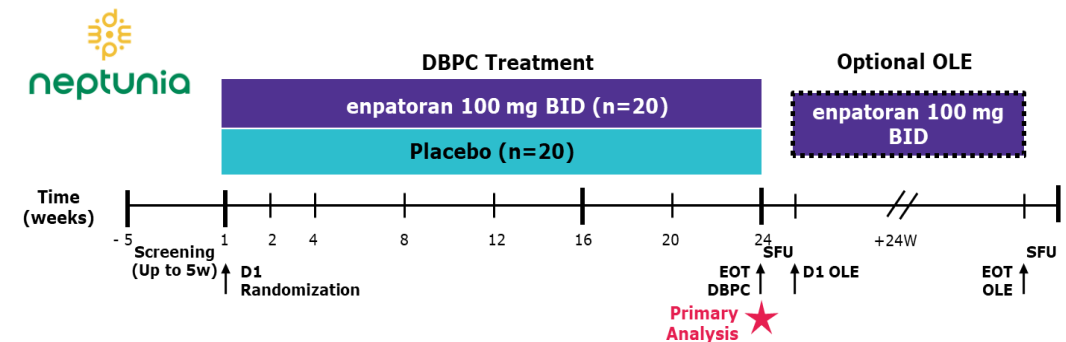
## Expansion into myositis, First-in-Class Potential

### Development Rationale

- **G7 prevalence of 100 – 120K**
- Debilitating autoimmune disease, characterized by muscle weakness, fatigue and disability
- **Patients show lupus-like patterns** of immune activation and TLR7/8 expression
- **High unmet need for effective treatment options:** Large proportion of patients refractory to SoC high dose CS/immunosuppressants



### Neptunia Study



- PoC study in dermatomyositis and polymyositis
- Started in early 2023

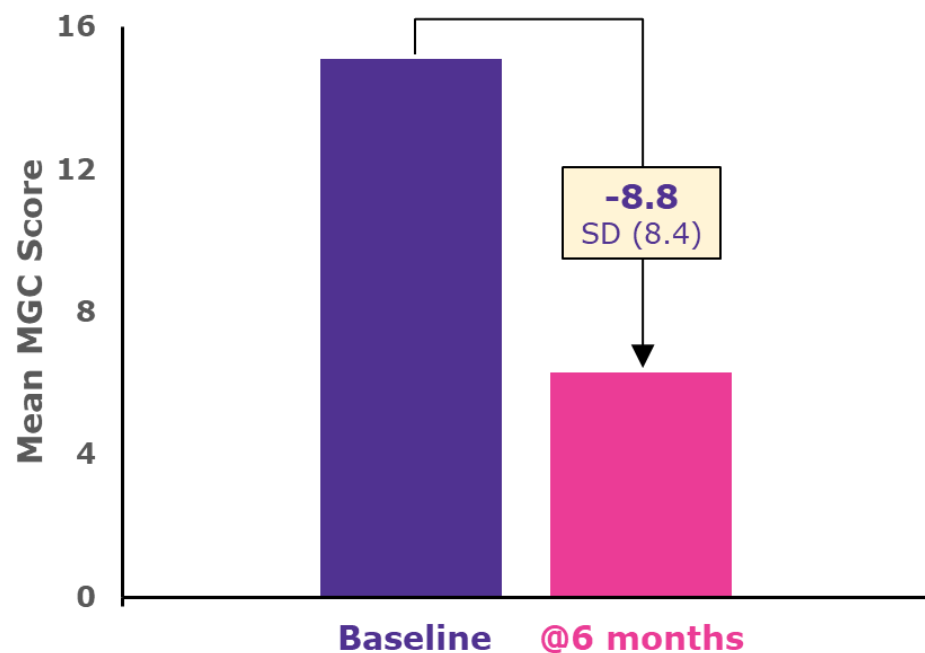
➤ **An oral therapy with novel MoA and potential for a steroid-sparing effect could be transformative for myositis patients**

Acronyms: **PoC**=Proof of Concept; **MoA**=Mode of Action; **SoC**=Standard of care

## N&I - Cladribine

# Cladribine – going beyond multiple sclerosis

### s.c. Cladribine Open Label Study in MG



### Development Rationale

- **Myasthenia gravis** is a neuromuscular disease with high unmet need
- There is **potential for a highly differentiated therapy** that can deliver high efficacy and convenience with an oral short-course treatment cycle
- Initial **supportive clinical data available**



**Clinical study planned for early 2024**

**Acronyms:** SD=Standard Deviation; MG=Myasthenia Gravis  
Redjak K et al. Eur J Neurol 2019. <https://doi:10.1111/ene.14124>.

# Oncology - Xevinapant

## Leveraging our long-lasting expertise in SCCHN

### Treatment paradigm of LA SCCHN

Disease	Treated stage III & IVA/B SCCHN patients (total ~110K patients) <sup>1</sup>					
Segment	Unresected			Resected		
	Cis-eligible	Cis-ineligible		High risk	Int risk	Low risk
			cis-elig.	cis-inelig.		
Current SOC	Cisplatin/ RT	Chemo/RT, Erbix/RT, RT	Cisplatin/ RT	CT/RT, RT	Cisplatin/ RT RT	RT/ no tx
Patients in treatment*	~23K pts	~23K pts	~18 pts	~10K pts	~40K pts	
	1	3		2		
	TrilynX (PhIII) <sup>6</sup> <i>Global, recruiting</i>	External studies and Real-World Data		XRay Vision (PhIII) <sup>6</sup> <i>Global, recruiting</i>		

**>50%**  
with recurrence and/or distant  
metastasis within 2 years of RT-  
based curative  
treatment for  
LA SCCHN <sup>2,3</sup>

**>20yrs**  
of limited progress in SOC,  
including failed trials of  
immunotherapy <sup>4,5</sup>

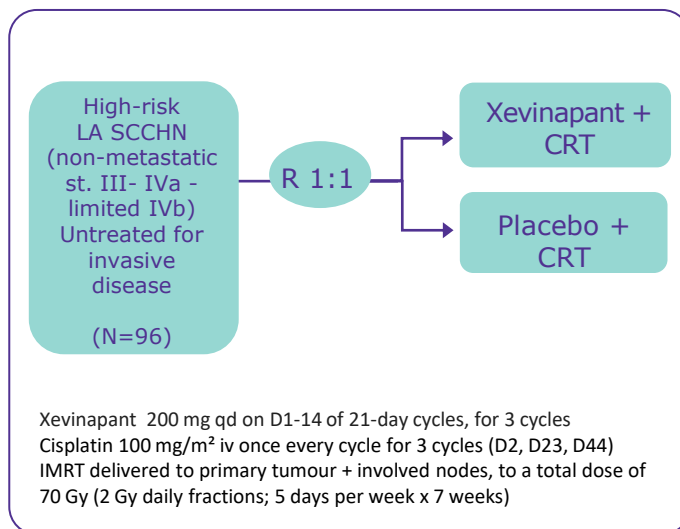
<sup>1</sup>Treated patient numbers are for US and EU combined (Kantar/Cerner Enviza 2021); <sup>2</sup>Denaro N, et al. Clin Exp Otorhinolaryngol. 2016;9(4):287-297.; <sup>3</sup>Ahn J-S, et al. Cancer Res Treat. 2007;39(3):93-98.; <sup>4</sup>NCCN Clinical Practice Guidelines in Oncology. Head and Neck Cancers. v1.2021.; <sup>5</sup>Machiels JP, et al. Ann Oncol. 2020;31(11):1462-1475. <sup>6</sup>Global trials, including strong presence in China and Japan; \*Global trials, including strong presence in China and Japan

**Acronyms:** SCCHN=squamous cell carcinoma of head and neck; LA SCCHN=locally advanced squamous cell carcinoma of head and neck; RT=Radiotherapy; SOC=Standard of care

# Oncology - Xevinapant

## Phase II: Consistent improvement across all efficacy endpoints with no compromise in delivery of backbone chemoradiotherapy (CRT)

### PhII: Double-blind, multi-centre, randomized trial<sup>1</sup>



### Selected efficacy endpoints

Efficacy Endpoint	Xevi + CRT	Pbo+ CRT	
<b>LCR at 18mo</b> (primary endpoint)	54%	33%	<b>OR 2.69</b> [1.13-6.42], p=0.026
<b>PFS</b> (3-year analysis)	NR	16.9 mo	<b>HR 0.34</b> [0.17-0.68], p=0.0023
<b>DoR<sup>2</sup></b> (3-year analysis)	NR	17.3 mo	<b>HR, 0.21</b> [0.08-0.54], p=0.0011
<b>OS<sup>3</sup></b> (3-year analysis)	NR	36.1 mo	<b>HR, 0.49</b> [0.26-0.92]; P=.0261

### Combination tolerability profile

Category of AEs	Xevi + CRT	Pbo+ CRT
Any TEAE	100%	100%
Gr ≥ 3	85%	87%
Serious AEs	63%	60%
Fatal AEs	0	4%
Late toxicity (mostly gr.1-2)	73%	66%

### Delivery of CRT

Treatment	Xevi + CRT	Pbo+ CRT
Median dose of Cis (mg/m <sup>2</sup> )	288	288
Pts with ≥ 2cycles of Cis (%)	88	83
Pts with all 3 cycles of Cis (%)	58	53
Median cumulative dose of RT (tumor/lymph nodes), Gy	70/ 51.8	70/ 51.8

<sup>1</sup>Sun XS, et al. Lancet Oncol. 2020;21(9):1173-1187; <sup>2</sup>Bourhis J. et al. Ann Oncol 2022;33:S1400. Oral presentation at ESMO 2022 (LBA33); <sup>3</sup>Bourhis J. et al. Ann Oncol (2020) 31 (suppl\_4): S1142-S1215.

