



# Q4 2022 Results

Investor  
presentation





# Disclaimer

This presentation contains forward-looking statements within the meaning of the United States Private Securities Litigation Reform Act of 1995, that can generally be identified by words such as “potential,” “expected,” “will,” “planned,” “pipeline,” “outlook,” or similar expressions, or by express or implied discussions regarding potential new products, potential new indications for existing products, potential product launches, or regarding potential future revenues from any such products; or regarding potential future, pending or announced transactions; regarding potential future sales or earnings of the Group or any of its divisions; or by discussions of strategy, plans, expectations or intentions; or regarding the Group’s liquidity or cash flow positions and its ability to meet its ongoing financial obligations and operational needs; or regarding the conclusion of the strategic review of Sandoz, our planned 100% spin-off of Sandoz, through which we plan to become a fully focused Innovative Medicines business. Such forward-looking statements are based on the current beliefs and expectations of management regarding future events, and are subject to significant known and unknown risks and uncertainties. Should one or more of these risks or uncertainties materialize, or should underlying assumptions prove incorrect, actual results may vary materially from those set forth in the forward-looking statements. You should not place undue reliance on these statements. In particular, our expectations could be affected by, among other things: liquidity or cash flow disruptions affecting our ability to meet our ongoing financial obligations and to support our ongoing business activities; the impact of a partial or complete failure of the return to normal global healthcare systems including prescription dynamics; global trends toward healthcare cost containment, including ongoing government, payer and general public pricing and reimbursement pressures and requirements for increased pricing transparency; uncertainties regarding potential significant breaches of data security or data privacy, or disruptions of our information technology systems; regulatory actions or delays or government regulation generally, including potential regulatory actions or delays with respect to the development of the products described in this presentation; the potential that the benefits and opportunities expected from our planned 100% spin-off of Sandoz may not be realized or may be more difficult or take longer to realize than expected; the uncertainties in the research and development of new healthcare products, including clinical trial results and additional analysis of existing clinical data; our ability to obtain or maintain proprietary intellectual property protection, including the ultimate extent of the impact on Novartis of the loss of patent protection and exclusivity on key products; safety, quality, data integrity, or manufacturing issues; uncertainties involved in the development or adoption of potentially transformational technologies and business models; uncertainties regarding actual or potential legal proceedings, investigations or disputes; our performance on environmental, social and governance measures; general political, economic and business conditions, including the effects of and efforts to mitigate pandemic diseases such as COVID-19; uncertainties regarding future global exchange rates; uncertainties regarding future demand for our products; and other risks and factors referred to in Novartis AG’s current Form 20-F on file with the US Securities and Exchange Commission. Novartis is providing the information in this presentation as of this date and does not undertake any obligation to update any forward-looking statements as a result of new information, future events or otherwise.

Ibrance® is a registered trademark of Pfizer Inc.



# Vas Narasimhan, M.D.

Chief Executive Officer

---

## Company overview





# Novartis delivers robust core operating income growth and core margin expansion; achieves important innovation milestones

## Growth, cc

1

Group sales Q4 +3% (FY +4%)  
 IM sales Q4 +3% (FY +4%); US IM sales Q4 +7%  
 Sandoz sales Q4 +0% (FY +4%)

## Innovation

3

**Pluvicto** EU approval for mCRPC post-taxane  
**Iptacopan** Ph3 APPOINT-PNH met primary endpoint  
**Pluvicto** Ph3 PSMAfore in mCRPC pre-taxane met primary endpoint  
**Ianalumab** Ph3 initiated in wAIHA; Ph3 initiating in 1L ITP and 2L ITP

## Productivity, cc

2

Group core operating income Q4 +15% (FY +8%)  
 IM core operating income Q4 +14% (FY +8%)  
 IM core margin Q4 36.4%, +3.5%pts (FY 36.9%)  
 Sandoz core operating income Q4 -18% (FY -1%)  
 SG&A savings of ~USD 1.5bn to be fully embedded by 2024<sup>2</sup>

## ESG

4

**Sustainability Linked Bond:** Significant progress towards 2025 targets  
**Innovative Therapies in LMICs:** ~1.2m patients; +26.3% vs. 2021  
**Novartis flagship programs:** ~31m patients vs. 2025 target ~23m  
**Ratings:** CDP - AA score<sup>1</sup>; ATMI: Leaders group 10th consecutive year

Constant currencies (cc), core results are non-IFRS measures; explanation can be found on page 49 of Condensed Interim Financial Report. Unless otherwise noted, all growth rates refer to same period in PY.  
 IM – Innovative Medicines division. mCRPC – metastatic castration-resistant prostate cancer. wAIHA – warm autoimmune hemolytic anemia. ITP – immune thrombocytopenia. LMIC – low and middle income countries. CDP – carbon disclosure project. ATMI – Access to Medicine Index. 1. One of only two pharma companies with AA rating. 2. Relating to streamlined organizational model.



# New Novartis<sup>1</sup>: Our focused strategy

Focusing on high-value innovative medicines that alleviate society's greatest disease burdens through technology leadership in R&D and novel access approaches

## Our focus

### 5 core Therapeutic Areas<sup>2</sup>

Cardiovascular, Immunology,  
Neuroscience, Solid Tumors, Hematology

### 2 + 3 technology platforms

Chemistry, Biotherapeutics  
xRNA, Radioligand, Gene & Cell Therapy

### 4 priority geographies

US, China, Germany, Japan

## Our priorities

### Accelerate growth



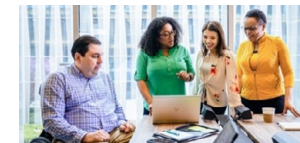
Deliver **high-value medicines** (including launch excellence)

### Deliver returns



Embed **operational excellence**

### Strengthen foundations



Unleash the power of our **people**

Scale **data science and technology**

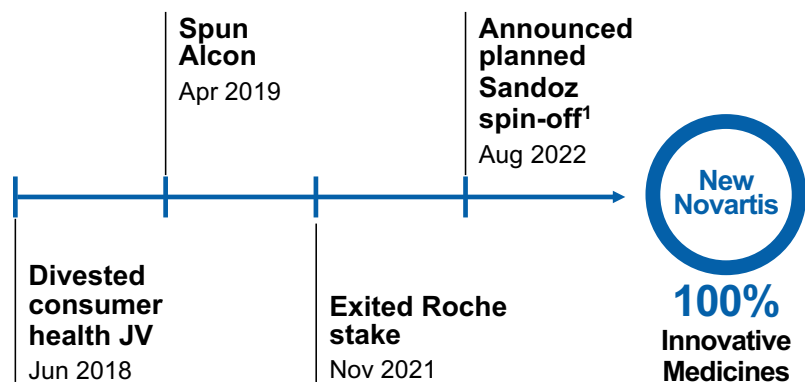
Build trust with **society**

1. New Novartis here and in the rest of the presentation refers to Novartis assuming planned Sandoz spin-off. Subject to final Novartis AG BoD and shareholder approval (EGM). 2. Other TAs opportunistically.

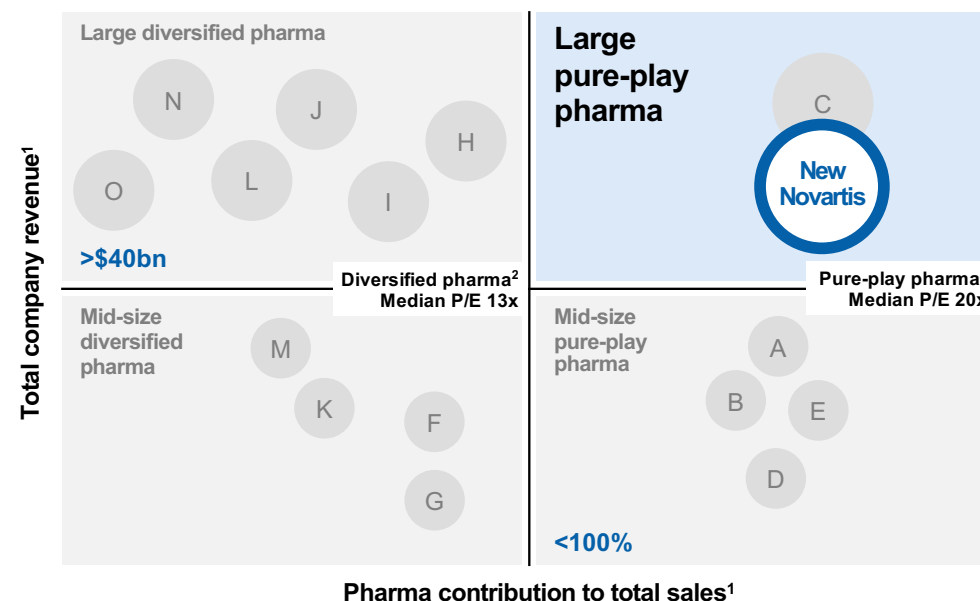


# As a pure-play Innovative Medicines company, New Novartis is uniquely positioned to leverage its scale, strengths and expertise

Novartis is on track to become a pure-play Innovative Medicines company



Simplified organizational model allowing for greater focus, leveraging scale and expertise  
Illustrative




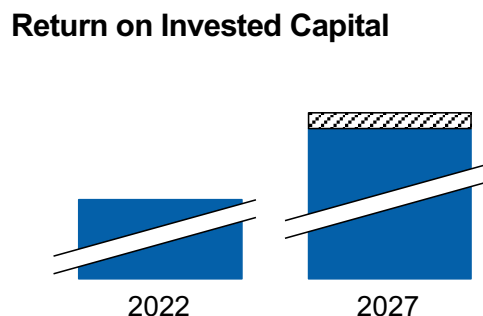
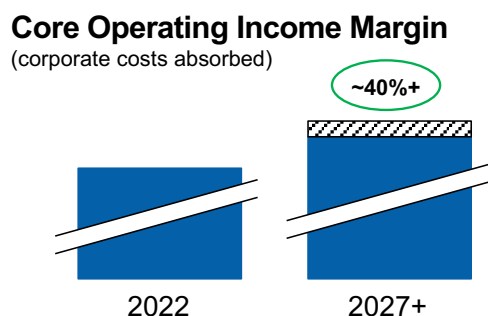
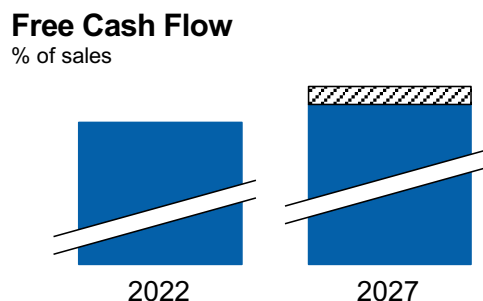
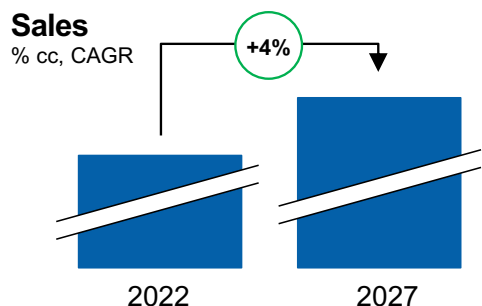
1. Company filings and FactSet. 2. Median P/E (Bloomberg, current year).



# New Novartis expected to continue delivering improved financials

## New Novartis expectations (illustrative only)

 Incremental benefit from planned Sandoz spin-off



Expected to grow sales, core margin and FCF (% of sales)

Margin targets include absorbing corporate costs

Planned Sandoz **spin-off** will result in **incremental growth** for:




















- Core operating income margin
- FCF (% of sales)
- Return on invested capital

**Remain committed to capital allocation priorities,** with growing (CHF) annual dividend



# Focused on five core Therapeutic Areas that have the largest growth potential and leverage our existing assets/expertise

## Select examples<sup>1</sup>

	Cardiovascular	Immunology	Neuroscience	Solid Tumors	Hematology
<b>Disease areas</b> (selected)	<ul style="list-style-type: none"> <li>Heart failure &amp; hypertension</li> <li>Atherosclerosis</li> </ul>	<ul style="list-style-type: none"> <li>Psoriasis</li> <li>Psoriatic arthritis</li> <li>Spondylitis/Spondylarthritis</li> <li>Hidradenitis suppurativa</li> <li>CSU</li> <li>Sjögren's / SLE / LN</li> </ul>	<ul style="list-style-type: none"> <li>Multiple sclerosis</li> <li>Spinal muscular atrophy</li> <li>Neurodegeneration, including Parkinson's, ALS</li> </ul>	<ul style="list-style-type: none"> <li>Breast and Women's cancer</li> <li>Prostate cancer</li> <li>Lung cancer</li> </ul>	<ul style="list-style-type: none"> <li>Non-Hodgkin's Lymphoma</li> <li>Non-malignant hematological - Immune thrombocytopenia</li> <li>Acute myeloid leukemia / Myelodysplastic syndrome</li> </ul>
<b>Commercial assets</b>	 	  	    	    	   
<b>Pipeline assets and opportunities</b>	<p><b>Iptacopan (LNP023)</b> C3G, IgAN</p> <p><b>Pelacarsen<sup>3</sup> (TQJ230)</b> CVRR-Lp(a)</p> <p><b>Leqvio</b> CVRR-LDLC</p> <p><b>XXB750</b> HFpEF, rHT</p>	<p><b>Cosentyx</b> Multiple indications</p> <p><b>Remibrutinib (LOU064)</b> CSU</p> <p><b>Ianalumab (VAY736)</b> Sjögren's, SLE, LN</p> <p><b>Ligelizumab (QGE031)</b> Food Allergy</p>	<p><b>Remibrutinib (LOU064)</b> MS</p> <p><b>OAV101</b> SMA IT</p> <p><b>DLX313<sup>4</sup></b> Parkinson's</p>	<p><b>Kisqali</b> Adjuvant HR+/HER2- BC</p> <p><b>JDQ433</b> NSCLC</p> <p><b>NIS793</b> 1L mPDAC / 1L mCRC</p> <p><b>Pluvicto</b> Prostate cancer</p>	<p><b>Iptacopan (LNP023)</b> PNH, aHUS</p> <p><b>Ianalumab (VAY736)</b> Multiple indications</p> <p><b>YTB323</b> Non-Hodgkin's Lymphoma</p>
<b>FY Sales USD<sup>5</sup></b>	<b>4.8bn</b>	<b>7.3bn</b>	<b>5.1bn</b>	<b>4.7bn</b>	<b>6.5bn</b>

1. TA-x (incl. Ophtha, Resp and other assets) not included in the above list. 2. Aimovig® is commercialized by Novartis ex-US/Japan. 3. Pelacarsen is licensed from Ionis Pharmaceuticals, Inc. 4. DLX313 is Novartis program name for UCB0599. 5. FY 2022 sales for entire Therapeutic Area.