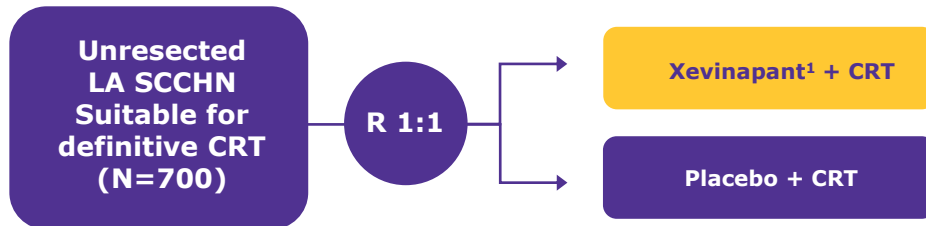
**Acronyms:** AE=adverse event; NR=Not reported; CRT=Chemoradiotherapy; LCR=Locoregional control; PFS=Progression-free survival; DoR=Duration of Response; OS=Overall survival; OR=Overall response

# Oncology - Xevinapant

## Phase III program on track to deliver on a blockbuster potential

### TrilynX™

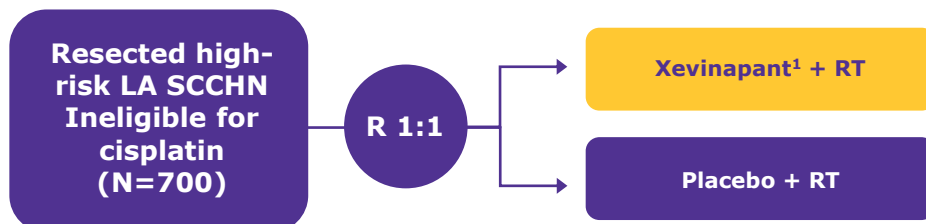
Confirming PhII results in unresected LA SCCHN



Primary endpoint: event-free survival

### XRay Vision™

Expanding population to resected LA SCCHN



Primary endpoint: disease-free survival



(NCT04459715)

- 250+ sites across 26 countries, including China and Japan
- Study nearing enrollment completion
- IA – event-driven

(NCT05386550)

- 200+ sites across 22 countries globally, incl. China and Japan
- Study initiated Q3/2022

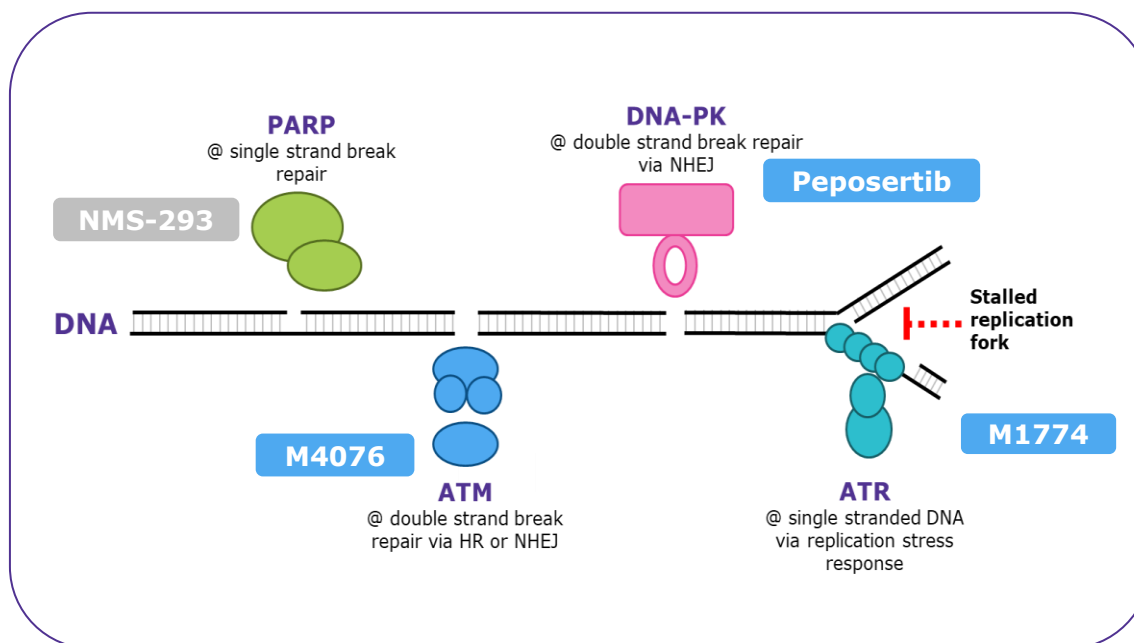
<sup>1</sup>Xevinapant administration: 3 cycles of oral solution at a dose of 200 mg/day once daily from Day 1 to 14, per 3-week cycle in combination with CRT/RT followed by 3 cycles of Xevinapant monotherapy

**Acronyms:** AE=adverse event; NR=Not reported; CRT=Chemoradiotherapy; LCR=Locoregional control; PFS=Progression-free survival; DoR=Duration of Response; OS=Overall survival; OR=Overall response; IA=Interim Analysis



# Oncology - DNA Damage Response (DDR)

## Unique portfolio of DDR inhibitors testing three distinct hypotheses to enhance tumor cell killing



Selectively kill tumors with DDR mutations  
(**Synthetic Lethality**)

Amplify **DNA damage-inducing** chemotherapy and radiotherapy

Activating **immune response**  
(through activation of cGAS–STING innate immune pathway and type I IFN signaling)

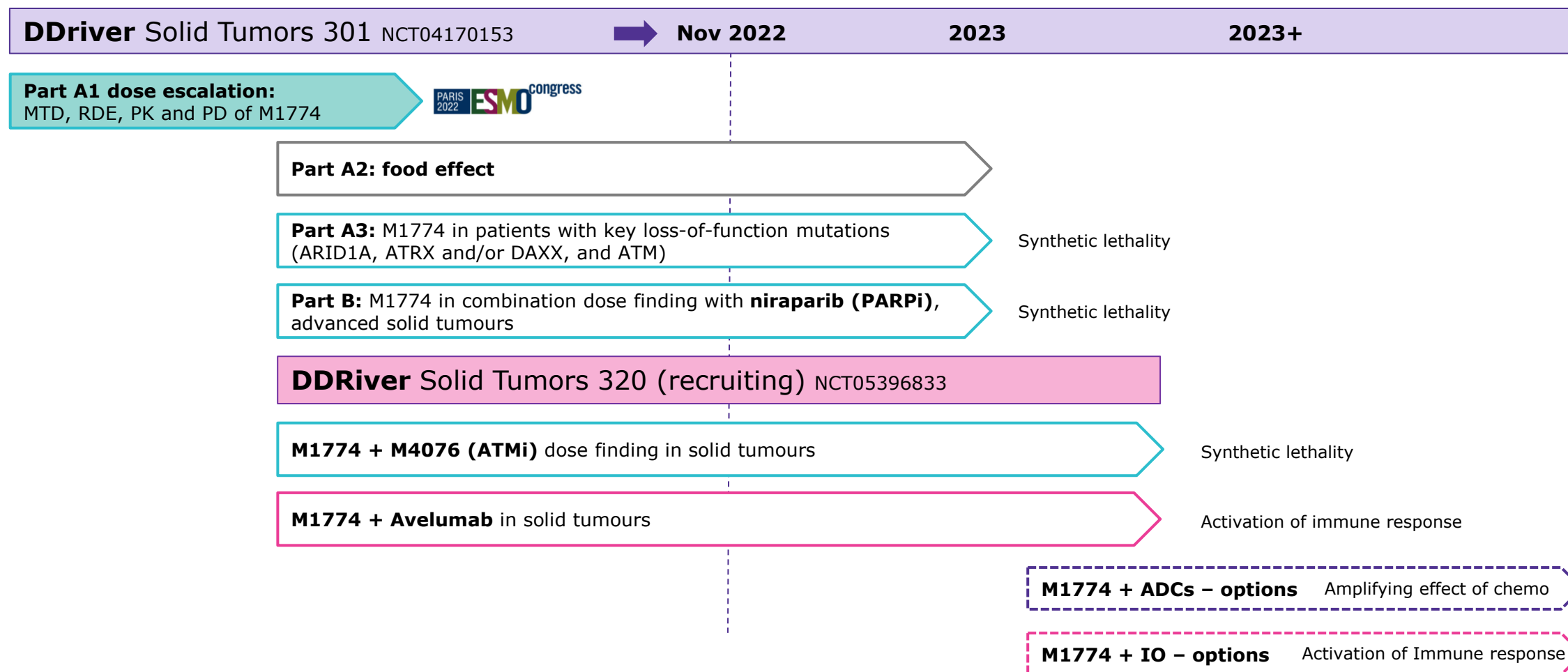
- Different types of DNA damage are repaired by different mechanisms
- Key proteins involved are PARP, ATR, ATM, and DNA-PK
- DDR inhibitors accumulate DNA damage, leading to cancer cell death