# Our capital allocation priorities are shareholder-focused, allowing for flexibility in strategic investments and capital distribution

## Investing in the business

### Investments in organic business

**USD 9.1bn** R&D 2022<sup>1</sup>

**USD 1.2bn** capital investments 2022

### Value-creating bolt-ons

**USD 30bn** (approx.) 2018-2022

## Returning to shareholders

**USD 59bn distributed** 2018-2022

### Growing annual dividend in CHF

**USD 7.5bn** paid out in 2022

Proposed DPS: **+3.2% CHF; +3.9% USD**

No rebasing post planned Sandoz spin-off

### Share buybacks

**USD 15bn** ongoing

USD 4.9bn to be executed<sup>2</sup>



**Substantial  
cash  
generation**

Planned Sandoz spin-off is expected to have limited impact on our credit rating, providing continued flexibility for future capital allocations

1. Core R&D and cap-ex actuals 2022. 2. As of December 31, 2022.

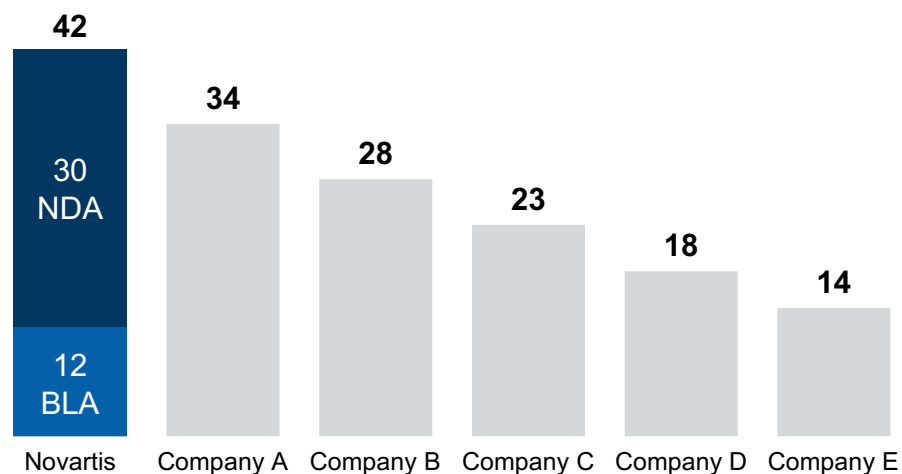


# Prioritizing pipeline to high-value innovative medicines

Refining our proven development engine with greater focus on asset value and improving R&D productivity

## Proven development engine

Total NME approvals by company (1999-2021)<sup>1</sup>



Industry leader across first-in-class approved NMEs<sup>2</sup>

## Improving R&D productivity

- 1 Clear TA strategy with disease area prioritization
- 2 Early assets with integrated development plans, until submission
- 3 Ongoing tracking and evaluation of asset progression/value
- 4 End-to-end governance with clear processes and ownership

### Expected outcomes

- Improved overall success rate (discovery to approval)
- Cycle time reduction
- Increased asset value

1. US FDA NME approvals. 2. FDA: BCG analysis (2017-2021).



## Key near-term readouts (2023) for high-value medicines...

### Key assets\* with submission enabling readouts in 2023

#### Kisqali®



NATALEE trial in adjuvant breast cancer testing broad patient population (anatomical stage II and III<sup>1</sup>), with final analysis expected in **H2 2023**

#### Iptacopan



APPOINT-PNH trial in treatment-naive patients positive readout; detailed data presentation in **2023**

PNH FDA submission planned **H1 2023**

APPLAUSE-IgAN Ph3 readout<sup>2</sup> planned in **H2 2023**

APPEAR-C3G Ph3 readout planned in **H2 2023**

#### Pluvicto®



PSMAfore trial in mCRPC (post-ARDT, pre-taxane) positive readout; detailed data presentation planned in **2023**

FDA regulatory submission planned **H2 2023**

\* Unprobabilized peak sales of all asset indications in late-stage development: ● > USD 1bn ●● > USD 2bn ●●● > USD 3bn

1. Based on AJCC prognostic staging. 2. 9 months analysis potentially supporting US Subpart H filing.



## ... set to increase in 2024-2025 timeframe

### Key assets\* with submission enabling readouts in 2024-2025

#### Pelacarsen



CVRR

Readout and submission in **2025**

#### Pluvicto®



mHSPC

Readout and submission in **2024**

#### OAV-101



SMA IT

Readout in **2024**; submission in **2025**

#### Iptacopan



Additional readouts/submissions

in **2025/2026+**

#### Remibrutinib



CSU

Readout and submission in **2024**

#### Scemblix®



1L CML-CP

Readout in **2024**; submission in **2025**

#### Ianalumab



1L and 2L ITP readouts in **2025**

with submission in **2026**

Additional hematology and

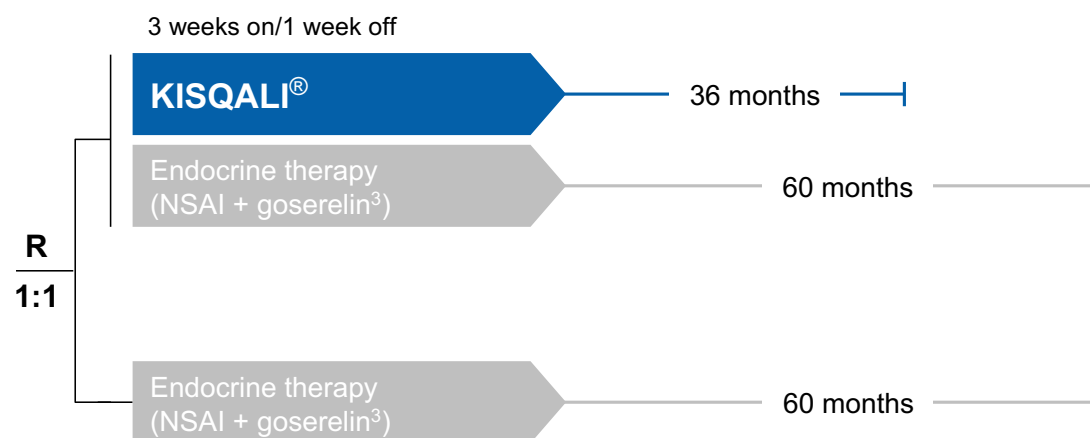
immunology indications **2026+**

\* Unprobabilized peak sales of all asset indications in late-stage development: ● > USD 1bn ●● > USD 2bn ●●● > USD 3bn



# Kisqali<sup>®</sup> – NATALEE study continues following first interim analysis; final readout expected H2 2023

**NATALEE:** HR+/HER2- pre- and post-menopausal, early breast cancer Stage II & III | N=5000



## NATALEE differentiation

Broad population including **anatomical Stage II and III<sup>2</sup>**

Longer treatment duration of **3 vs. 2 years** (monarchE)

**Lower dose** (400mg/day) to potentially improve tolerability and adherence without compromising efficacy

## Study status

**Final analysis planned at 500 iDFS events, expected H2 2023**

1<sup>st</sup> interim analysis at 70% of events (completed, study continues)

2<sup>nd</sup> interim analysis at 85% of events

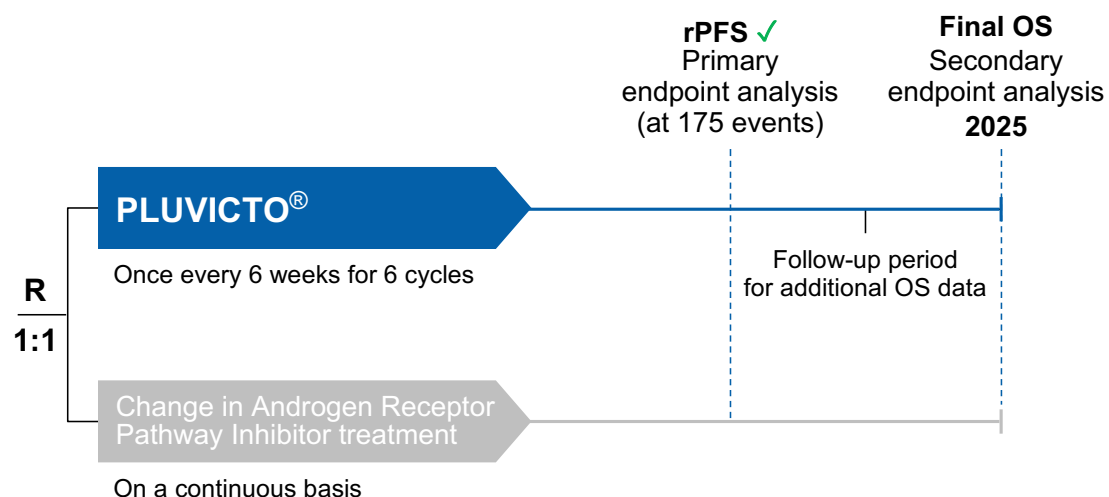
**Patient population: 218K** patients with early breast cancer in US + EU<sup>1</sup>

NSAI – non-steroidal aromatase inhibitor. 1. eBC Patient - Adjuvant Breast Cancer Opportunity Assessment June 2020. 2. Based on AJCC prognostic staging. 60% Stage III and 40% Stage II patients in study. Stage II vs. Stage III is a stratification factor. The trial did not require Ki-67% or other CDx for patient identification or stratification, but Ki-67% is part of the statistical analysis plan. 3. In pre-menopausal women and in men.



# Pluvicto® – PSMAfore study demonstrated statistically significant and clinically meaningful radiographic PFS benefit; filing H2 2023

**PSMAfore:** Patients with mCRPC who progressed while on ARPI treatment | N=450



## Study status

**Met the primary endpoint (rPFS)** – statistically significant and clinically meaningful

**First PSMA-targeted RLT to demonstrate clinical benefit** in patients with mCRPC who have not yet received taxane-based chemotherapy

FDA regulatory **submission planned for H2 2023**, to include OS data as aligned with FDA

**Addressing a significant unmet need** in earlier lines of metastatic prostate cancer

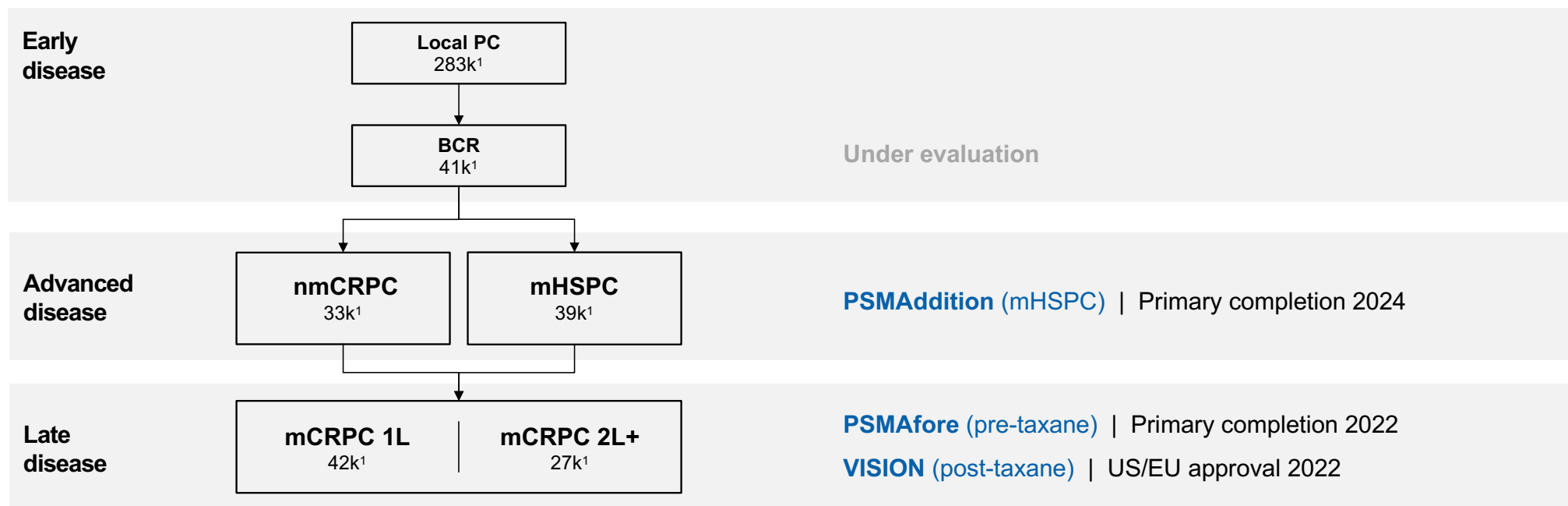
rPFS – radiographic progression free survival. OS – overall survival. mCRPC – metastatic castration-resistant prostate cancer.



# Expanding Pluvicto<sup>®</sup> development program to address significant unmet need in earlier lines and stages of prostate cancer

## Our ongoing clinical development plan for Pluvicto<sup>®</sup> in prostate cancer

Prostate cancer incidence in US, in patients per year



PC – prostate cancer. BCR – biochemical recurrence. nmCRPC – non-metastatic castration-resistant prostate cancer. mHSPC – metastatic hormone-sensitive prostate cancer. mCRPC – metastatic castration-resistant prostate cancer.  
1. Source: Kantar 2023 US Prostate Cancer Incidence, as of 30-Jan-2023



# Iptacopan – provides the opportunity to redefine care across multiple complement-driven conditions<sup>1</sup>

First-in-class, oral, selective factor B inhibitor, targeting complement system proximally via alternative pathway<sup>1</sup>

Indication	2021	2022	2023	2024	2025	2026+	Key updates	US prevalence Thousands
PNH		Ph3 - APPLY					<input checked="" type="checkbox"/> Superior to SoC for both primary endpoints in patients with residual anemia despite SoC	<10
		Ph3 - APPOINT					<input checked="" type="checkbox"/> Achieved clinically meaningful increases in Hb levels in treatment-naive patients with PNH	
IgAN		Ph3 - APPLAUSE	*				<input type="checkbox"/> 9 months analysis (H2 2023) potentially provides basis for US Subpart H filing on proteinuria reduction	185 <sup>2</sup>
C3G		Ph3 - APPEAR					<input type="checkbox"/> Submission enabling readout H2 2023	<10
aHUS			Ph3 - APPELHUS				<input type="checkbox"/> Submission enabling readout in 2025	<10
IC-MPGN				Ph3			<input type="checkbox"/> Ph3 start in H2 2023	<10

## Additional ongoing early-stage (Ph2) activities in Lupus Nephritis, iAMD and Immune thrombocytopenia

PNH – paroxysmal nocturnal hemoglobinuria. IgAN – immunoglobulin A nephropathy. C3G – complement 3 glomerulopathy. aHUS – atypical hemolytic uremic syndrome. iAMD – intermediate age-related macular degeneration. IC-MPGN – immune complex membranoproliferative Glomerulonephritis. \*9 months readout may support US submission for accelerated approval. 1. Phase 3 studies initiated or planned; additional indications are being explored. 2. Estimated ~46-55k number of patients at high risk of progression with proteinuria > 1g/day (~25-30%).





# Iptacopan demonstrated superiority over anti-C5 in adult PNH patients with residual anemia despite anti-C5 treatment...