**NMS-293** Collaboration agreement with licensing option with Nerviano Medical Sciences S.r.l.

**Acronyms:** HR=homologous recombination; NHEJ=non-homologous end joining; PARP= Poly [ADP-ribose] polymerase; DNA-PK= DNA-dependent protein kinase; ATM= ataxia-telangiectasia-mutated protein; ATR= ataxia telangiectasia and Rad3-related protein

# Oncology - DNA Damage Response (DDR)

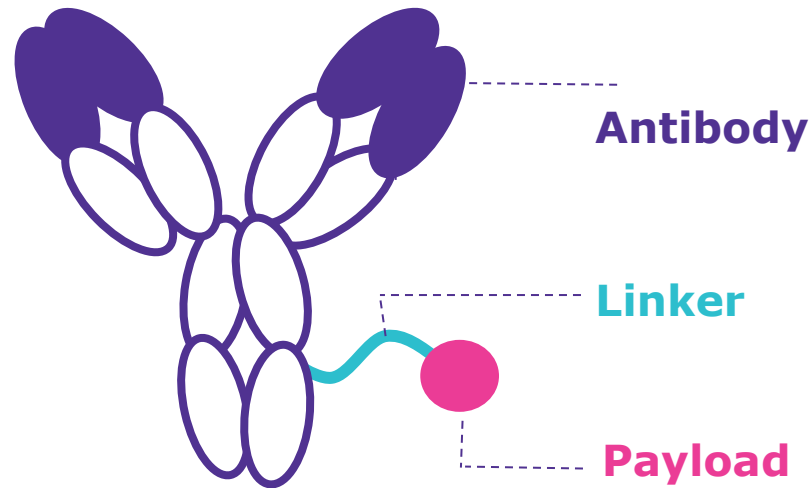
## Exploring combination potential of M1774 in a broad DDRiver development program



**Acronyms:** PK=Pharmacokinetics; RDE=Recommended Dose for Expansion; NR=Not Reported; MTD=Maximal Tolerated Dose; PD= Pharmacodynamics; ARID1A= AT-Rich Interaction Domain 1A; ATRX= AT-Rich Interaction Domain 1A; DAXX= Death- associated protein 6; ATMi= ataxia-telangiectasia-mutated protein, inhibitor; PARPi= Poly [ADP-ribose] polymerase inhibitor; ADC=Antibody-drug conjugates; IO= Immunooncology; ATM=ataxia-telangiectasia-mutated protein

# Oncology - Enabling Technologies: ADCs

## Group's ADC technology addresses the limitations of first-gen ADCs



### First generation ADCs

- Unfavorable target **expression**
- Suboptimal **half-life** and internalization
- **Unstable** linkers, unspecific cleavage
- Undefined **mixtures** from conjugation step
- **Too potent** and **toxic** payloads
- Tumor-**resistant** payloads

Low therapeutic windows

### Group's ADC Platform

- Mono & **bispecific** internalizing binders
- Designed physiochemical properties
- **Tumor-specific** linker cleavage
- **Site-specific** conjugation technologies
- **Next-generation** cytotoxic and immune-mod. payloads
- DNA-alkylators and **TOP1 inh.** fit with DDR ambitions

Improved therapeutic benefits

Many opportunities to enhance targeted **delivery of chemotherapy** to tumor cells. Company HC pipeline includes **9 pre-clinical** and **2 clinical assets**.

**Acronyms:** ADC=Antibody-drug conjugates; DDR=DNA damage response

# Oncology - Antibody-Drug Conjugates

## M9140: specifically designed to fight CRC and other GI cancers, with optionality in additional tumors

### Scientific Rationale

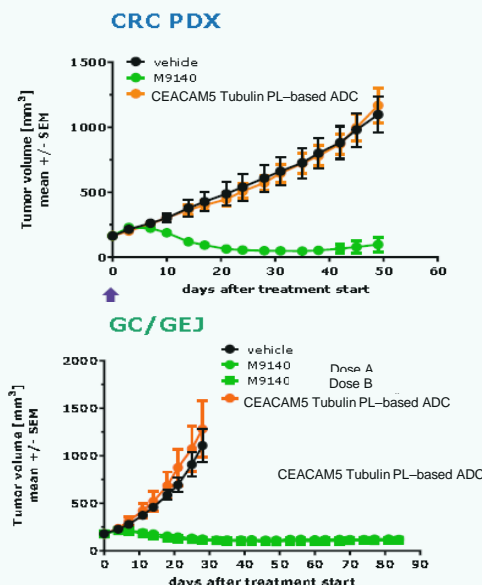
#### CEACAM5 expression

CEACAM5 antigen expression by tumor type	
CRC (AD)	98%
Gastric Cancer	60%
Pancreatic Cancer	54%
nsq NSCLC	47%
Cervical	31%
ESCC	23%
sq NSCLC	17%
SCCHN	12%
UC	9%
TNBC	1%

- **CEACAM5** is expressed in CRC, GC/GEJ, lung & other cancers with low expression in normal tissues, making it an ideal target
- **TOP1 inhibitor (exatecan)** payload optimized for tumors with target expression & sensitivity to TOP1i

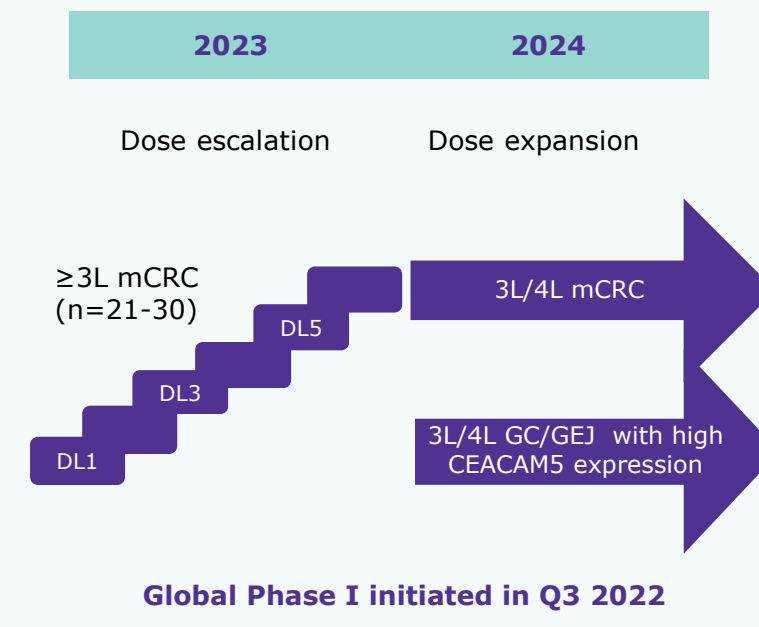
### Differentiation

#### M9140 vs DM4 ADC



- **Superior pre-clinical efficacy** vs antimicrotubule payload (ravtansine) ADCs
- **Synergistic potential** and durable efficacy with DDRi

### Phase I study ongoing NCT05464030



**Acronyms:** ADC=Antibody-drug conjugates; RDE=Recommended Dose for Expansion; NR=Not Reported; CRC=Colorectal cancer; GC=Gastric cancer; GEJ=Gastric and gastroesophageal junction; TOP1i=Topoisomerase inhibitor type 1 inhibitor; DDRi=DDR DNA damage response inhibitors; GI=Gastrointestinal; CRC=Colorectal cancer; CEACAM5=Carcinoembryonic antigen-related cell adhesion molecule 5

# Healthcare Q1: Profitable growth driven by sales momentum of Bavencio® and Mavenclad® in line with the mid-term guidance

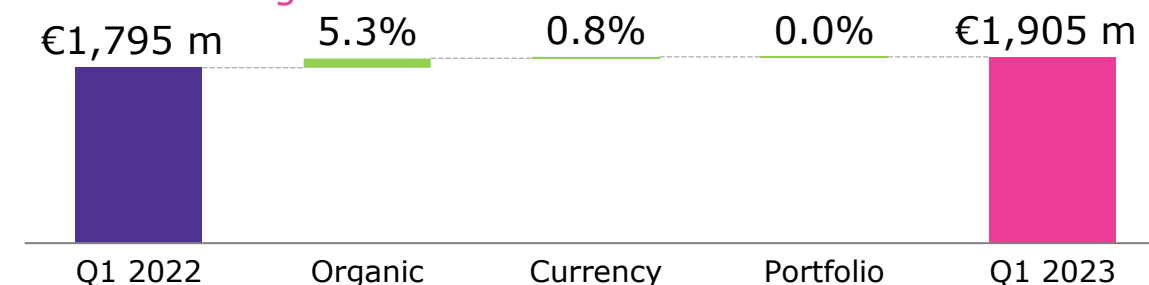
## Healthcare P&L

[€m]	IFRS		Pre	
	Q1 2022	Q1 2023	Q1 2022	Q1 2023
Net sales	1,795	1,905	1,795	<b>1,905</b>
M&S*	-376	-381	-375	<b>-380</b>
Admin	-71	-76	-69	<b>-72</b>
R&D	-397	-395	-397	<b>-403</b>
EBIT	454	520	458	<b>516</b>
EBITDA	526	593	-	<b>-</b>
EBITDA pre	529	590	529	<b>590</b>
(in % of net sales)	29.5%	30.9%	29.5%	<b>30.9%</b>

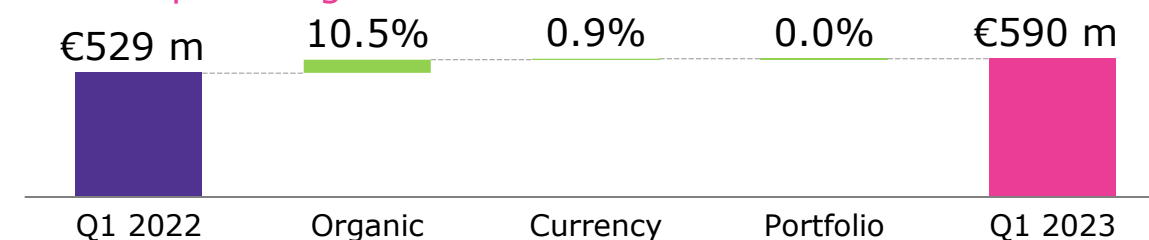
## Comments

- Oncology up +15% org., driven by continuous growth of Bavencio® (+31% org.) across all regions and supported by Erbitux® (+4% org.)
- N&I softer at -2% org.: Mavenclad® growing +23% org., largely offsetting Q1 Rebif® decline (-25% org.), amplified by channel dynamics
- Stable established portfolio, driven by resilient Fertility (+7% org.) and CM&E (+3% org.)
- M&S declining in % of sales based on constant productivity efforts
- R&D up slightly in absolute terms, down in relative terms, in line with mid-term ambition of low twenties
- Strong organic EBITDA pre with profitable growth (+10%), driven by strong sales momentum, product mix, lower R&D in relative terms, and lower comps on gross profit

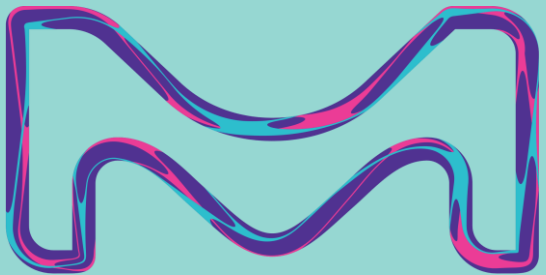
## Net sales bridge



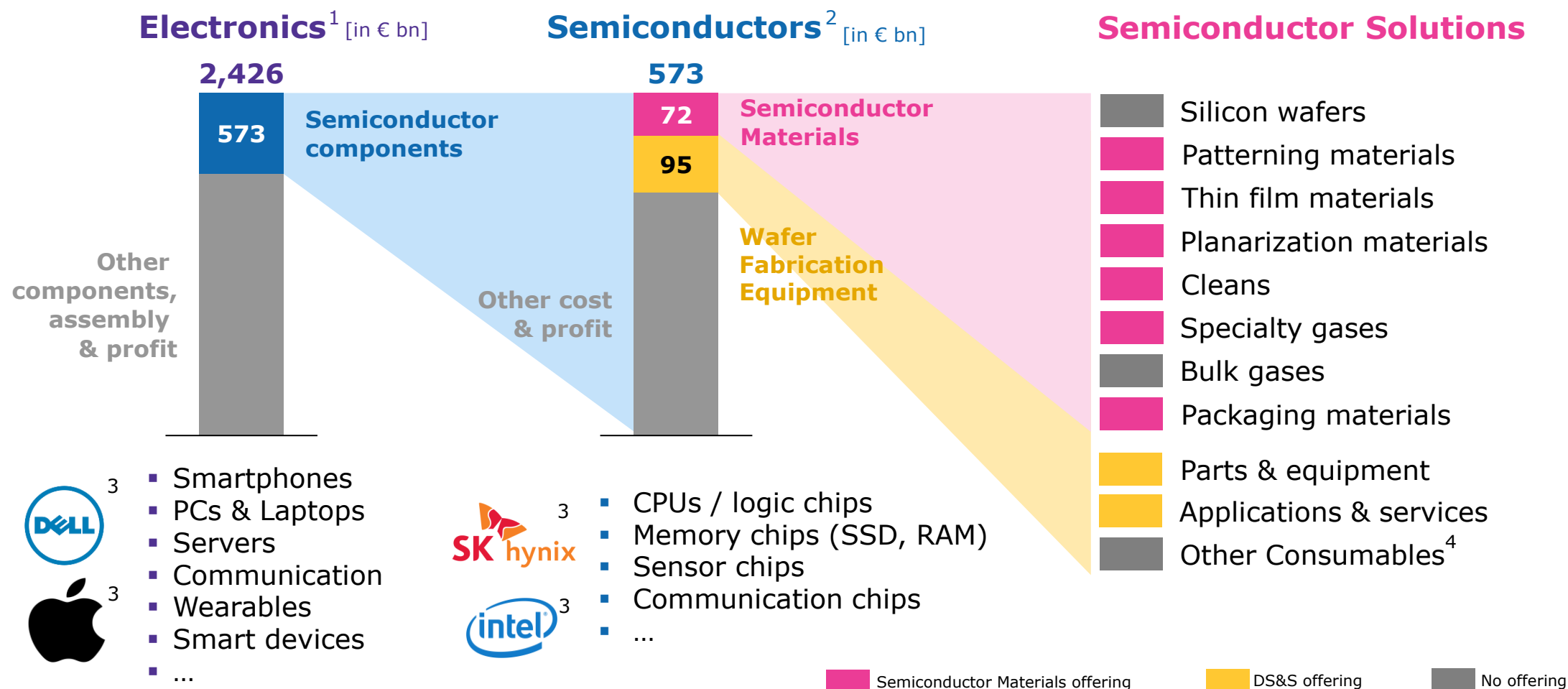
## EBITDA pre bridge



# electronics

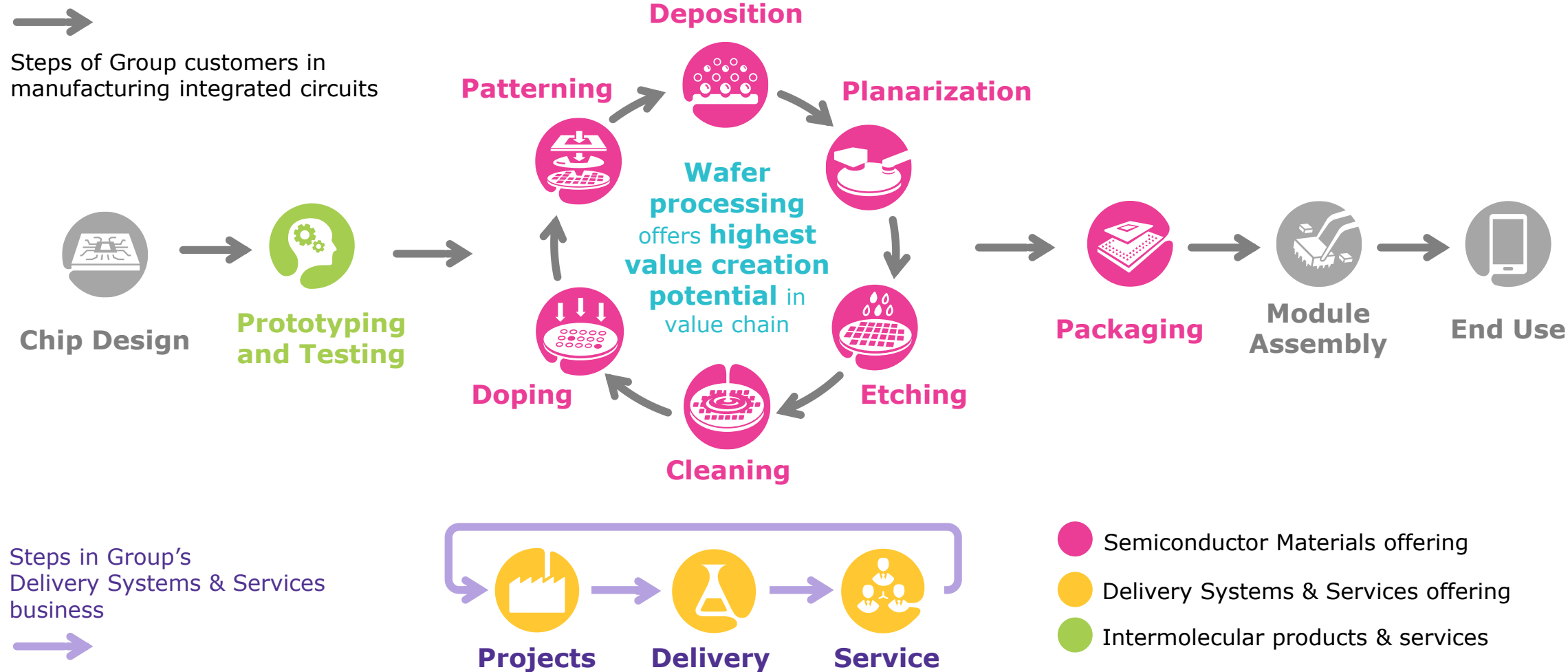


# Semiconductor Solutions – **integrated materials player, well positioned to serve the need of customers in semiconductor fabrication**



Illustrative Industry P&Ls based on Sources: <sup>1</sup>Prismark 2022, <sup>2</sup>Prismark 2022 & SEMI MKT MMDS Q3 2022 & SEMI WFF Q4 2022; <sup>3</sup>Representative player in the industry, non-exclusive list, not based on any underlying criteria; <sup>4</sup>e.g. Filters, Pads, etc.; CPU = Central Processing Unit; RAM = Random Access Memory; SSD = Solid State Disk; CMOS = Complementary metal-oxide semiconductor