**APPLY-PNH:** Randomized, active-comparator controlled Ph3 trial in adult PNH patients with residual anemia, despite treatment with an intravenous anti-C5 antibody

	Endpoints	Observed	Population estimate <sup>2</sup>	
		Iptacopan vs. SoC	Iptacopan vs. SoC	Difference
PRIMARY	Increase from baseline in Hb of $\geq 2$ g/dL in the absence of RBC transfusions	51/60 <sup>1</sup> vs. 0/35	82.3% vs. 2.0%	<b>80.3%</b> (95% CI 71.3, 87.6) P<0.0001 <sup>3</sup>
	Hb $\geq 12$ g/dL in the absence of RBC transfusions	42/60 <sup>1</sup> vs. 0/35	68.8% vs. 1.8%	<b>67.0%</b> (95% CI 56.3, 76.9) P<0.0001 <sup>3</sup>
SECONDARY	Transfusion avoidance	60/62 vs. 14/35	96.4% vs. 26.1%	<b>70.3%</b> (95% CI 52.6, 84.9) P<0.0001 <sup>3</sup>
	Clinical breakthrough hemolysis	2/62 vs. 6/35	Rate ratio (95% CI) of 0.10 (0.02, 0.61) means <b>10-fold lower</b> rate of annualized clinical breakthrough hemolysis	

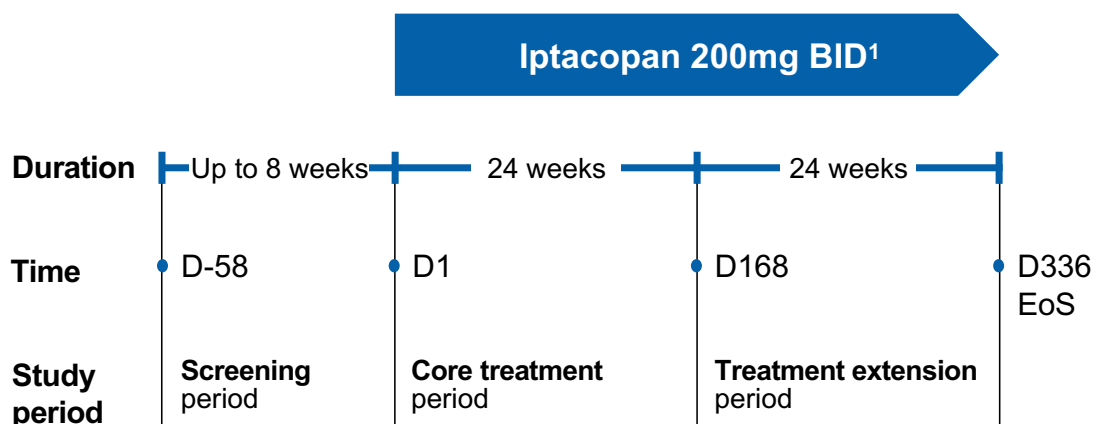
**Improvements across a range of other secondary endpoints:** Increasing Hb, reducing patient-reported fatigue and reticulocyte count, maintaining low LDH

PNH – paroxysmal nocturnal hemoglobinuria. 1. 2/62 patients in the iptacopan arm had missing data between Days 126 and 168 so were not evaluable based on observed data. 2. Marginal proportions reflect the population average probability of a patient meeting the endpoint criteria. 3. P values are two-sided and unadjusted.



## ... and showed clinically meaningful increases in Hb levels for treatment-naïve adult patients with PNH

**APPOINT-PNH:** Single-arm Ph3 trial in adult patients with PNH with hemolysis (LDH > 1.5x ULN) and anemia (Hb < 10g/dL) naïve to complement inhibitors



### Study status

**Met primary endpoint** of proportion of patients achieving a sustained increase in Hb of  $\geq 2$ g/dL, in the absence of transfusions, at 24 weeks

**Safety profile consistent** with previously reported data

**Data to be presented** at upcoming medical meeting

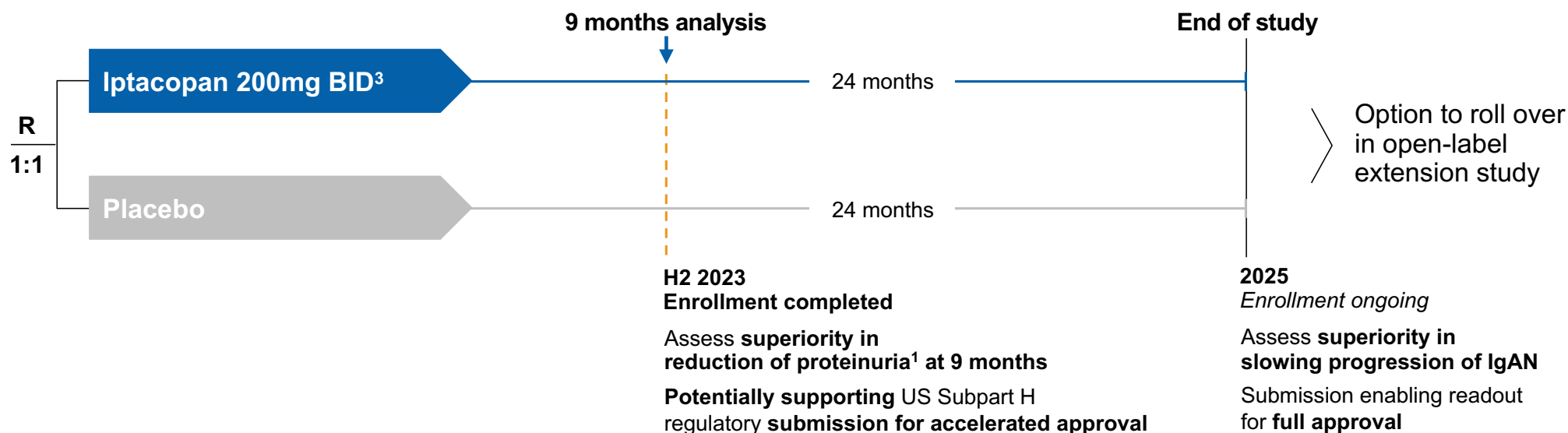
**Iptacopan has the potential to be practice-changing in PNH**

PNH – paroxysmal nocturnal hemoglobinuria. 1. BID – twice daily.



# Upcoming 9 months analysis from IgAN Ph3 study (APPLAUSE) could potentially support US Subpart H filing







**APPLAUSE-IgAN:** Biopsy-confirmed patients with IgAN at risk of progression with elevated proteinuria (UPCR<sup>1</sup> ≥1g/g) despite being on stable background therapy<sup>2</sup>



1. UPCR (urine protein-to-creatinine ratio) from 24-h urine collection. 2. Including at least maximally tolerated dose of ACEi/ARB for at least 90 days. 3. BID – twice daily.



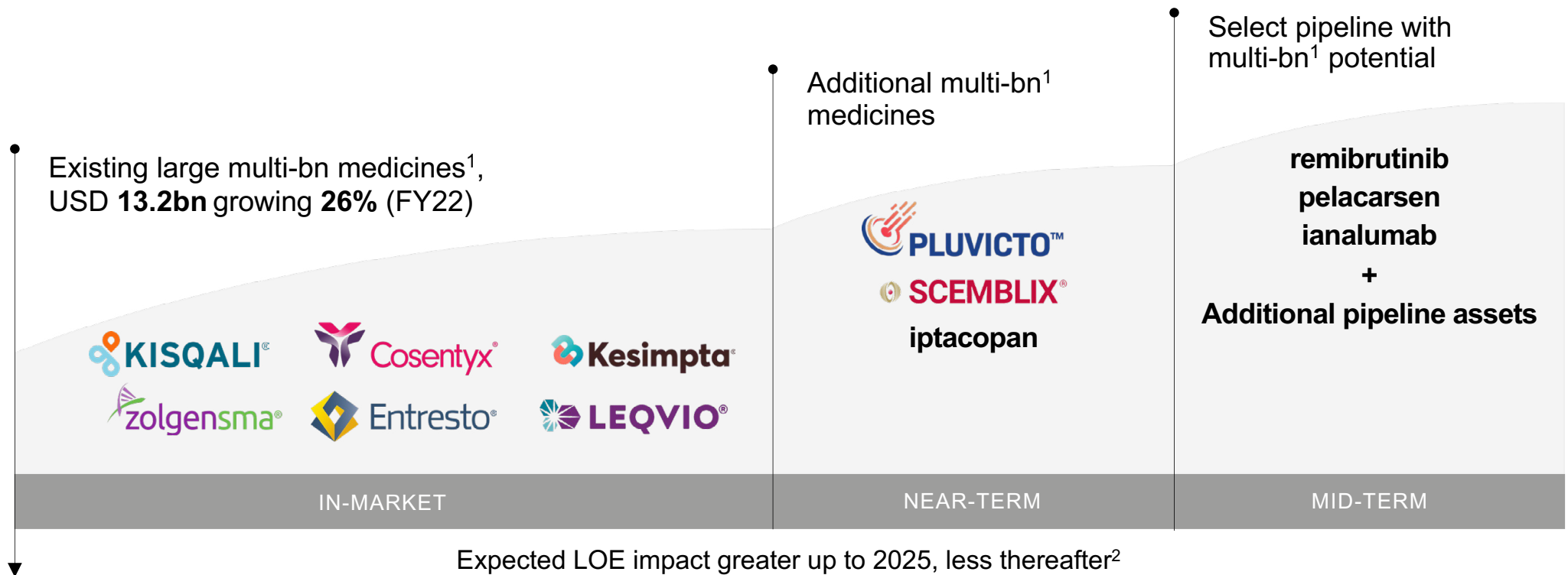
## Selected early stage assets with the potential to deliver high-impact medicines for patients

Compound	Therapeutic area	MoA	Indication(s)	Current phase	Next milestone
XXB750	Cardiovascular 	NPR1 agonist	<b>Hypertension</b> Heart failure	Ph2b	Ph2b readout 2024
YTB323	Hematology 	CD19 RAPID CART	<b>1L HR LBCL</b>	Ph2	Data readout(s) 2024/2025
	Immunology 		Multiple indications being explored	-	-
AAA603	Solid Tumors 	Radioligand therapy targeting GRPR	<b>Breast cancer</b> Glioblastoma	Ph1	Ph1 readout – H2 2023
PPY988	Ophthalmology 	Gene therapy - Complement factor I modulation	<b>Geographic atrophy</b>	Ph2b	Topline data – 2024
DLX313	Neuroscience 	a-Synuclein inhibitor	<b>Parkinson's</b>	Ph2a	Topline data – 2024

NPR1 – natriuretic peptide receptor 1. CART – chimeric antigen receptor T. LBCL – large B-cell lymphoma. GRPR – gastrin releasing peptide receptor.



# Confidence in near and mid-term growth underpinned by multi-bn existing medicines and pipeline



1. Potential USD sales. 2. For forecasting purposes, we assume Entresto LOE in 2025.



GROWTH

# 2022 driven by particularly strong performance from Entresto<sup>®</sup>, Kesimpta<sup>®</sup>, Kisqali<sup>®</sup> and Pluvicto<sup>®</sup>

## FY sales<sup>1</sup>

	Sales USD million	Growth vs. PY USD million	Growth vs. PY cc
Entresto <sup>®</sup> * <small>valsartan/valsartan</small>	4,644	1,096	37%
Kesimpta <sup>®</sup> * <small>(ofatumumab) intravenous</small>	1,092	720	200%
KISQALI <sup>®</sup> * <small>ribociclib</small>	1,231	294	38%
PLUVICTO <sup>®</sup> * <small>amivantamab veeva</small>	271	271	nm
SEMBLIX <sup>®</sup> * <small>(secarmetinib) oral suspension</small>	149	142	nm
LEQVIO <sup>®</sup> * <small>levamisole</small>	112	100	nm
Tafinlar + Mekinist <sup>®</sup> <small>(dabrafenib) (vemurafenib)</small>	1,770	77	11%
MAYZENT <sup>®</sup> <small>(siponimod) tablets</small>	357	76	32%
ILGARIS <sup>®</sup> <small>(calixtalimab) intravenous</small>	1,133	74	15%
PROMACTA <sup>®</sup> <small>(eltrombopag)</small>	2,088	72	9%
Cosentyx <sup>®</sup> * <small>(secukinumab)</small>	4,788	70	5%

2022:  
Strong growth (+60% cc)

2023 and beyond:  
Expect continued  
strong growth

Expect LCM to accelerate growth

\* Please see subsequent slides

Constant currencies (cc) is a non-IFRS measure; explanation of non-IFRS measures can be found on page 50 of Condensed Interim Financial Report. Unless otherwise noted, all growth rates refer to same period in PY.  
nm – not meaningful. LCM – life cycle management.



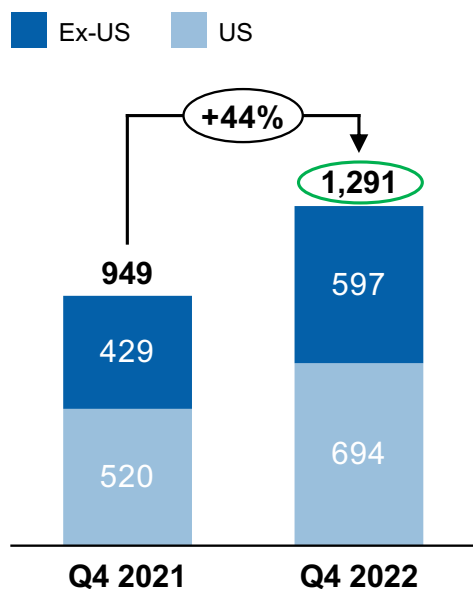
GROWTH

# Entresto® delivers strong growth across all geographies



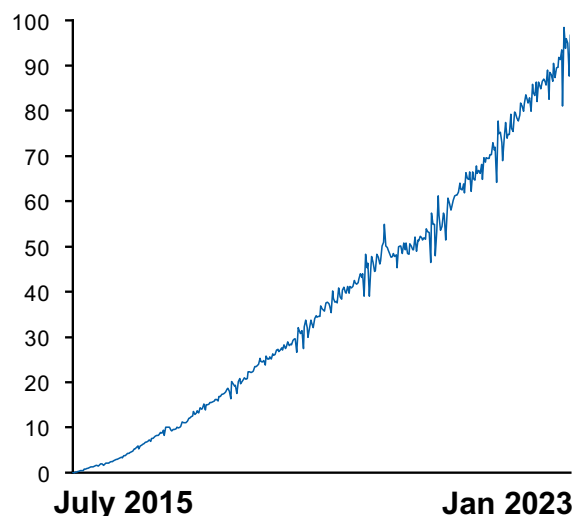
## Sales evolution

USD m, % cc



## US weekly TRx<sup>2</sup>

Total prescriptions (000)



## Strong Q4 momentum across geographies

US: NBRx +16% vs PY, ~1.2m TRx in Q4<sup>1</sup>

EU: continued growth in HFrEF

China/Japan: significant contribution from HTN<sup>2</sup>

FY sales 4.6bn (+37% cc, +1.1bn)

## Confidence in future growth<sup>3</sup>

US/EU: further penetration in CHF

Strong clinical profile and RW data in heart failure

China/Japan: launch momentum in HTN

TRx – total prescriptions. HFrEF – heart failure with reduced ejection fraction. CHF – chronic heart failure. RW – real world. HTN – hypertension. 1. IQVIA National Prescription Audit. 2. Approved indications differ by geography. Examples include “indicated to reduce the risk of cardiovascular death and hospitalization for HF in adult patients with CHF. Benefits are most clearly evident in patients with LVEF below normal.” (US) HFrEF (EU) HFrEF and HTN (China and JP). HTN is not an approved indication in the US. 3. For forecasting purposes, we assume Entresto® LOE in 2025.