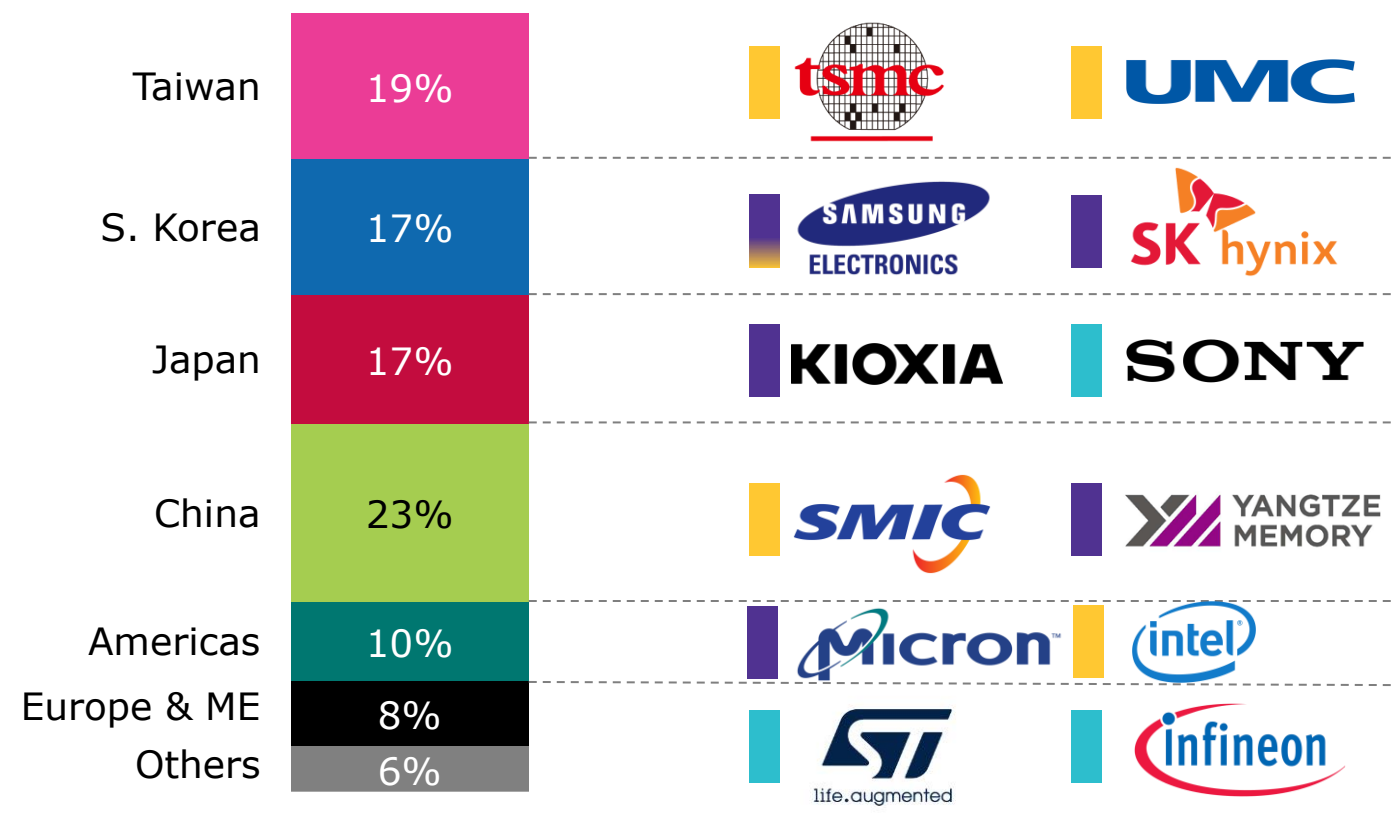
# Unique comprehensive products and services portfolio offers end-to-end solutions, well-placed in high growth segments





# Beyond a comprehensive portfolio Semiconductor Solutions also has an industry spanning customer base, supplying various end markets

2021 wafer capacity by region<sup>1</sup>      Selected customers per region<sup>2</sup>

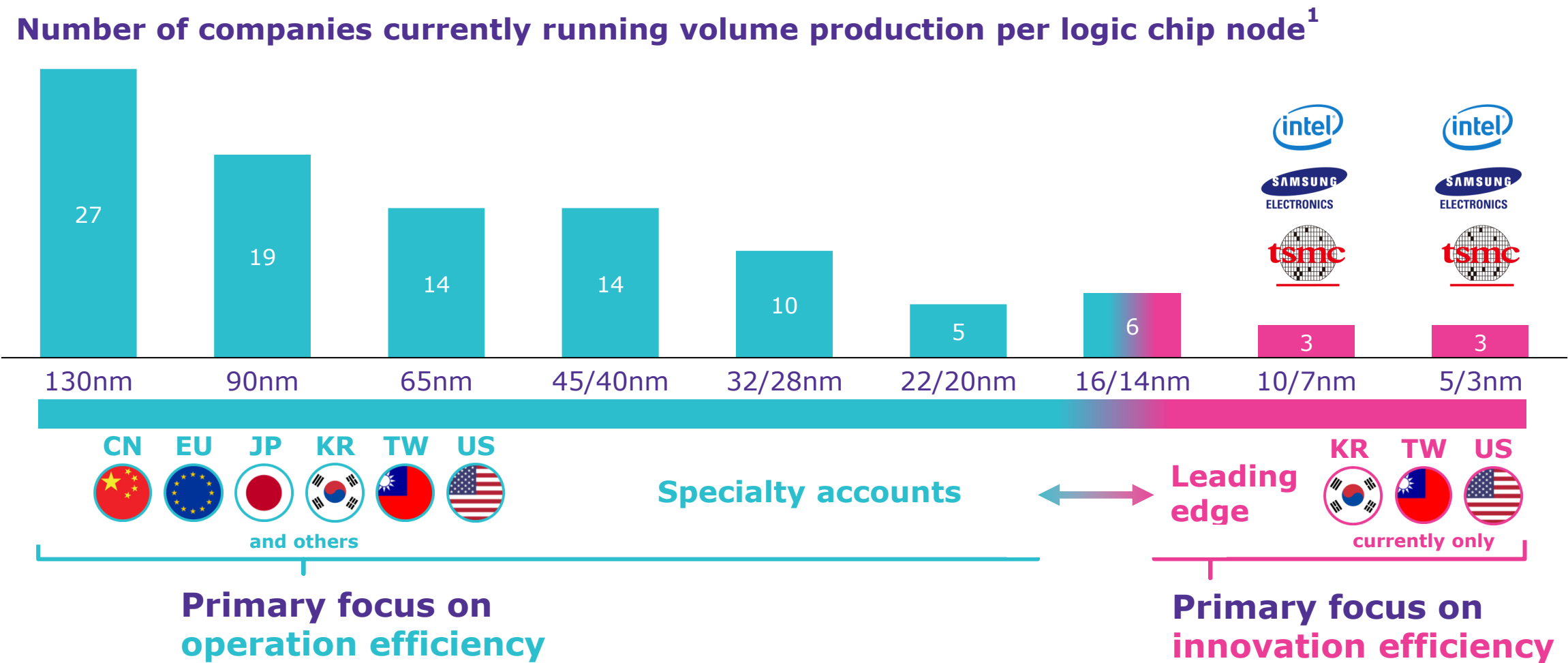


Semiconductor Solutions has **OVER 100 customers** supplying all top 10 chip makers and virtually all of the top 100<sup>3</sup>

- Focus on logic chips
- Focus on memory chips
- Focus on other chips

<sup>1</sup>SEMI World Fab Forecast Q4 2022 - Dec 2021 capacity,      <sup>2</sup>Representative, non-exclusive list, not based on any underlying criteria      <sup>3</sup>Based on FY 2022 Sales

Only 3 companies are currently running **volume production  $\leq 10\text{nm}$**   
These companies have the largest market shares across all nodes



<sup>1</sup>Source: Wikichip.org and own data; volume production as of 2020; countries are listed in alphabetical order

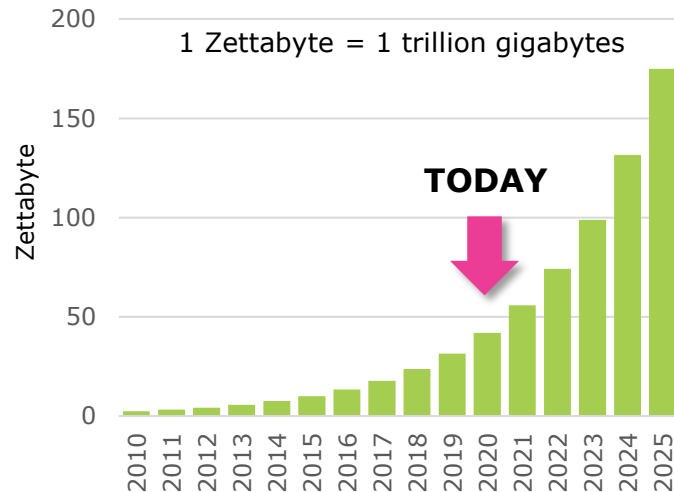
# Technology trends inevitably drive exponential data growth... ...more chips needed to generate, transfer, process & store data