GROWTH

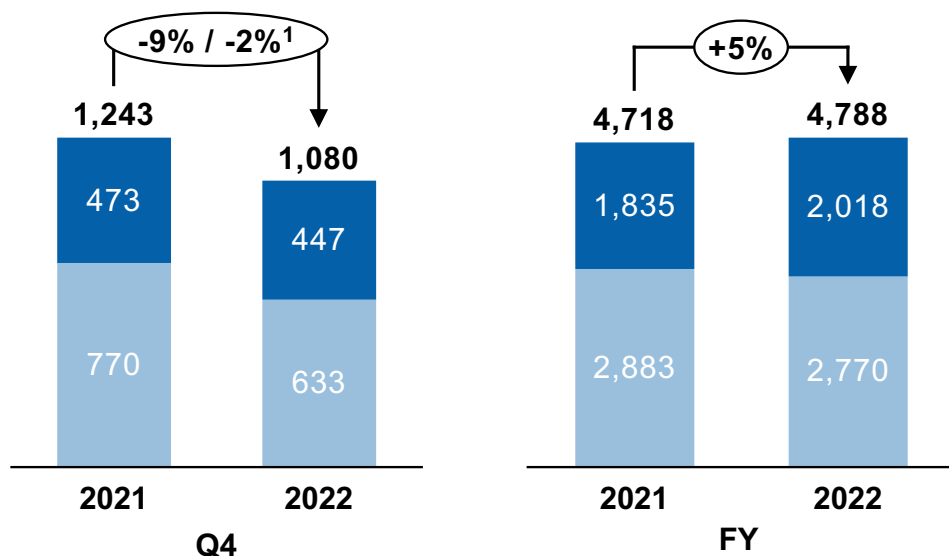
# Cosentyx<sup>®</sup> Q4 sales impacted mainly by a revenue deduction true-up related to prior quarters in the US and China COVID lockdowns



## Sales evolution

USD m, % cc

■ Ex-US ■ US



## Q4 performance

**US:** -18%/-6%<sup>1</sup>. Impacted by a RD true-up relating to prior quarters in 2022 driven primarily by a higher Medicaid channel mix

**Ex-US:** +5% (cc), growth driven by core indications

**China:** Impacted by COVID and stock compensation provision for 2023 NRDL re-listing

Volume continues to grow across key geographies

**FY sales USD 4.8bn (+5% cc) driven by ex-US (+20% cc)**

## Future growth mainly driven by LCM

**2023:** Expect sales broadly in line with PY (H2 growth and H1 decline<sup>2</sup>)

**2024+:** LCM anticipated to drive next phase of growth

RD – revenue deduction. NRDL – national reimbursement drug list. LCM – life cycle management. 1. US Cosentyx<sup>®</sup> sales growth was impacted by a revenue deduction true-up, which was related to prior quarters in 2022. Global sales declined -9% in Q4 vs. PY (decline would have been -2% without the true-up). US sales declined -18% in Q4 vs. PY (decline would have been -6% without the true-up). 2. Expect continued RD dynamics in US.





GROWTH

# Cosentyx<sup>®</sup> – life cycle management to drive growth from 2024

Peak sales potential including all existing and new indications > USD 7bn



Indication	Potential
Hidradenitis Suppurativa (HS)	
Giant Cell Arteritis (GCA)	●●●
Lupus Nephritis (LN)	●●●
2mL AI/PFS & IV expansion	
<i>Additional Ph3 indication programs under assessment</i>	

●●○ <USD 1bn   ●●○ USD 1-2bn   ●●● >USD 2bn

## Diagnosed population<sup>1</sup>

Indication	Patients	Unmet need
HS	>400K	Debilitating skin disease with significant QoL impact
GCA	>480K	Eye-sight threatening vasculitis in elderly
LN	>130K	Major cause of morbidity and mortality in SLE patients

## Life cycle development milestones

	2022	2023	2024	2025	2026	2027
HS		◆ EU ◆ US				
IV		◆ US				
2mL AI / PFS		◆ US				
GCA	Ph3	★				
LN	Ph3	★				

★ Primary readout  
◆ Regulatory decisions expected

HS – hidradenitis suppurativa. GCA – giant cell arthritis. LN – lupus nephritis. AI – auto injector. PFS – prefilled syringe. IV – intravenous formulation (rheumatology indications). 1. Total diagnosed population G6 countries.



GROWTH

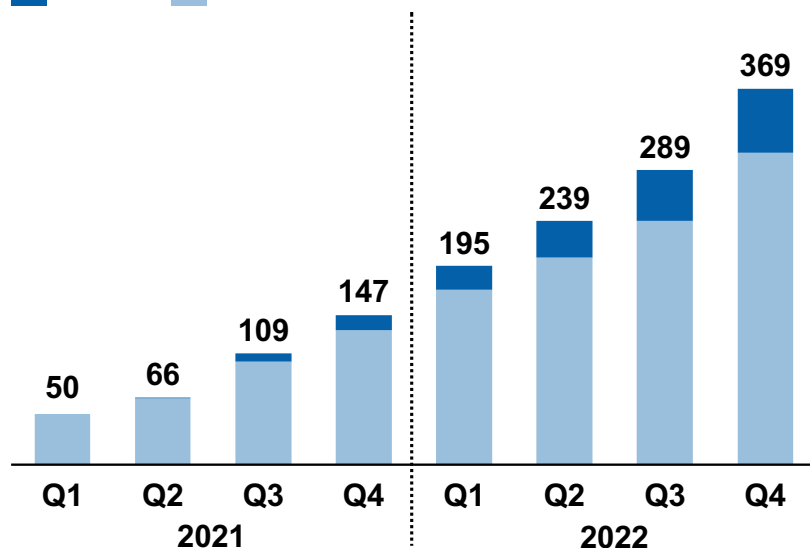
# Kesimpta® shows strong growth driven by a compelling product profile



## Sales evolution

USD m, % cc

■ Ex-US ■ US



### Global sales +28% (cc) vs. Q3, driven by US<sup>1</sup>

TRx +116% vs. PY (market +1%)<sup>1,2</sup>

NBRx +43% vs. PY (market -8%)<sup>1,2</sup>

B-cell NBRx share about 50% of MS market<sup>1,2</sup>

Kesimpta® B-cell NBRx share ~30%<sup>1,2</sup>

Adding ~80-90 new writers/month<sup>1,3</sup>

Fast initiation: <6 days for 80% patients<sup>1,4</sup>

FY sales **USD 1.1bn (+200% cc)**

### Confident in future growth

**Powerful efficacy:** 9/10 patients with NEDA-3 at year 4<sup>5</sup>

**Convenience:** 1 minute a month dosing from home or anywhere<sup>6</sup>

TRx – total prescriptions. NBRx – new to brand prescription. NEDA – No Evidence of Disease Activity. 1. Refers to US unless otherwise stated. 2. December 2022, IQVIA NPA (Kesimpta®) and IQVIA NPA adjusted by NSP (all others). B-cell therapies as portion of MS market in NBRx. 3. Data on file. 4. Measured as days between prescription and dispense of first dose. Refers to patients in Kesimpta® Patient Support Program. Data on file. 5. Kuhle, et al. Poster presented atECTRIMS, 26–28 October, 2022. 6. The initial dosing period consists of 20 mg subcutaneous doses at Weeks 0, 1 and 2, thereafter once a month. Patient must take pen out of the refrigerator 15-30 minutes before self-administering.



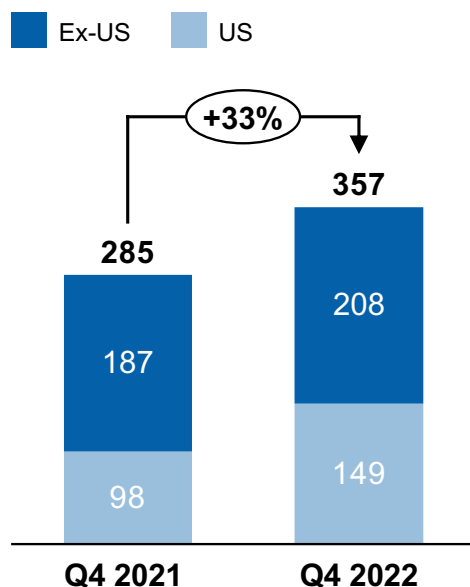
GROWTH

# Kisqali<sup>®</sup> delivers strong growth across all geographies based on increasing recognition of overall survival and quality of life benefits



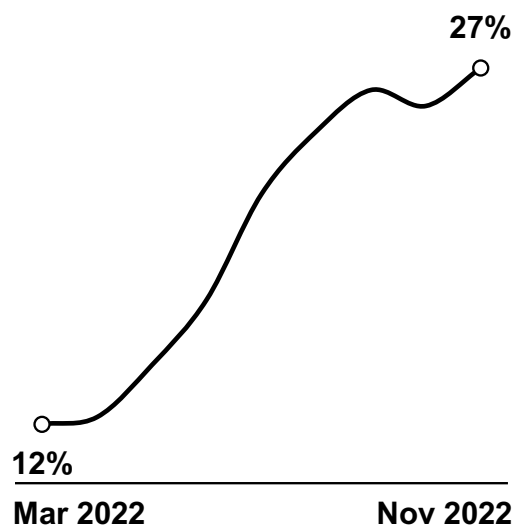
## Sales evolution

USD m, % cc



## US mBC NBRx share<sup>1</sup>

R3M, %



FY sales USD 1.2bn (+38% cc)

NBRx share 27%<sup>1</sup>

**NCCN update<sup>2</sup>:** The only Category 1 treatment for 1L mBC with AI; Category 1 for 1L with fulvestrant

**RIGHT Choice Ph2 study:** Kisqali<sup>®</sup> doubled median PFS in patients with aggressive HR+/HER2- mBC compared to CT<sup>3</sup>

**NATALEE** final analysis expected **H2 2023**

**HARMONIA H2H** (vs. Ibrance<sup>®</sup>) recruiting

**Approved in China** for pre/peri-menopausal HR+/HER2- mBC

mBC – metastatic breast cancer. R3M – rolling 3 months. H2H – head-to-head. 1. Of CDK4/6 mBC market, US Nov'22 R3M. 2. NCCN Guidelines updated as of 27-Jan-2023. 3. RIGHT Choice evaluated Kisqali<sup>®</sup> plus endocrine therapy (ET) vs. combination chemotherapy (CT) in 1L pre- and perimenopausal patients with aggressive forms of HR+/HER2- mBC, including patients with visceral crisis. Data presented at SABCS: mPFS 24.0 vs. 12.3 months; HR=0.54; p=.0007.



GROWTH

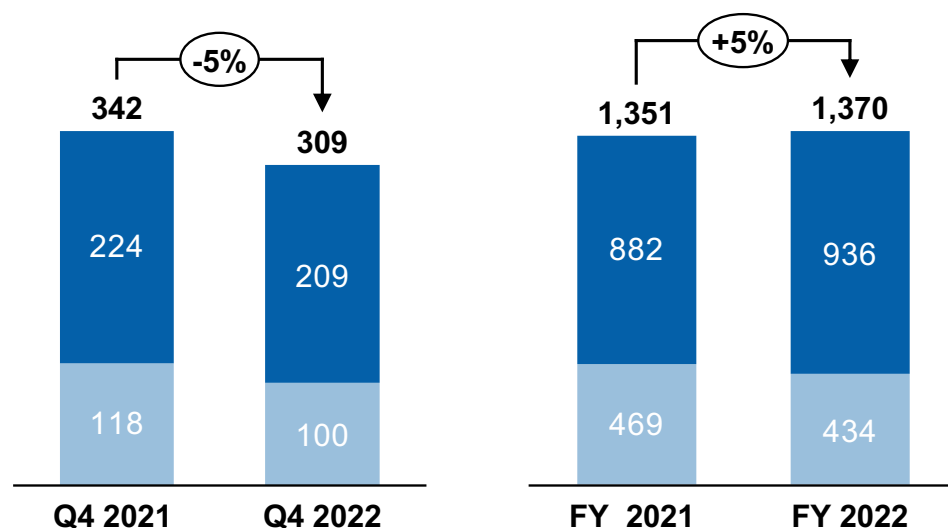
# Zolgensma<sup>®</sup> maintains leading share in patients with SMA <2 years of age<sup>1</sup>; Q4 growth impacted by prior year prevalent boluses



## Sales evolution

USD m, % cc

■ Ex-US ■ US



1. Based on US data.

Markets **mainly incident** patient population

Maintaining leader share (**>90% US**) in <2 years

Q4 sales **decline** due to prior year prevalent boluses in **ex-US** markets (Europe/Canada)

FY sales **USD 1.4bn (+5% cc)**

Continued efforts to **increase newborn screening ex-US** (45% in Europe; >99% in US)

**IT development on track** – Ph3 STEER and STRENGTH enrolling



GROWTH

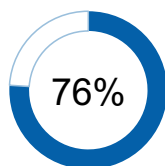
# Leqvio® – we are continuing to progress the launch in Q4...



## Addressing non-clinical barriers

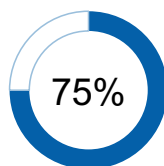
### Access

Patients covered at or near label<sup>1</sup>



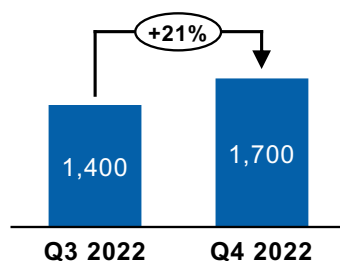
### Adherence

Patients coming for 2<sup>nd</sup> dose within <95 days<sup>4</sup>



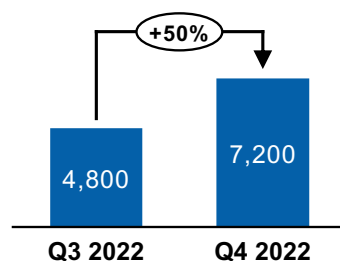
### Adoption

Facilities<sup>2</sup> having ordered Leqvio®



### Adoption

HCPs<sup>3</sup> with Leqvio® experience



FY sales **USD 112 million**

### ORION-3 data and publication

- Strong long-term safety profile
- Effective/sustained reductions in LDL-C over 4 years
- At any time throughout the trial ~80% of patients reached LDL-C <70mg/dL

Ph3 **secondary prevention CVRR studies (ORION-4 / V2P) ongoing**

Ph3 **primary prevention CVRR study** expected start **H1 2023**

HCP – healthcare professional. V2P – VICTORION-2-PREVENT. 1. As of January 3, 2022. 2. Either an alternate site of care or a physician practice. 3. Either prescribe Leqvio® to a patient based on service center data, data on file or have ordered through Free Trial Offer program. 4. Refers to average duration in between doses. Based on IQVIA and data shared by infusion management and ambulatory infusion center companies. \*Leqvio® is administered initially, again at 3 months, and then once every 6 months. \*\*Novartis has obtained global rights to develop, manufacture and commercialize Leqvio® under a license agreement with Alnylam Pharmaceuticals.