**Data created worldwide**  
is growing +30% annually

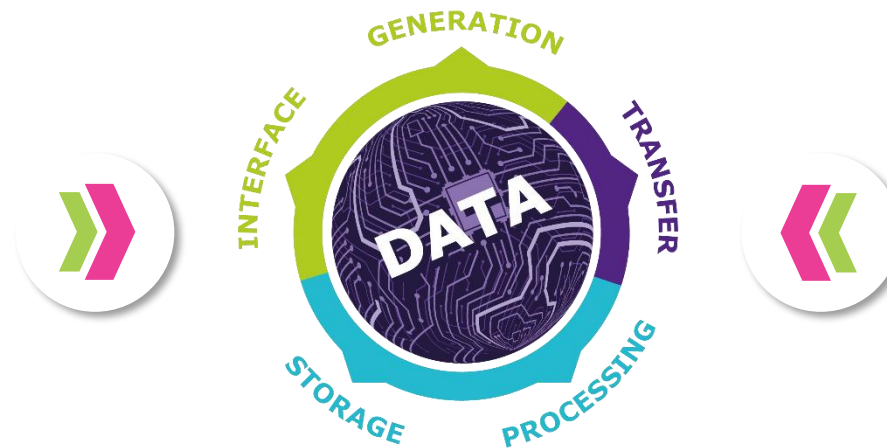
**All segments of data application**  
are affected by global data growth

**Technology trends** strongly impact  
relevance of data application segments

Size of global data sphere



Source: IDC DataAge 2025 Whitepaper



Technology market growth - examples

**5G Technology<sup>1</sup>**  
>122% CAGR

**Artificial Intelligence<sup>2</sup>**  
>33% CAGR

**IoT Sensors<sup>3</sup>**  
>24% CAGR

**Data Center Services<sup>4</sup>**  
>13% CAGR

**Autonomous Driving<sup>5</sup>**  
>18% CAGR

Semiconductor Solutions supports growth trend as part of “**the company behind the companies, advancing digital living**”

1) [alliedmarketresearch.com](https://www.alliedmarketresearch.com), Prismark 2020, CAGR 2021-2026; 2) [fortunebusinessinsights.com](https://www.fortunebusinessinsights.com), [post-gazette.com](https://www.post-gazette.com), CAGR 2018-2026; 3) [mordorintelligence.com](https://www.mordorintelligence.com), [computerweekly.com](https://www.computerweekly.com), CAGR 2020-2025;

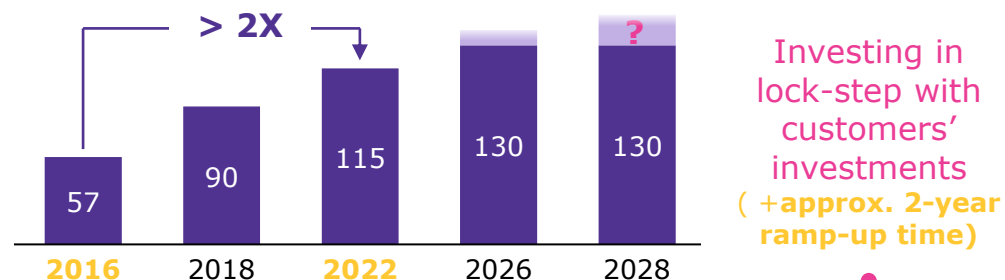
4) [mordorintelligence.com](https://www.mordorintelligence.com), Prismark 2020; CAGR 2020-2025; 5G = 5<sup>th</sup>-generation cellular wireless; IoT = Internet of Things 5) [mordorintelligence.com](https://www.mordorintelligence.com), autonomous car market value CAGR 2020-2025

# "Level Up" Scale - Expanding in synch with customer demand

A partner of choice, in step for higher demand

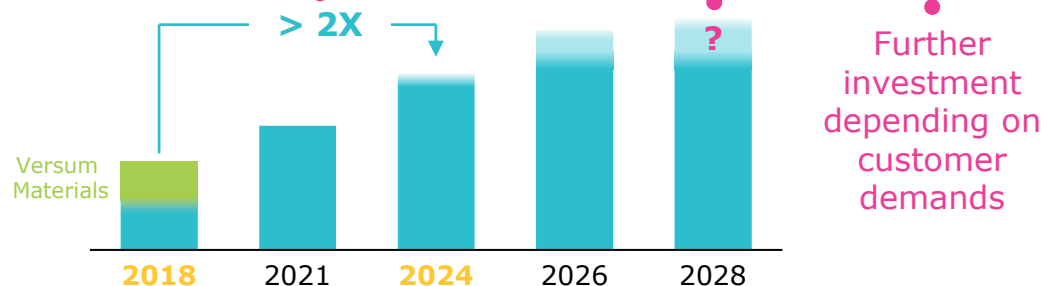
## Semiconductor industry

CAPEX p.a.<sup>1</sup> [€bn]







## Electronics

CAPEX illustrative [majority in Semi]



1) McClean March 2021, Company announcements; FX rate: 1.18 \$/€; 2) incl. IT

Smart localization, investing close to customers

Share of semi material market <sup>1</sup>	Key investments
<b>Taiwan</b>  ~25%	<ul style="list-style-type: none"> <li>Additional <b>large site</b> ensuring supply for key customers</li> <li>Further <b>expand R&amp;D footprint</b></li> </ul>
<b>Korea</b>  ~25%	<ul style="list-style-type: none"> <li><b>Expand</b> strong <b>footprint</b>, even higher customer proximity</li> </ul>
<b>China</b>  ~15%	<ul style="list-style-type: none"> <li><b>Become most localized</b> multi-national ready for growth</li> <li>Expand <b>production and R&amp;D</b></li> </ul>
<b>USA</b>  ~10%	<ul style="list-style-type: none"> <li>Expand capacity for <b>global &amp; local supply</b></li> <li>Enable <b>new sites of key customers</b></li> </ul>

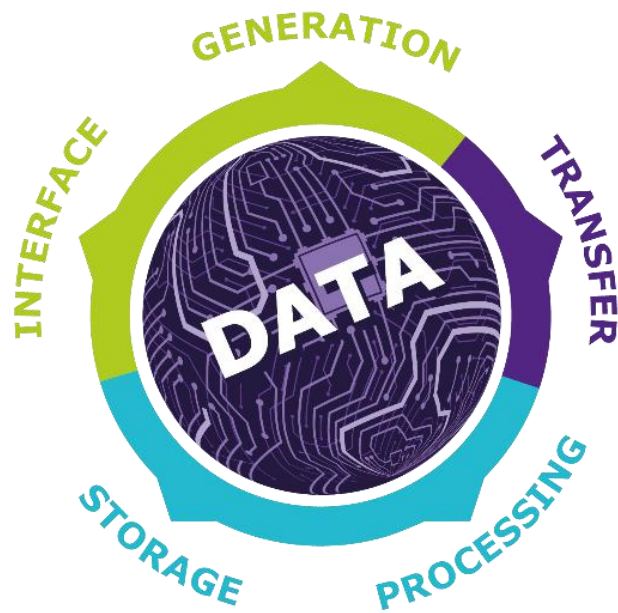
1) Source: Linx Consulting – only relevant segments, 2020; 2) Aggregated spend 2021-25, total spend: ~€2.1 bn, thereof ~11% (~€250 m) in Germany, also to fund global programs



# "Level Up" Tech – delivering today and enabling tomorrow

## Strong portfolio of silicon & optical technologies empowering today's applications

Solutions empowering customers to make **smaller, faster, more energy efficient** & **more sustainable** devices in various applications across the entire **data sphere**



- Data Generation**  
Sensors, MEMs
- Data Transfer**  
Network chips, interconnects, antenna
- Data Processing**  
Logic chips: CPUs, GPUs
- Data Storage**  
Memory Chip: DRAM, 3D NAND
- Data Interface**  
Displays: TV and mobile (LC, OLED)

## And enabling tomorrow's leading-edge technologies

### Selected future applications

#### Next-Gen image sensors

Leverage semiconductor & display knowledge for new & optimized sensors

#### Smart Antennas

New LC, enabling beam forming, replacing bulky mechanical antennas

#### Transition to nanosheets

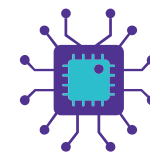
Novel etchants & dopants allowing higher scaling & lower power consumption

#### 3D NAND with >300 layers

ALD<sup>1</sup> materials that help minimize cross talk between memory cells

#### Foldable displays

Broad set of materials from encapsulation to the OLED stack



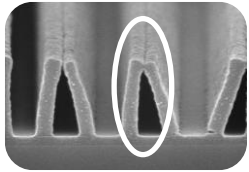
### Our contribution

1) Atomic Layer Deposition

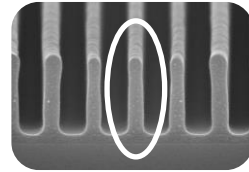


## Expanding the limits of how small you can go

### Pattern collapse

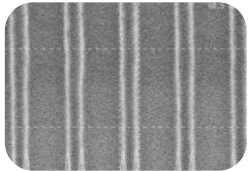


### AZ® rinse materials



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

### Lithography limitation

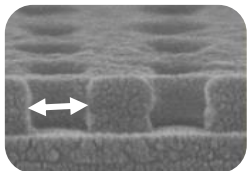


### Directed self-assembly (DSA)

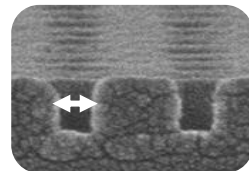


Block copolymer can generate small lines or contact holes by self-assembly. This allows miniaturization without expensive new equipment.

### Wide features



### AZ® shrink materials



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



**Group delivers highly innovative solutions for complex customer problems**

# Semiconductor Solutions

## Partner of choice for semiconductor manufacturers globally



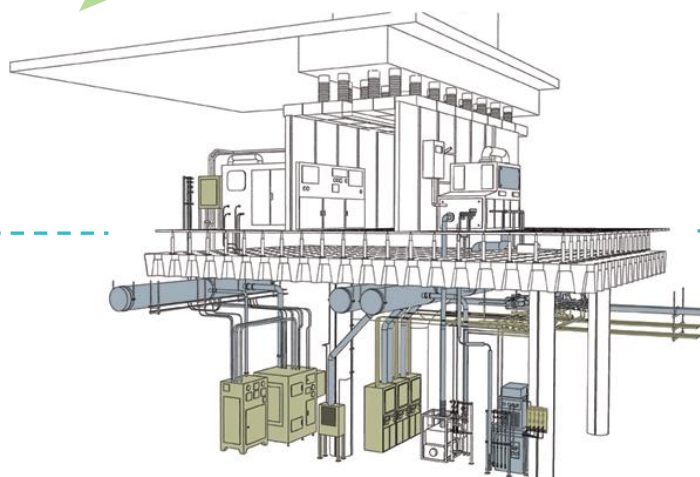
### Semiconductor Materials

Winning in the fab with process owners

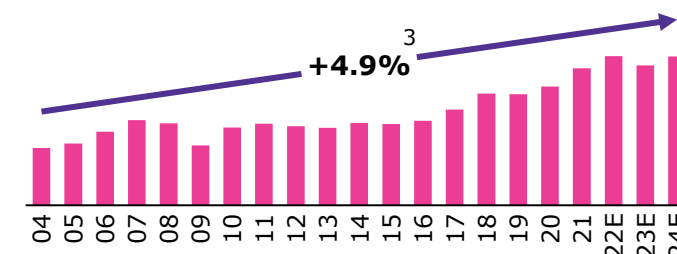


### Delivery systems & services

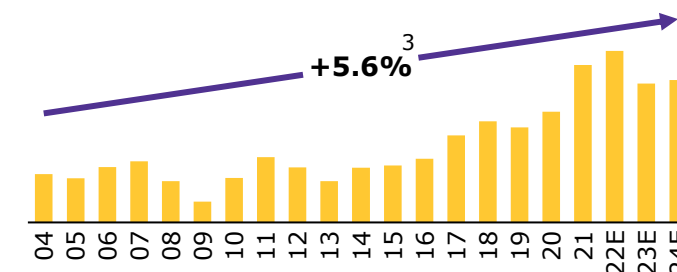
Winning in the sub-fab with facility engineers



### Fab material market <sup>1</sup>



### Fab equipment market <sup>2</sup>



**One fab address = two customers:** buying cycles, interfaces & nature of business fundamentally different, but ... **combined, highly synergistic**

Fab = Semiconductor fabrication plant

<sup>1</sup>Source LINX-Consulting, wafer processing materials - excludes silicon wafers and packaging materials;

<sup>2</sup>Source: Gartner; <sup>3</sup>2004-2024 20-year CAGR





# DS&S - Delivery Systems & Services: a trusted global player in **safe and reliable delivery of hazardous materials** to semiconductor industry



## Fab projects

- Designing bulk spec **gas delivery systems**
- Managing **construction and installation**
- High-volume customers who store large specialty gas **ISO containers outside fab**



## Gas & chemical delivery

- Design and manufacture delivery systems for: specialty gases, CVD/ALD deposition materials, CMP slurries & cleans
- Systems **store gas/chemical containers** while in-use and **control material delivery parameters** to fab processes
- **Interface with customer's fab** process control and monitoring systems.



## MEGASYS & in-fab service

- Provide **delivery systems maintenance, materials inventory management**, quality assurance, & new equipment installations
- Contracts with **18 customers' fabs**
- >500 global employees + **~100 field service technicians**



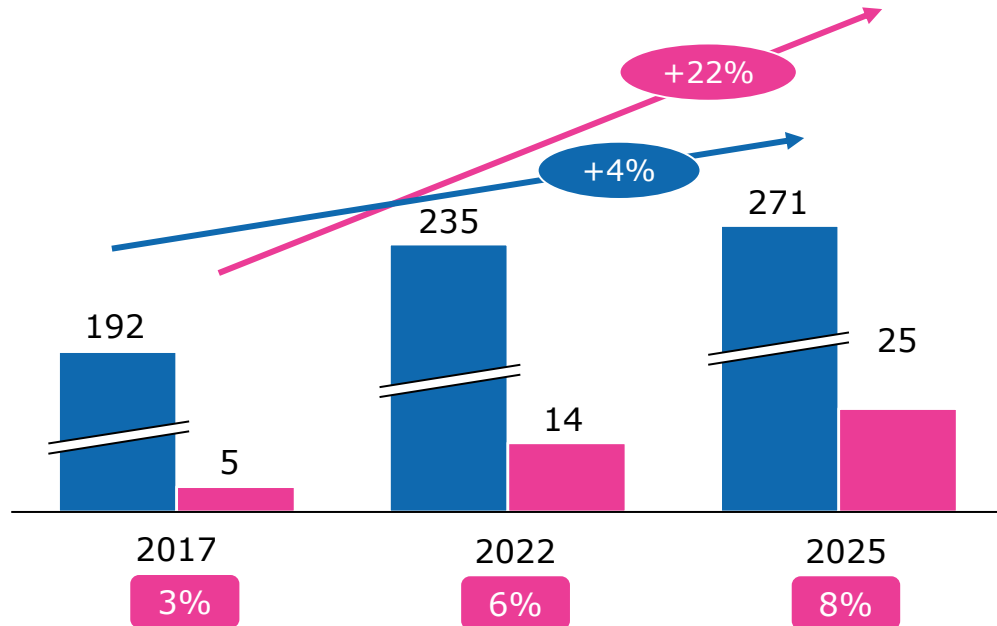


# Electronics

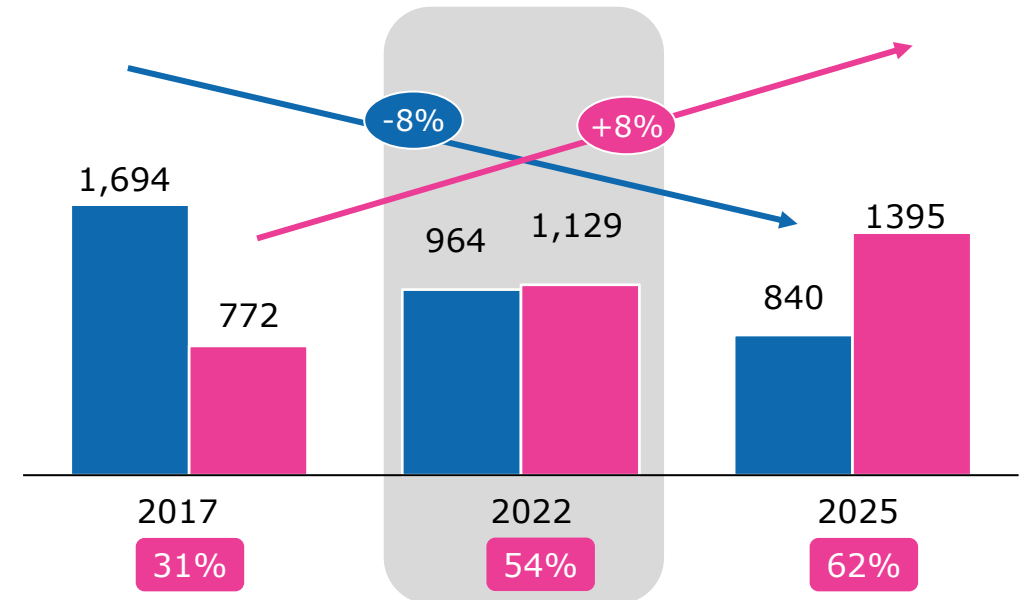
## Display Solutions - OLED material market exceeds LC material market **already in 2022**

x% OLED shipment area / addressable material market [in % of total]    Liquid Crystals    OLED

**Display shipment area<sup>1</sup>**  
[km<sup>2</sup>]



**Addressable material market<sup>2</sup>**  
[€m]



- **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 exceeds LC material market in 2022**, but market split between **many more players**

<sup>1</sup>Omdia; <sup>2</sup>Internal Business Intelligence; Acronyms: LCD = Liquid-Crystal Display, OLED = Organic Light Emitting