GROWTH

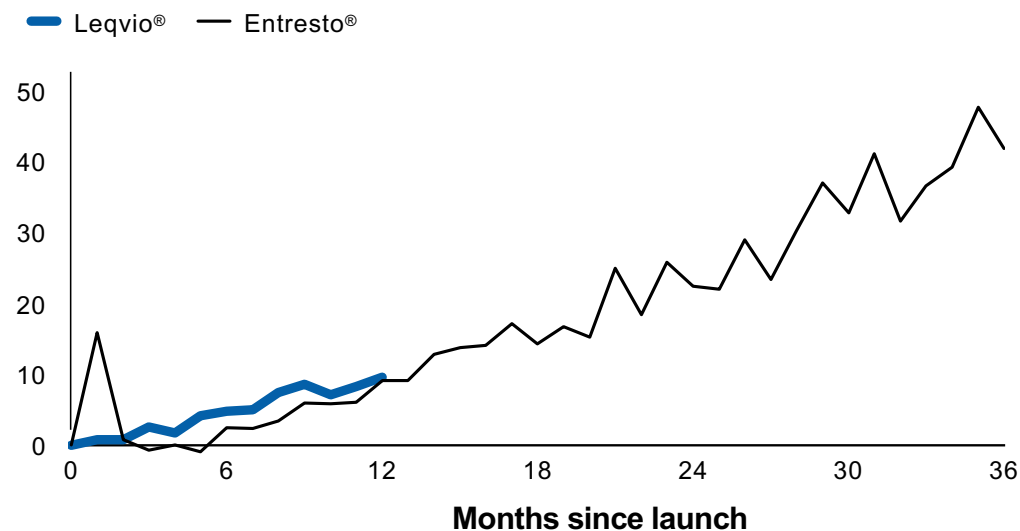
## ... expect steady ramp in 2023 similar to Entresto® US trajectory



### Leqvio® in line with initial Entresto® launch

#### US monthly sales evolution

USD m



### 2023 focus

#### US: Accelerate adoption

- Enable new facilities to order Leqvio® (breadth)
- Accelerate growth among prescribers (depth)
- Support HCPs with acquisition/reimbursement process
- Expect gradual conversion from Free Trial offer

#### Ex-US: Continue rollout

- Expand prescriber breadth in **UK**
- Anticipate regulatory approval in additional geographies including **China** (Q4 2023)
- Prepare for anticipated launches in **China/Japan/Spain**

\*Leqvio® is administered initially, again at 3 months, and then once every 6 months. \*\*Novartis has obtained global rights to develop, manufacture and commercialize Leqvio® under a license agreement with Alynham Pharmaceuticals.



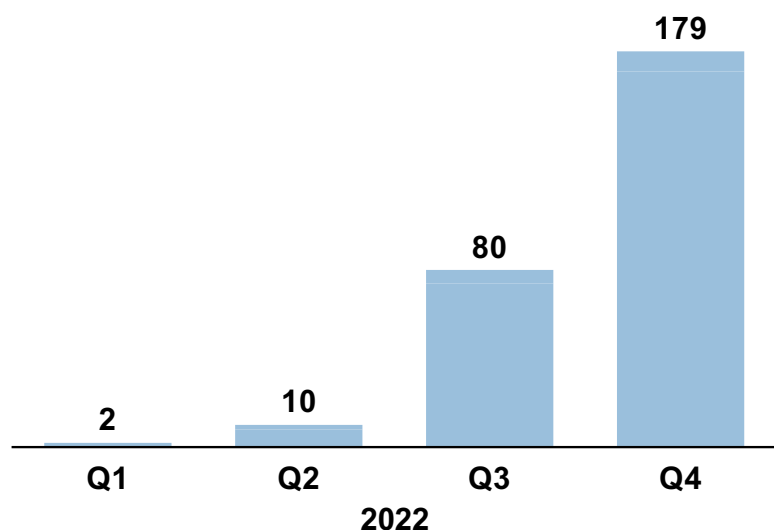
GROWTH

# Pluvicto<sup>®</sup> rapid uptake in US reflects very strong demand, driven by significant unmet need and impressive clinical profile



## Sales evolution

Global sales, USD m



FY sales **USD 271 million** (almost entirely US)

**NBRx share 18%** in post-taxane mCRPC

**160+ unique accounts** in US treated with Pluvicto in 2022

**More than 75% of insured lives covered**  
(across Medicare, Medicaid and private payers)

**Permanent A code** effective in October

**Approved in EU** for mCRPC post-taxane

NBRx – new to brand prescriptions. mCRPC – metastatic castration-resistant prostate cancer.



GROWTH

# Pluvicto<sup>®</sup> manufacturing capacity is set to significantly expand in 2023 with bringing Millburn and Indianapolis on-line



## Expected coverage by end 2023

Manufacturing site <sup>1</sup> :	Ivrea	Millburn	Indianapolis	Zaragoza
Commercial	US, EU, RoW <sup>2</sup>	Canada, US <sup>3</sup>	US <sup>3</sup>	-
Clinical	EU, RoW	Canada, US, EU	-	EU, RoW <sup>2</sup>

## Targeting capacity of at least 250k doses annually for 2024+

1. Additional manufacturing sites in Asia under evaluation. 2. Dependent on regulatory approval. 3. Expected in H2 2023.





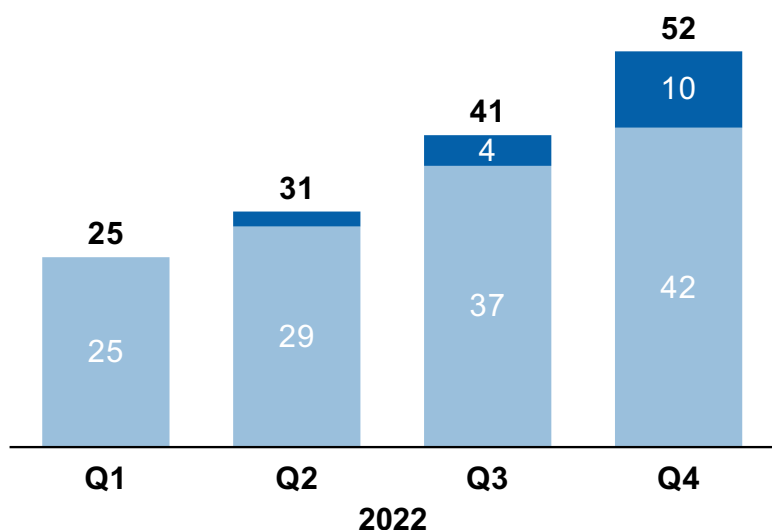
# Scemblix<sup>®</sup> launch off to a strong start



## Sales evolution

USD m

■ Ex-US ■ US



FY sales **USD 149 million**

US sales driven by patients resistant/intolerant to other TKIs; CML 3L+ **NBRx share at 29%**<sup>1</sup>

**Global rollout** ongoing with approval in 40 countries; access pathways in 9, negotiations ongoing in 30+

**ASCEND IIT** presented at ASH, showing promising preliminary results and consistent tolerability in 1L CML

**ASC4FIRST (1L registrational study)** completed enrollment ahead of plan, readout expected 2024

1. IQVIA: US Oct 2022 rolling three months 3L+ new patient start share.



# Harry Kirsch

Chief Financial Officer

---

## Financial review and 2023 guidance





## 2022 financial results in line with guidance; ahead on Core OpInc

### Group full year guidance (Q3 earnings October 2022)

In cc

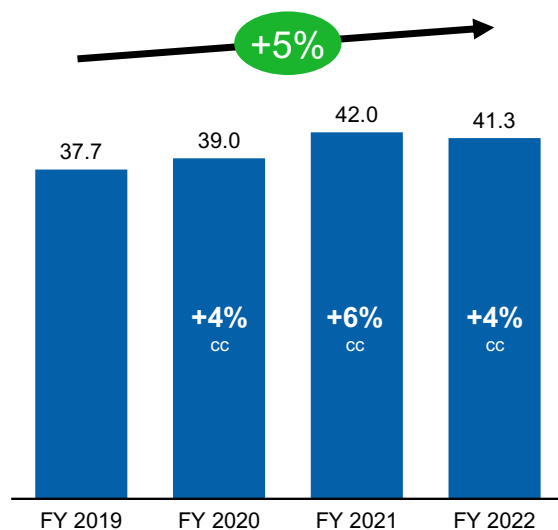
		FY 2022 vs. PY
Innovative Medicines	Sales to <b>grow mid single digit</b>	+4%
	Core OpInc to <b>grow mid to high single digit, ahead of sales</b>	+8%
Sandoz	Sales to <b>grow low to mid single digit</b>	+4%
	Core OpInc to <b>grow low single digit</b>	-1%
Group	Sales to <b>grow mid single digit</b>	+4%
	Core OpInc to <b>grow mid single digit</b>	<b>+8%</b>



# 2022 performance continues our track record of consistent top-line growth and core margin expansion for Innovative Medicines (IM)

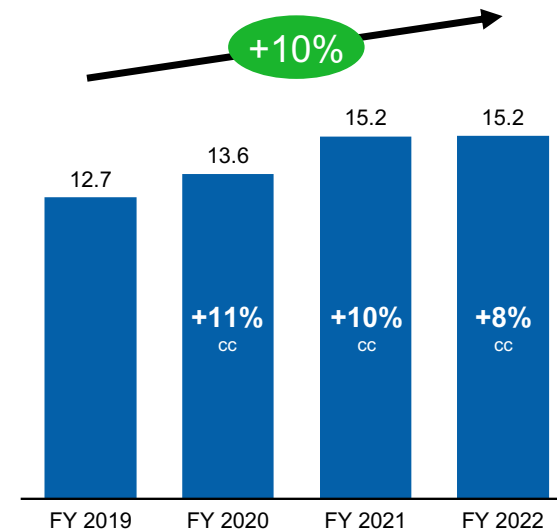
## IM Sales<sup>1</sup>

USD bn, % CAGR cc



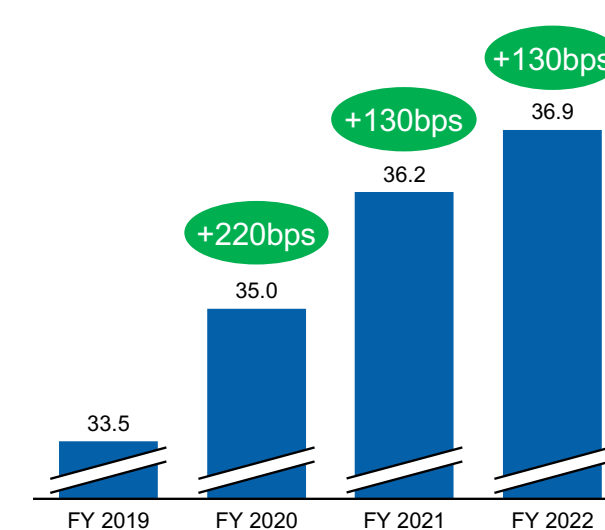
## IM Core OpInc<sup>1</sup>

USD bn, % CAGR cc



## IM Core Margin<sup>1</sup>

(%), growth bps cc



1. 2022 FY Sales growth +4% cc and -2% USD, 2022 FY Core OpInc growth +8% cc and 0% USD.



## Solid Q4 and FY performance

Group <sup>1</sup> USD million	Q4 2022	Change vs. PY		FY 2022	Change vs. PY	
		% USD	% cc		% USD	% cc
Net Sales	12,690	-4	3	50,545	-2	4
Core Operating income	4,030	6	15	16,665	0	8
Operating income	1,949	-24	-14	9,197	-21	-13
Net Income	1,466	-91	-90	6,955	-71	-67
<i>Growth ex. prior year Roche income</i>		-12	2		-20	-9
Core EPS (USD)	1.52	9	19	6.12	-3	6
<i>Growth ex. prior year Roche income</i>		12	23		5	14
EPS (USD)	0.69	-91	-89	3.19	-70	-66
<i>Growth ex. prior year Roche income</i>		-8	7		-17	-7
Free Cash Flow	3,552	17		11,945	-10	
<i>Growth ex. prior year Roche dividend</i>		17			-6	

1. Core results, constant currencies and free cash flow are non-IFRS measures. Further details regarding non-IFRS measures can be found starting on page 50 of the Condensed Financial Report. A table showing the Q4 2022 and FY 2022 key figures excluding Roche can be found on page 3 and 9 and a reconciliation of 2021 IFRS results and non-IFRS measures core results to exclude the impacts of the 2021 divestment of our Roche investment can be found on page 59 of the Condensed Interim Financial Report.



# Novartis proposes 26th consecutive dividend increase to the AGM: 3.20 CHF / share<sup>1</sup>

## 2022

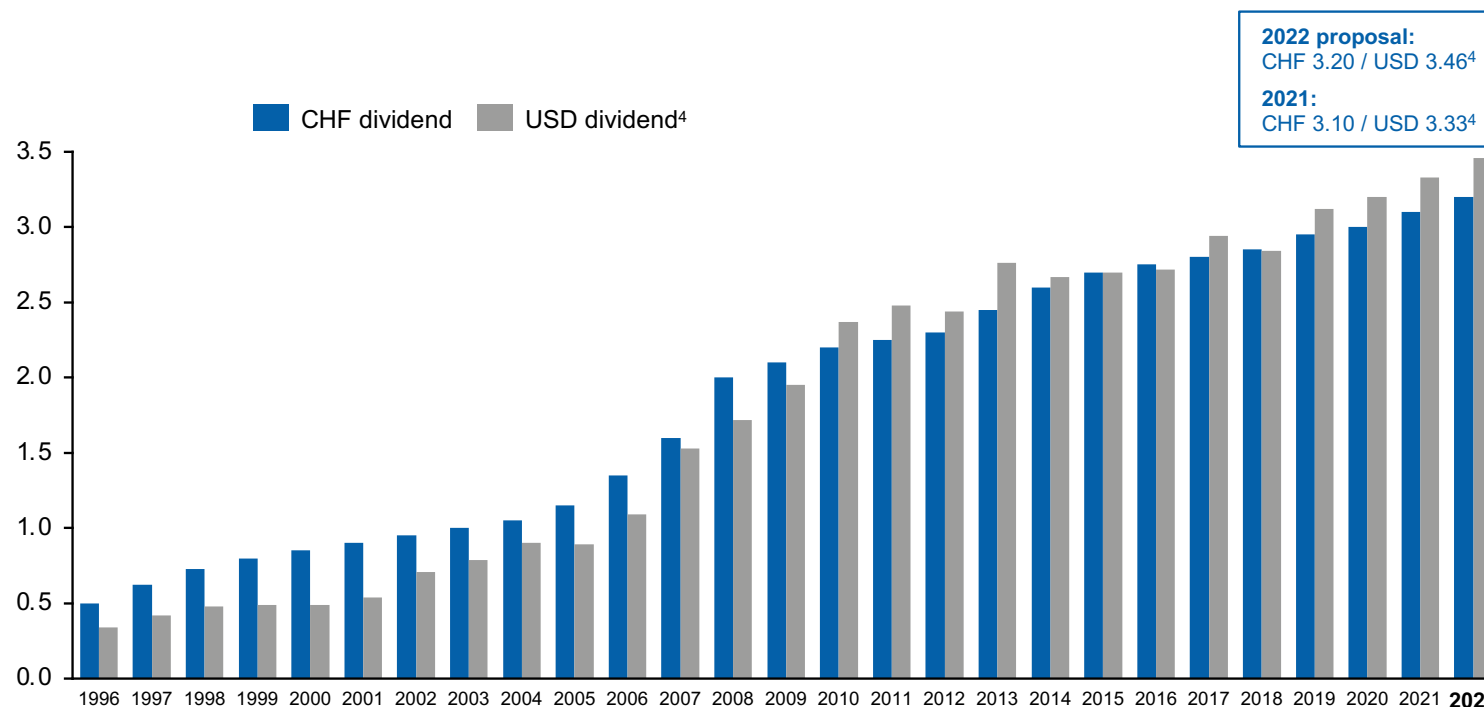
Dividend yield **3.8%**<sup>2</sup>

Dividend growth **3.2%**<sup>3</sup>

## 1996-2022 CAGR

CHF: **7.4%**

USD: **9.3%**<sup>4</sup>



1. Proposal to shareholders at the 2023 Annual General Meeting, taking place on March 7, 2023    2. Based on closing share price of CHF 83.59 at end of business year 2022 (December 30, 2022)    3. In CHF  
 4. Historical dividends per share converted at historical exchange rates at the dividend payment dates as per Bloomberg; for 2022, translated into US dollars at the FX rate of CHF/USD of 1.081, as of December 31, 2022



## Continuing core margin improvements for Group driven by IM

	Q4 2022				FY 2022			
	Net sales change vs. PY	Core operating income change vs. PY	Core margin	Core margin change vs. PY	Net sales change vs. PY	Core operating income change vs. PY	Core margin	Core margin change vs. PY
	(in % cc) <sup>1</sup>	(in % cc) <sup>1</sup>	(%) <sup>1</sup>	(%pts cc) <sup>1</sup>	(in % cc) <sup>1</sup>	(in % cc) <sup>1</sup>	(%) <sup>1</sup>	(%pts cc) <sup>1</sup>
Innovative Medicines	3	14	36.4	3.5	4	8	36.9	1.3
Sandoz	0	-18	16.8	-3.8	4	-1	20.6	-1.1
<b>Group</b>	<b>3</b>	<b>15</b>	<b>31.8</b>	<b>3.5</b>	<b>4</b>	<b>8</b>	<b>33.0</b>	<b>1.3</b>

IM – Innovative Medicines. 1. Constant currencies (cc), core results are non-IFRS measures. An explanation of non-IFRS measures can be found on page 49 of the Condensed Interim Financial Report.



# Sandoz returns to growth in 2022; planned spin-off on track for H2

Driven by Biopharma and ex-US sales

## FY performance<sup>1</sup>

Sales USD 9.2bn (+4%)

Biopharma grew 9% and Retail 4%

Strong ex-US sales growth:

- EU: USD 4.9bn (+4%)
- RoW: USD 2.5bn (+9%)
- US: USD 1.8bn (-4%)

Core OpInc (-1%) impacted by inflationary pressures on input costs and higher SG&A

## Key growth drivers for 2023 and beyond

Share gains across geographies

Two potential US biosimilar approvals expected in H2 2023

Launches, targeting USD 80bn originator sales (2030) with strong pipeline of 15+ biosimilar assets

Bolt-on BD&L and M&A

## On track for planned spin-off in H2 2023

Final transaction requires Novartis AG BoD and shareholder approval

Carve-out financials to be provided ahead of CMD

Expected to be tax neutral to Novartis and the majority of our institutional shareholders

1. All growth rates in constant currencies (cc).





# Novartis excluding and including Sandoz 2023 full year guidance

Expected, barring unforeseen events; growth vs. PY in cc

<b>Innovative Medicines (IM)</b>	Sales expected to <b>grow low-to-mid single digit</b> Core OpInc expected to <b>grow mid-to-high single digit</b>
<b>Novartis ex. Sandoz</b> (IM + Corporate)	Sales expected to <b>grow low-to-mid single digit</b> Core OpInc expected to <b>grow mid-to-high single digit</b>
<b>Novartis incl. Sandoz</b> (IM + Sandoz + Corporate) <sup>1</sup>	Sales expected to <b>grow low-to-mid single digit</b> Core OpInc expected to <b>grow mid single digit</b>

## Key assumptions:

- Our guidance assumes that we see a continuing return to normal global healthcare systems, including prescription dynamics, and that no Sandostatin® LAR generics enter in the US in 2023
- We continue to expect that the planned Sandoz spin-off is completed in H2 2023

1. Novartis Group guidance, assuming Sandoz would remain within the Group for the entire FY 2023



## Sandoz 2023 and mid-term guidance

Expected, barring unforeseen events; growth vs. PY in cc

### 2023

Sales expected to **grow low-to-mid single digit**

Core OpInc expected to **decline low double digit**, reflecting required stand-up investments to transition Sandoz to a separate company and continued inflationary pressures

### Mid-term

Sales expected to **grow low-to-mid single digit CAGR**

Core OpInc margin expected to **expand to mid 20s**, continuously progressing from the low 2023 base driven by continued Sales growth and operational efficiencies

### Key assumptions:

We continue to expect that the planned Sandoz spin-off is completed in H2 2023

Note: after completion of planned Sandoz spin-off, Core OpInc guidance will be expressed in terms of core EBITDA.



## FY 2023 guidance on other financial KPIs

Barring unforeseen events; (in cc)

### Group | Full year guidance

#### Core Net Financial Result

Expenses expected to be broadly in line vs. 2022

#### Core Tax Rate

Expected to be broadly in line vs. 2022



# Group Core OpInc to grow mid single digit as sales growth and SG&A savings partly offset by Gx erosion and Sandoz stand-up costs

## 2023 key drivers of core operating income (Group)

Vs. PY (cc) Illustrative



- + In-market growth drivers to continue growing strongly
- + Recent launches to further accelerate
- + China growth expected to accelerate benefiting from return to normal in H2
- + Simplified organizational model to deliver continued SG&A savings
- + Ongoing productivity programs



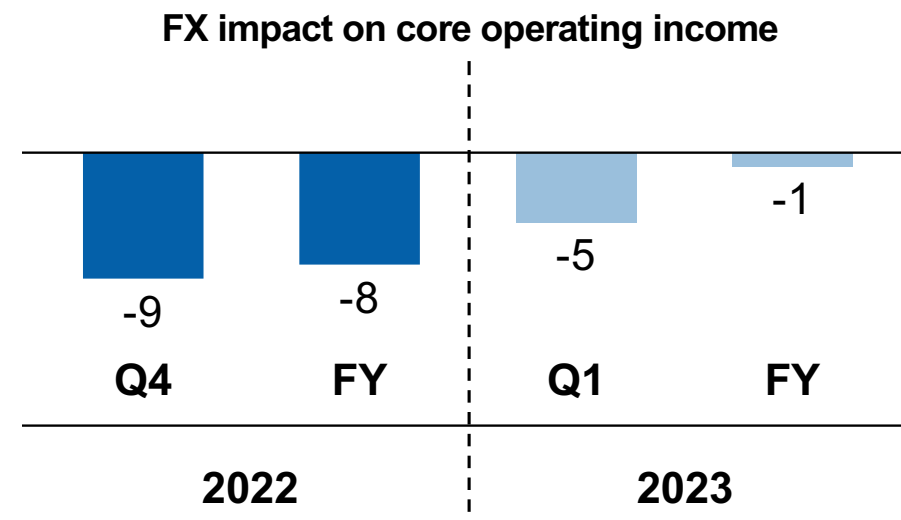
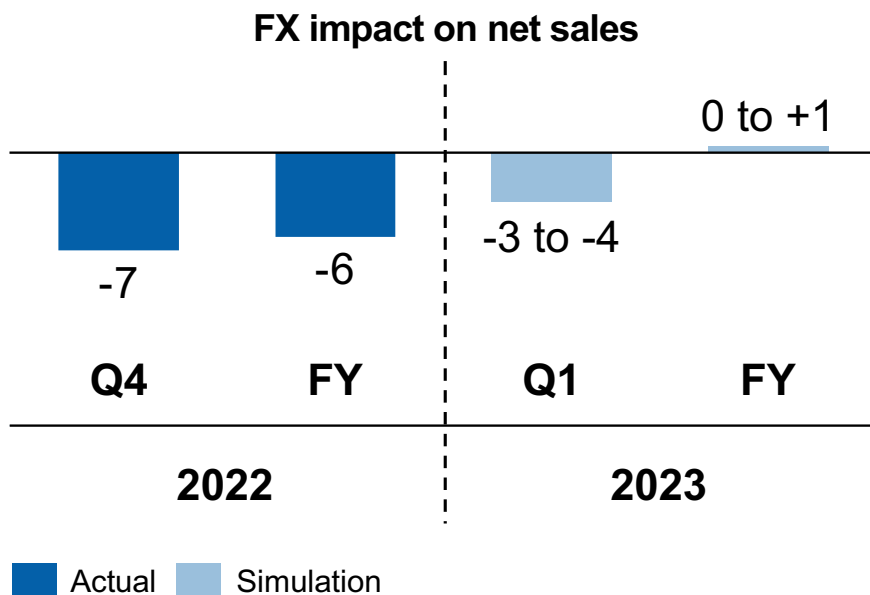
- Impact of inflation expected to continue in 2023
- Gx erosion expected to increase due to Gilenya<sup>®</sup> US and Lucentis<sup>®</sup> EU
- Stand-up investments to transition Sandoz to a standalone company



## Expected currency impact for 2023

### Currency impact vs. PY

%pts, assuming late-January exchange rates prevail in 2023





---

# Vas Narasimhan, M.D.

Chief Executive Officer

---





## Creating impact through fulfilling unmet medical need by delivering innovative medicines to as many people possible

**~290 million patients** reached with Innovative Medicines and Novartis Global Health, and an additional **~453 million patients** reached with Sandoz

**~150 pipeline projects** further expanding patient reach

**First gene, siRNA and radioligand therapies** (at scale), fulfilling unmet medical need

**~40 new drug approvals** over the last 20 years, delivering innovative medicines

Recent innovation highlights:

<b>Leqvio<sup>®</sup></b>	ASCVD
<b>Scemblix<sup>®</sup></b>	CML
<b>Pluvicto<sup>®</sup></b>	Prostate cancer
<b>iptacopan</b>	PNH and C3G





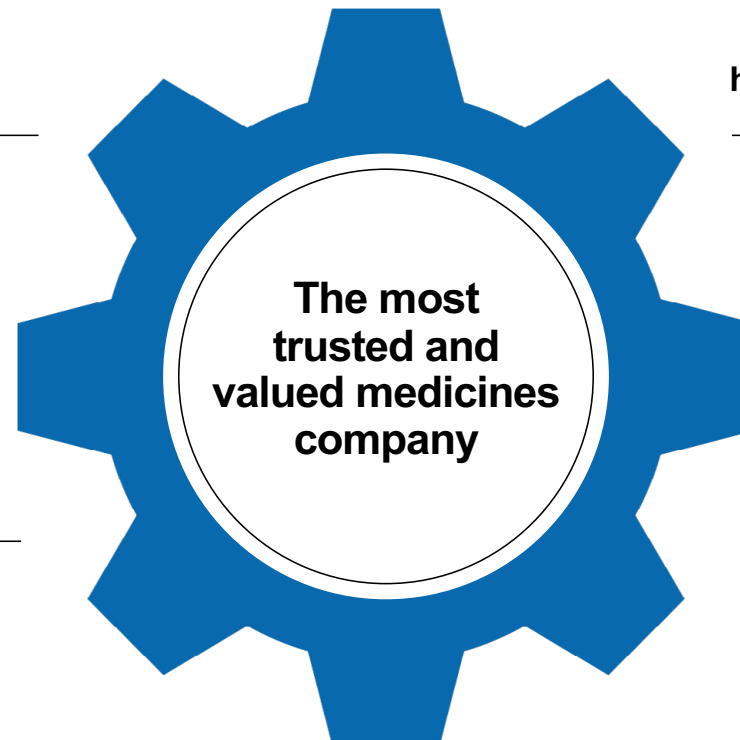
# Novartis priorities for 2023 and beyond

1 Transforming to a **pure-play** IM company

2 **Focusing** on 5 core TAs, technology platforms and the US

3 Establishing **9 key brands** with multi-\$bn potential

4 Improving **R&D productivity** (e.g. iptacopan, Pluvicto®)



Prioritizing pipeline in specific DAs to **high-value NMEs** across our 5 core TAs 5

Continuing to deliver **improved financials** 6

Continuing with **shareholder-focused capital allocation** 7

Strengthening foundations – **ESG/Human Capital** 8





# Appendix



# 2022 events<sup>1</sup>

## NME Lead

<b>Regulatory decisions</b>	H1	Pluvicto™ mCRPC (US ✓ /EU ✓)
	H1	Vijoice® PROS (US ✓)
	H2	Scemblix® 3L CML (JP ✓ /EU ✓)
	H2	tislelizumab ESCC 2L (US) <sup>10</sup>
	H1/H2	Jakavi® acute & chronic GVHD (EU ✓ /JP <sup>x13</sup> )
	H1/H2	Kymriah® r/r follicular lymphoma (US ✓ /EU ✓ /JP ✓)
<b>Submissions</b>	H1/H2	Beovu® DME (US ✓ /EU ✓ /JP ✓)
	H1	ensovibep COVID-19 (US ✓)
	H1/H2	Cosentyx® HS (EU ✓ /US ✓)
	H1/H2	tislelizumab NSCLC (EU ✓ /US <sup>x2</sup> )
	H2	tislelizumab 1L Nasopharyngeal cancer (US <sup>x2</sup> )
<b>Submissions-enabling readouts</b>	H2	Cosentyx® Psoriatic Arthritis IV (US) ✓ <sup>12</sup>
	H2	canakinumab NSCLC Ph3 CANOPY-A ✓ (PE not met)
	H2	iptacopan PNH Ph3 APPLY-PNH ✓
H2	Pluvicto™ pre-taxane mCRPC Ph3 PSMAfore <sup>3</sup> ✓	

✓ Achieved to plan    ✗ Not achieved to plan

<b>Other readouts</b>	H1	sabatolimab HR-MDS Ph2 ✓ <sup>4</sup>
	H1	Cosentyx® Lichen planus Ph2 PRELUDE <sup>5</sup> ✓ (PE not met)
	H1	Cosentyx® axSpA IV Ph3 INVIGORATE-1 ✓
	H1	icenticaftor COPD Ph2b ✓ <sup>6</sup>
	H2	UNR844 presbyopia Ph2 READER ✓ (PE not met)
<b>Ph3/pivotal study starts</b>	H1	Cosentyx® peripheral SpA <sup>x7</sup>
	H1	OAV101 SMA IT STEER ✓
	H1	ensovibep COVID-19 (EMPATHY Part B) <sup>x8</sup>
	H2	JDQ443 NSCLC mono ✓
	H2	ianalumab Sjögren's Syndrome ✓
	H2	ianalumab Lupus Nephritis ✓
	H2	ociperlimab solid tumors ✗
H2	Pluvicto® nmCRPC <sup>x11</sup>	
H2	YTB323 2L DLBCL <sup>9</sup> ✗	
H2	OAV101 SMA IT Ph3b STRENGTH ✓	

PE: Primary Endpoint Note: Kisqali® NATALEE Ph3 readout removed (2023 event as shared at Q1 2023). 1. Selected. 2. No US submission planned. 3. Could move to early 2023. 4. Submission will be based on Ph3 results. 5. Primary endpoint at Wk16 not met. 6. Ph2b DRF demonstrated dose response across multiple endpoints, study results presentation end 2022. Out-licensing planned. 7. Strategy update. 8. No definite start date for the IV Ph3 clinical trial can be provided at this time. 9. Development strategy updated. 10. FDA deferred action pending completion of required inspections. 11. Ph3 in nmCRPC shifting to Ph2, with FPFV in 2023. 12. Submission included also ankylosing spondylitis IV and non-radiographic axial SpA IV. 13. Base case approval moved to H1 2023.