# Electronics

## Strategic roadmap materializing

### Measures for a bright future



#### 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



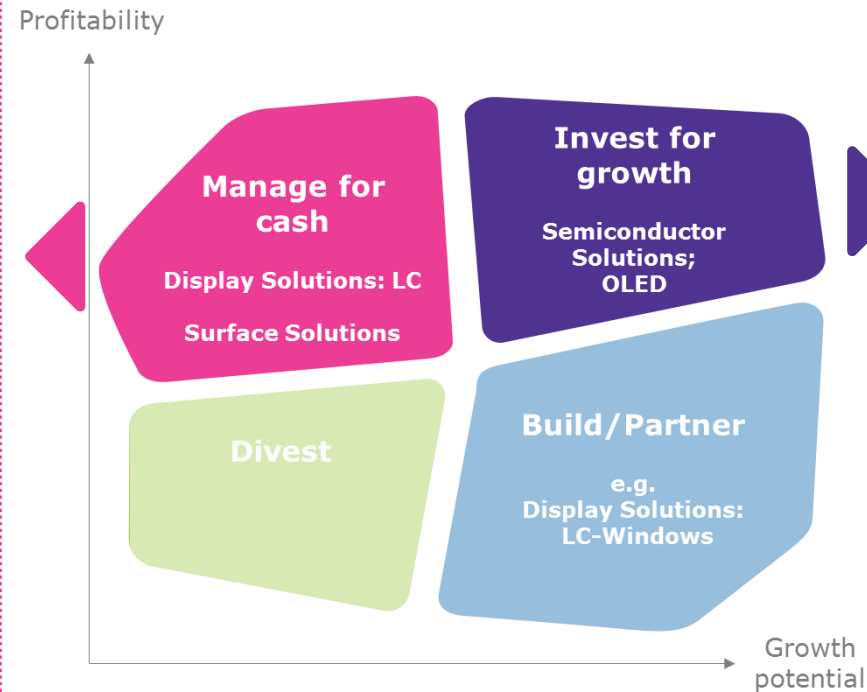
#### Chilworth

- Chilworth site during September 2019 successfully closed



#### Atsugi

- Shut down of Electronics 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



- 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



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

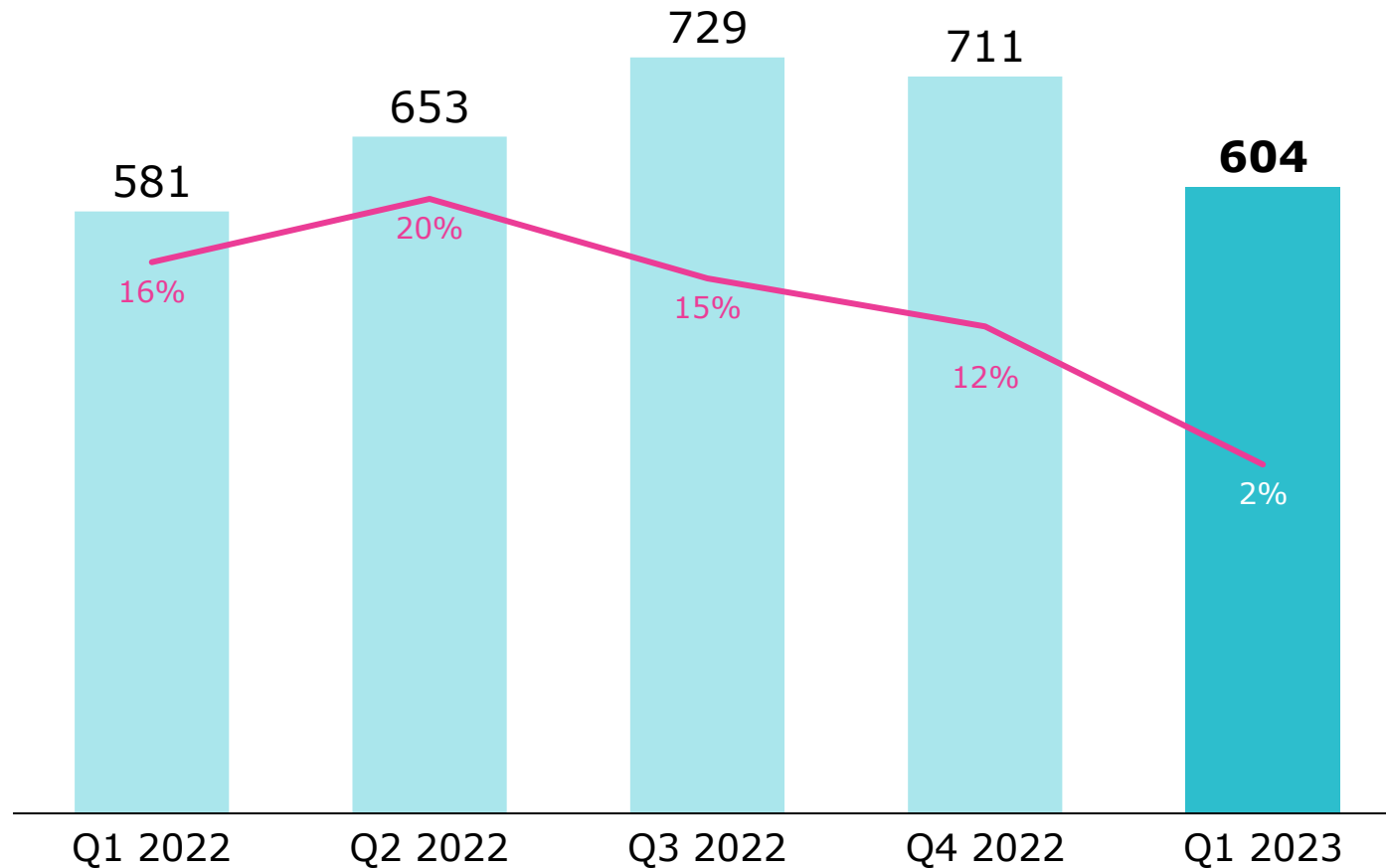


**Both transactions successfully closed**



# Semiconductor Solutions delivers organic growth; slowdown due to softening market

Sales development [€m] - org. growth [%]



- **Semiconductor Solutions** growth slows due to ongoing Semi market softening
- High growth in **DS&S business** more than offsets softer **Semiconductor Materials**
- **Semiconductor Materials** suppressed due to low end-user demand and lower customer utilization

# Electronics Q1: Semi Solutions grows +2% org., ahead of a depressed market; decline in Display Solutions weighs on sales and profits

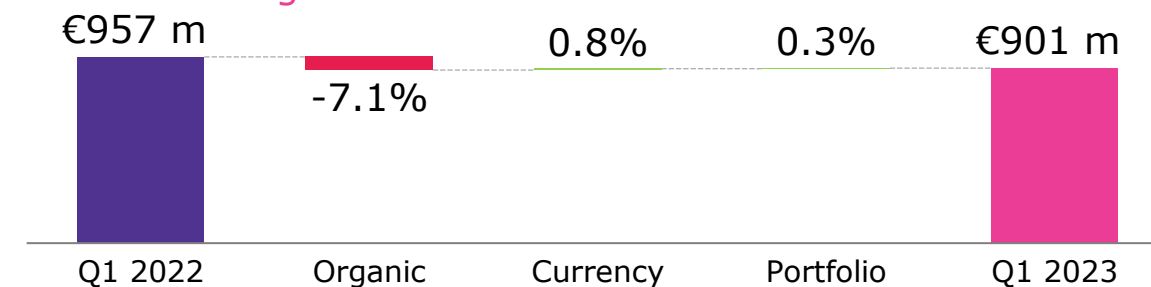
## Electronics P&L

[€m]	IFRS		Pre	
	Q1 2022	Q1 2023	Q1 2022	Q1 2023
Net sales	957	901	957	<b>901</b>
M&S*	-156	-158	-156	<b>-158</b>
Admin	-28	-33	-28	<b>-31</b>
R&D	-75	-74	-75	<b>-74</b>
EBIT	145	86	156	<b>105</b>
EBITDA	279	228	-	<b>-</b>
EBITDA pre	289	237	289	<b>237</b>
(in % of net sales)	30.2%	26.4%	30.2%	<b>26.4%</b>

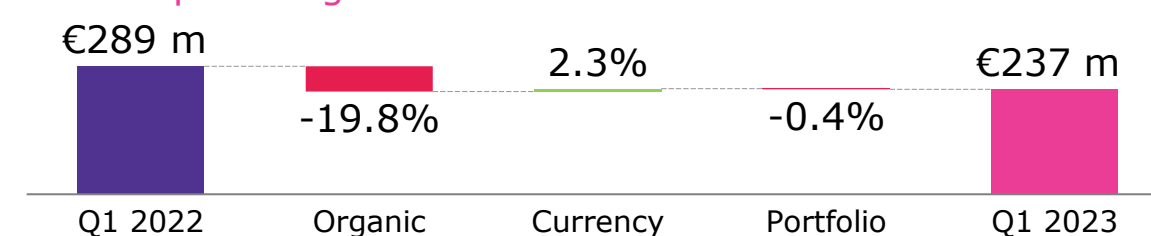
## Comments

- Semiconductor Solutions: +2% org. growth, supported by DS&S large project and equipment business
- Display Solutions: down -28% org. with continued decline in Liquid Crystals against tough comps, driven by lower customer utilization
- Surface Solutions: down -5% org. driven by softer industrials and coatings, partially offset by strong Cosmetics business

## Net sales bridge



## EBITDA pre bridge



- M&S costs about stable in absolute terms; R&D stable in absolute terms due to ongoing investments, higher in % of sales due to lower topline
- EBITDA pre margin down mainly due to LC price and volume decrease amid inflationary developments (raw materials, energy), and gradual tightening of conditions among the semi-materials customer base

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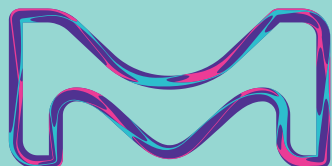


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