## 2023 expected key events

		H1 2023	H2 2023
Regulatory decisions	Cosentyx <sup>®</sup> HS	EU	US
	Cosentyx <sup>®</sup> 2 ml AI	US	
	Cosentyx <sup>®</sup> IV		US
	Leqvio <sup>®</sup> Hypercholesterolemia		JP, China
Submissions	Iptacopan PNH (US/EU/JP)	US/EU	JP
	Pluvicto <sup>®</sup> mCRPC, pre-taxane (US)		US
Readouts	Kisqali <sup>®</sup> HR+/HER2- BC (adj)		NATALEE Ph3 FIR
	Iptacopan IgAN Ph3		APPLAUSE-IgAN Ph3
	Iptacopan C3G Ph3		Ph3 APPEAR-C3G Ph3
Ph3 starts	Iptacopan in IC-MPGN		Ph3
	Leqvio <sup>®</sup> CVRR primary prevention	Ph3	
	lanalumab in immune thrombocytopenia	Ph3	
	lanalumab in systemic lupus erythematosus	Ph3	

HS – hidradenitis suppurativa. PNH – paroxysmal nocturnal hemoglobinuria. mCRPC – metastatic castration-resistant prostate cancer. FIR – first interpretable results. IgAN – immunoglobulin A nephropathy. C3G – complement 3 Glomerulopathy. IC-MPGN – immune complex membranoproliferative glomerulonephritis.



## Our pipeline projects at a glance

	Phase 1/2	Phase 3	Registration	Total
<b>Innovative Medicines</b>	<b>100</b>	<b>42</b>	<b>8</b>	<b>150</b>
Solid Tumors	24	15	3	42
Hematology	21	8	0	29
Immunology	23	7	4	34
Neuroscience	5	5	0	10
Cardiovascular	8	5	1	14
Others	19	2	0	21
<i>Ophthalmology</i>	5	1	0	6
<i>Respiratory &amp; Allergy</i>	3	0	0	3
<i>Global Health</i>	11	1	0	12
<b>Biosimilars<sup>1</sup></b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>
<b>Total</b>	<b>100</b>	<b>44</b>	<b>8</b>	<b>152</b>

1. Selected disclosed, internal projects.



# Novartis pipeline in Phase 1

## 30 lead indications

  Lead indication

### Solid tumors

Code	Name	Mechanism	Indication(s)
AAA603	<sup>177</sup> Lu-NeoB	Radioligand therapy target GRPR	Multiple solid tumors
AAA817	<sup>225</sup> Ac-PSMA-617	Radioligand therapy target PSMA	Metastatic castration-resistant prostate cancer
ADPT01	ADPT01	-	Colorectal cancer (combos)
DFF332	DFF332	HIF2A inhibitor	Renal cell carcinoma
DKY709	DKY709 + spartalizumab	Novel immunomodulatory agent	Cancers
DYP688	DYP688	GNAQ,GNA11 antagonist	Unveal melanoma
IAG933	IAG933	-	Mesothelioma
JDQ443	JDQ443	KRAS inhibitor	KRAS G12C mutated solid tumors
KAZ954	KAZ954	-	Solid tumors
KFA115	KFA115	Novel immunomodulatory Agent	Solid tumors
MGY825	MGY825	-	NSCLC
NIS793	NIS793, spartalizumab	TGFB inhibitor	Solid tumors
NIZ985	NIZ985, spartalizumab	IL-15 agonist	Solid tumors
NZV930	NZV930, spartalizumab, NIR178	CD73 antagonist	Solid tumors
TNO155	TNO155	SHP2 inhibitor	Solid tumors (combo)
VPM087	gevokizumab	IL-1 beta antagonist	Colorectal cancer, 1st line
WNT974	WNT974 + spartalizumab	Porcupine inhibitor	Solid tumors

### Immunology

Code	Name	Mechanism	Indication(s)
FIA586	FIA586	-	Non-alcoholic steatohepatitis (NASH)
MHS552	MHS552	-	Autoimmune indications
MHV370	MHV370	-	Systemic lupus erythematosus
NGI226	NGI226	-	Tendinopathy

### Neuroscience

Code	Name	Mechanism	Indication(s)
NIO752	NIO752	Tau antagonist	Progressive supranuclear palsy

### Hematology

Code	Name	Mechanism	Indication(s)
ADPT03	ADPT03	BCL11A	Sickle cell anemia
HDM201	HDM201 (combos)	MDM2 inhibitor	Hematological malignancy
JBH492	JBH492	-	Hematological malignancy
JEZ567	JEZ567	CD123 CAR-T	Acute myeloid leukemia
MAK683	MAK683	EED inhibitor	Cancers
MBG453	sabatolimab	TIM3 antagonist	Low risk myelodysplastic syndrome
MIK665	MIK665	MCL1 inhibitor	Hematological malignancies
PIT565	PIT565	-	B-cell malignancies
VAY736	ianalumab + ibrutinib	BAFF-R inhibitor	Hematological malignancy (combo)
VOB560	VOB560	-	Cancers
WVT078	WVT078	-	Multiple myeloma
YTB323	rapcabtagene autoleucl	CD19 CAR-T	Adult ALL

### Cardiovascular

Code	Name	Mechanism	Indication(s)
XXB750	XXB750	NPR1 agonist	Cardiovascular diseases

### Others

Code	Name	Mechanism	Indication(s)
<b>Global Health</b>			
EDI048	EDI048	CpPI(4)K inhibitor	Cryptosporidiosis
EYU688	EYU688	NS4B inhibitor	Dengue
KAF156	ganaplacide	Non-artemisinin plasmodium falciparum inhibitor	Malaria prophylaxis
INE963	INE963	-	Malaria, uncomplicated
<b>Ophthalmology</b>			
MHU650	MHU650	-	Diabetic eye diseases



# Novartis pipeline in Phase 2

## 28 lead indications

  Lead indication

### Solid Tumors

Code	Name	Mechanism	Indication(s)
AAA601	Lutathera®	Radioligand therapy target SSTR	GEPNET, pediatrics 1L ES-SCLC Glioblastoma
JDQ443	JDQ443	KRAS inhibitor	NSCLC (combo)
NIR178	NIR178, spartalizumab	Ad2AR inhibitor, PD1 inhibitor	Cancers
NIS793	NIS793	TGFB inhibitor	1L metastatic colorectal cancer
TNO155	TNO155	SHP2 inhibitor	Solid tumors (single agent)

### Immunology

Code	Name	Mechanism	Indication(s)
CFZ533	iscalimab	CD40 inhibitor	Sjögren's Hidradenitis suppurativa
CMK389	CMK389	IL-18 inhibitor	Atopic dermatitis
DFV890	DFV890	NLRP3 inhibitor	Osteoarthritis Familial cold auto-inflammatory syndrome
LNA043	LNA043	ANGPTL3 agonist	Knee osteoarthritis Osteoarthritis (combos)
LOU064	remibrutinib	BTK inhibitor	Food allergy Hidradenitis suppurativa Sjögren's
LRX712	LRX712	-	Osteoarthritis
LYS006	LYS006	Anti-inflammatory	Colitis ulcerative
MAS825	MAS825	-	NLRC4-GOF indications Hidradenitis suppurativa
MHV370	MHV370	-	Sjögren's Mixed connective tissue disease
QUC398	QUC398	ADAMTS5 inhibitor	Osteoarthritis
VAY736	ianalumab	BAFF-R inhibitor	Autoimmune hepatitis Systemic lupus erythematosus

### Neuroscience

Code	Name	Mechanism	Indication(s)
ADPT06	ADPT06	-	Cognitive impairment
BLZ945	sotuletinib	CSF-1R inhibitor	Amyotrophic lateral sclerosis
DLX313	DLX313 (UCB0599)	Alpha-synuclein Inhibitor	Parkinson's disease
MJ821	onfasprodil	NR2B negative allosteric modulator	Major depressive disorder with acute suicidal ideation or behavior

1. Gyroscope acquisition.

### Hematology

Code	Name	Mechanism	Indication(s)
ABL001	Scemblix®	BCR-ABL inhibitor	Chronic myeloid leukemia, 2L, pediatrics
INC424	Jakavi®	JAK1/2 inhibitor	Acute GVHD, pediatrics Chronic GVHD, pediatrics
LNP023	iptacopan	CFB inhibitor	Immune thrombocytopenia
MBG453	sabatolimab	TIM3 antagonist	Unfit acute myeloid leukemia Acute myeloid leukemia, maintenance
PHE885	PHE885	BCMA cell therapy	4L multiple myeloma
PKC412	Rydapt®	Multi-targeted kinase inhibitor	Acute myeloid leukemia, pediatrics
YTB323	rapcabtagene autoleucel	CD19 CAR-T	1L high-risk large B-cell lymphoma

### Cardiovascular

Code	Name	Mechanism	Indication(s)
CFZ533	iscalimab	CD40 inhibitor	Lupus nephritis Type 1 diabetes mellitus
HSY244	HSY244	-	Atrial fibrillation
LNP023	iptacopan	CFB inhibitor	Lupus nephritis
MBL949	MBL949	-	Obesity related diseases
TIN816	TIN816	ATP modulator	Acute kidney injury
XXB750	XXB750	NPR1 agonist	Hypertension

### Others

Code	Name	Mechanism	Indication(s)
<b>Global Health</b>			
KAE609	cipargamin	PfATP4 inhibitor	Malaria, severe Malaria, uncomplicated
KAF156	ganaplacide	Non-artemisinin plasmodium falciparum inhibitor	Malaria, uncomplicated
LXE408	LXE408	Proteasome inhibitor	Visceral leishmaniasis
QMF149	Ateectura®	Combo	Asthma, pediatrics
SEG101	Adakveo®	P-selectin inhibitor	Sickle cell disease, pediatrics
SKO136	ensovibep	Multi-specific DARPin	Corona virus infection

### Respiratory & Allergy

CMK389	CMK389	IL-18 inhibitor	Pulmonary sarcoidosis
LTP001		SMURF1 inhibitor	Pulmonary arterial hypertension Idiopathic pulmonary fibrosis

### Ophthalmology

LKA651	LKA651	EPO inhibitor	Diabetic eye disease
LNP023	iptacopan	CFB inhibitor	iAMD
PPY988	PPY988	Gene therapy - Complement factor I modulation	Geographic atrophy



# Novartis pipeline in Phase 3

## 8 lead indications

  Lead indication

### Solid Tumors

Code	Name	Mechanism	Indication(s)
AAA617	Pluvicto™	Radioligand therapy target PSMA	mCRPC, pre-taxane Metastatic hormone sensitive prostate cancer (mHSPC)
AAA601 <sup>1</sup>	Lutathera®	Radioligand therapy target SSTR	Gastroenteropancreatic neuroendocrine tumors, 1st line in G2/3 tumors (GEP-NET 1L G3)
BYL719	Piqray®	PI3Kα inhibitor	Ovarian cancer
JDQ443	JDQ443	KRAS inhibitor	2/3L Non-small cell lung cancer
LEE011	Kisqali®	CDK4/6 inhibitor	HR+/HER2- BC (adj)
NIS793	NIS793	TGFβ1 inhibitor	1L Metastatic pancreatic ductal adenocarcinoma
VDT482	tislelizumab	PD1 inhibitor	1L Nasopharyngeal Carcinoma Adj/Neo adj. NSCLC 1L ESCC 1L Gastric cancer 1L Hepatocellular Carcinoma Localized ESCC 1L Urothelial Cell Carcinoma 1L Small Cell Lung Cancer

### Immunology

Code	Name	Mechanism	Indication(s)
AIN457	Cosentyx®	IL17A inhibitor	Lupus Nephritis Giant cell arteritis
IGE025	Xolair®	IgE inhibitor	Food allergy
LOU064	remibrutinib	BTK inhibitor	Chronic spontaneous urticaria
QGE031	igelizumab	IgE inhibitor	Food allergy
VAY736	ianalumab	BAFF-R inhibitor	Sjögren's Lupus Nephritis

### Neuroscience

Code	Name	Mechanism	Indication(s)
AMG334	Aimovig®	CGRPR antagonist	Migraine, pediatrics
BAF312	Mayzent®	S1P1,5 receptor modulator	Multiple sclerosis, pediatrics
LOU064	remibrutinib	BTK inhibitor	Multiple sclerosis
OAV101	AVXS-101	SMN1 gene replacement therapy	SMA IT administration
OMB157	Kesimpta®	CD20 Antagonist	Multiple sclerosis, pediatrics

1. <sup>177</sup>Lu-dotatate in US.

### Hematology

Code	Name	Mechanism	Indication(s)
ABL001	Scemblix®	BCR-ABL inhibitor	Chronic myeloid leukemia, 1st line
ETB115	Promacta®	Thrombopoietin receptor (TPO-R) agonist	Radiation sickness syndrome
LNP023	iptacopan	CFB inhibitor	Paroxysmal nocturnal hemoglobinuria Atypical hemolytic uraemic syndrome
MBG453	sabatolimab	TIM3 antagonist	Myelodysplastic syndrome
VAY736	ianalumab	BAFF-R inhibitor	1L Immune Thrombocytopenia 2L Immune Thrombocytopenia warm Autoimmune Hemolytic Anemia

### Cardiovascular

Code	Name	Mechanism	Indication(s)
KJX839	Leqvio®	siRNA (regulation of LDL-C)	CVRR-LDLC Hyperlipidemia, pediatrics
LNP023	iptacopan	CFB inhibitor	IgA nephropathy C3 glomerulopathy
TQJ230	pelacarsen	ASO targeting Lp(a)	Secondary prevention of cardiovascular events in patients with elevated levels of lipoprotein (a) (CVRR-Lp(a))

### Others

Code	Name	Mechanism	Indication(s)
<b>Global Health</b>			
COA566	Coartem®	PGH-1 (artemisinin combination therapy)	Malaria, uncomplicated (<5kg patients)
<b>Ophthalmology</b>			
RTH258	Beovu®	VEGF inhibitor	Diabetic retinopathy

### Biosimilars

Code	Name	Mechanism	Indication(s)
GP2411	denosumab	anti RANKL mAb	Osteoporosis (same as originator)
SOK583	afilbercept	VEGF inhibitor	Ophthalmology indication (as originator)



# Novartis pipeline in registration

## 1 lead indication

Lead indication

### Solid Tumors

Code	Name	Mechanism	Indication(s)
VDT482	tislelizumab	PD1 inhibitor	2L ESCC Non-small cell lung cancer
DRB436	Tafinlar® + Mekinist®	BRAF inhibitor + MEK inhibitor	HGG/LGG, pediatrics

### Immunology

Code	Name	Mechanism	Indication(s)
AIN457	Cosentyx®	IL17A inhibitor	Hidradenitis suppurativa Psoriatic arthritis (IV formulation) Axial SpA (IV formulation)
I GE025	Xolair®	IgE inhibitor	Auto-injector

### Cardiovascular

Code	Name	Mechanism	Indication(s)
LCZ696	Entresto®	Angiotensin receptor/neprilysin inhibitor	Congestive heart failure, pediatrics <sup>1</sup>

1. Approved in US.





# Novartis submission schedule

## New Molecular Entities: Lead and supplementary indications

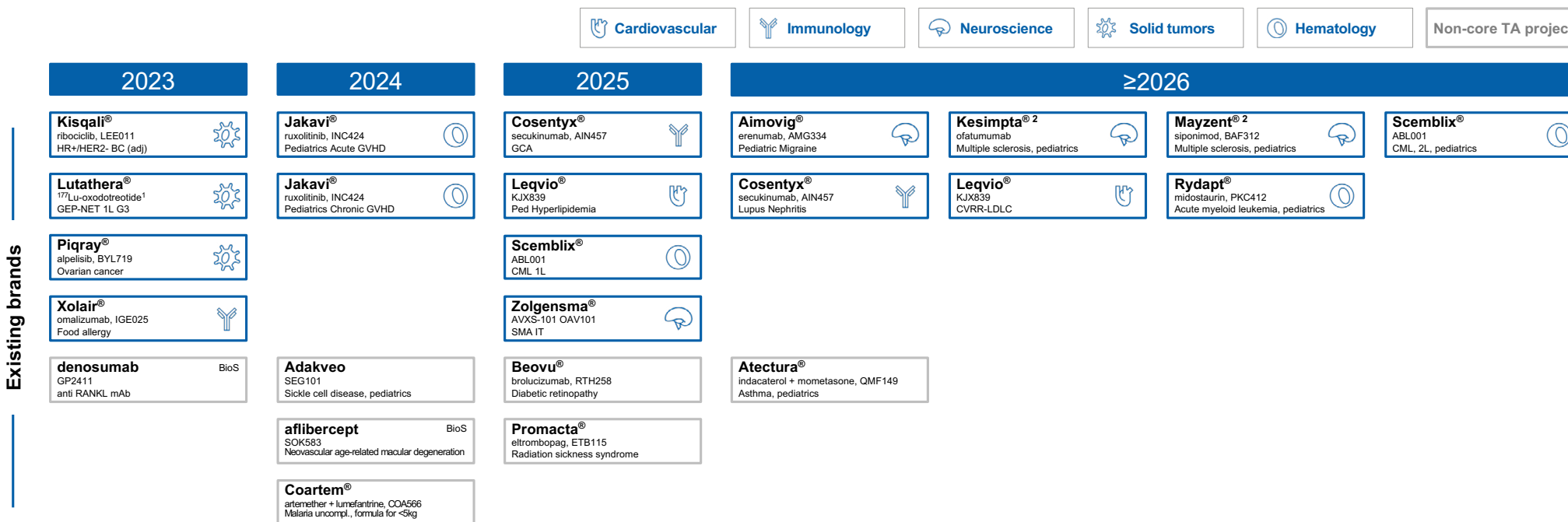
	Cardiovascular		Immunology		Neuroscience		Solid tumors		Hematology		Non-core TA project		
	2023	2024	2025	≥2026									
Lead	<b>iptacopan</b> LNP023 PNH	<b>JDQ443</b> JDQ443 2/3L NSCLC (mono)	<b>NIS793</b> 1L Pancreatic cancer	<b>177Lu-NeoB</b> AAA603 Multiple Solid Tumors	<b>iscalimab</b> CFZ533 Sjögren's syndrome	<b>MIJ821</b> Acute depression	<b>TNO155</b> Solid tumors						
		<b>remibrutinib</b> LOU064 CSU	<b>pelacarsen</b> TQJ230 CVRR-Lp(a)	<b>gevokizumab</b> VPM087 1st line CRC	<b>ligelizumab</b> QGE031 Food allergy	<b>rapcabtogene autoleucl</b> YTB323 High-risk large B-cell lymphoma	<b>XXB750</b> Hypertension						
		<b>sabatolimab</b> MBG453 HR-MDS		<b>ianalumab</b> VAY736 2L Immune Thrombocytopenia	<b>LNA043</b> Knee osteoarthritis								
				<b>cipargamin</b> KAE609 Malaria severe	<b>libvatrep</b> SAF312 COSP	<b>LXE408</b> Visceral leishmaniasis						<b>PPY988<sup>1</sup></b> Geographic atrophy	
Supplementary	<b>Pluvicto®</b> AAA617 mCRPC, Pre-taxane	<b>iptacopan</b> LNP023 C3G		<b>ianalumab</b> VAY736 1L Immune Thrombocytopenia	<b>ianalumab</b> VAY736 Lupus Nephritis	<b>JDQ443</b> JDQ443 NSCLC (combo)	<b>sabatolimab</b> MBG453 Unfit AML						
	<b>tislelizumab</b> VDT482 1L Gastric Cancer	<b>iptacopan</b> LNP023 IgAN		<b>ianalumab</b> VAY736 wAIHA	<b>ianalumab</b> VAY736 SLE	<b>remibrutinib</b> LOU064 Multiple sclerosis	<b>tislelizumab</b> VDT482 Adj/Neo adj NSCLC						
	<b>tislelizumab</b> VDT482 1L ESCC	<b>Pluvicto®</b> AAA617 mHSPC		<b>ianalumab</b> VAY736 AIH	<b>iptacopan</b> LNP023 aHUS	<b>remibrutinib</b> LOU064 Sjögren's syndrome	<b>tislelizumab</b> VDT482 1L Urothelial Cell Carcinoma						
	<b>tislelizumab</b> VDT482 1L Hepatocellular Carcinoma	<b>tislelizumab</b> VDT482 1L Small Cell Lung Cancer		<b>ianalumab</b> VAY736 Sjögren's syndrome									
	<b>tislelizumab</b> VDT482 1L Nasopharyngeal cancer	<b>tislelizumab</b> VDT482 Localized ESCC		<b>cipargamin</b> KAE609 Malaria uncomplicated									

1. Gyroscope acquisition.



# Novartis submission schedule

## Supplementary indications for existing brands



1. <sup>177</sup>Lu-dotatate in US. 2. Kesimpta and Mayzent: Pediatric study in multiple sclerosis run in conjunction (NEOS).



# Clinical Trials Update

Includes selected ongoing or recently concluded global trials of Novartis development programs/products which are in confirmatory development or marketed (typically Phase 2b or later).

For further information on all Novartis clinical trials, please visit:  
[www.novartisclinicaltrials.com](http://www.novartisclinicaltrials.com)



# Cardiovascular



## iptacopan - CFB inhibitor

### NCT04578834 APPLAUSE-IgAN (CLNP023A2301)

<b>Indication</b>	IgA nephropathy
<b>Phase</b>	Phase 3
<b>Patients</b>	450
<b>Primary Outcome Measures</b>	Ratio to baseline in urine protein to creatinine ratio (sampled from 24h urine collection) at 9 months Annualized total estimated Glomerular Filtration Rate (eGFR) slope estimated over 24 months
<b>Arms Intervention</b>	Arm 1 - LNP023 200mg BID Arm 2 - Placebo BID
<b>Target Patients</b>	Primary IgA Nephropathy patients
<b>Readout Milestone(s)</b>	2023 (primary endpoint for US initial submission, 9 months UPCR) 2025 (24 months)
<b>Publication</b>	Perkovic et al. 2021, Nephrology Dialysis Transplantation, Vol. 36, Suppl. 1: Study Design Wong et al. 2021, Nephrology Dialysis Transplantation, Vol. 36, Suppl. 1: IPTACOPAN (LNP023): A NOVEL ORAL COMPLEMENT ALTERNATIVE PATHWAY FACTOR B INHIBITOR SAFELY AND EFFECTIVELY STABILISES EGFR IN C3 GLOMERULOPATHY



## iptacopan - CFB inhibitor

### NCT03955445 (CLNP023B12001B)

<b>Indication</b>	C3 glomerulopathy (C3G)
<b>Phase</b>	Phase 2
<b>Patients</b>	27 patients from ongoing Ph2 (sample size from Ph3 pending HA discussions Q1 2021), total patients for this study will increase
<b>Primary Outcome Measures</b>	Characterize the effect of LNP023 treatment on a composite renal response endpoint at 9 months (1. a stable or improved eGFR and, 2. a reduction in proteinuria and 3. an increase in C3 compared to the CLNP023X2202 baseline visit)
<b>Arms Intervention</b>	Open-label LNP023 200mg bid
<b>Target Patients</b>	Patients with C3 glomerulopathy
<b>Readout Milestone(s)</b>	2025
<b>Publication</b>	Wong et al 2021 Nephrology, Dialysis and Transplantation Vol. 36, Suppl. 1: eGFR trajectory

## iptacopan - CFB inhibitor

### NCT04817618 APPEAR-C3G (CLNP023B12301)

<b>Indication</b>	C3 glomerulopathy
<b>Phase</b>	Phase 3
<b>Patients</b>	68
<b>Primary Outcome Measures</b>	Log-transformed ratio to baseline in UPCR (sampled from a 24 hour urine collection)
<b>Arms Intervention</b>	Experimental: iptacopan 200mg b.i.d. Placebo Comparator: Placebo to iptacopan 200mg b.i.d.
<b>Target Patients</b>	Patients with native C3G
<b>Readout Milestone(s)</b>	2023
<b>Publication</b>	TBD



## Leqvio® - siRNA (regulation of LDL-C)

### NCT03705234 ORION-4 (CKJX839B12301)

<b>Indication</b>	Hypercholesterolemia inc. Heterozygous Familial Hypercholesterolaemia (HeFH)
<b>Phase</b>	Phase 3
<b>Patients</b>	15000
<b>Primary Outcome Measures</b>	A composite of major adverse cardiovascular events, defined as: Coronary heart disease (CHD) death; Myocardial infarction; Fatal or non-fatal ischaemic stroke; or Urgent coronary revascularization procedure
<b>Arms Intervention</b>	Arm 1: every 6 month treatment Inclisiran sodium 300mg (given by subcutaneous injection on the day of randomization, at 3 months and then every 6-months) for a planned median duration of about 5 years Arm 2: matching placebo (given by subcutaneous injection on the day of randomization, at 3 months and then every 6-months) for a planned median duration of about 5 years.
<b>Target Patients</b>	Patient population with mean baseline LDL-C $\geq$ 100mg/dL
<b>Readout Milestone(s)</b>	2026
<b>Publication</b>	TBD

## Leqvio® - siRNA (regulation of LDL-C)

### NCT03814187 ORION-8 (CKJX839A12305B)

<b>Indication</b>	Hypercholesterolemia inc. Heterozygous Familial Hypercholesterolaemia (HeFH) and Homozygous Familial Hypercholesterolemia (HoFH)
<b>Phase</b>	Phase 3
<b>Patients</b>	3275
<b>Primary Outcome Measures</b>	Proportion of subjects achieving prespecified low density lipoprotein cholesterol (LDL-C) targets at end of study Safety and tolerability profile of long-term use of inclisiran
<b>Arms Intervention</b>	Inclisiran sodium 300mg on Day 90 and every 180 days for a planned duration of 3 years
<b>Target Patients</b>	Patients with HeFH or pre-existing atherosclerotic cardiovascular disease (ASCVD) on background statin +/- ezetimibe therapy and risk equivalents (patients from ORION 3, 9, 10 & 11 studies)
<b>Readout Milestone(s)</b>	2023
<b>Publication</b>	TBD



## Leqvio® - siRNA (regulation of LDL-C)

### NCT04652726 ORION-16 (CKJX839C12301)

<b>Indication</b>	Hyperlipidemia, pediatrics
<b>Phase</b>	Phase 3
<b>Patients</b>	150
<b>Primary Outcome Measures</b>	Percentage (%) change in low-density lipoprotein cholesterol (LDL-C) from baseline to Day 330
<b>Arms Intervention</b>	Group 1: Inclisiran sodium 300mg on Days 1, 90, 270, placebo on Day 360, inclisiran sodium 300mg on Days 450 and 630 Group 2: Placebo on Days 1, 90, 270, inclisiran sodium 300mg on Days 360, 450 and 630.
<b>Target Patients</b>	Adolescents (12 to less than 18 years) with heterozygous familial hypercholesterolemia (HeFH) and elevated low density lipoprotein cholesterol (LDL-C)
<b>Readout Milestone(s)</b>	2025
<b>Publication</b>	Design publication (O-16/-13) in Eur. J. Prev. Cardiol. Vol. 29, Feb. 2022 (actual) Presentation at EAS May-2022 on O-13/-16 study design (actual)

## Leqvio® - siRNA (regulation of LDL-C)

### NCT04659863 ORION-13 (CKJX839C12302)

<b>Indication</b>	Hyperlipidemia, pediatrics
<b>Phase</b>	Phase 3
<b>Patients</b>	12
<b>Primary Outcome Measures</b>	Percentage (%) change in low-density lipoprotein cholesterol (LDL-C) from baseline to day 330
<b>Arms Intervention</b>	Group 1: Inclisiran sodium 300mg on Days 1, 90, 270, placebo on Day 360, inclisiran sodium 300mg on Days 450 and 630. Group 2: Placebo on Days 1, 90, 270, inclisiran sodium 300mg on Days 360, 450 and 630.
<b>Target Patients</b>	Adolescents (12 to less than 18 years) with homozygous familial hypercholesterolemia (HoFH) and elevated low density lipoprotein cholesterol (LDL-C)
<b>Readout Milestone(s)</b>	2025
<b>Publication</b>	Design publication (O-16/-13) in Eur. J. Prev. Cardiol. Vol. 29, Feb. 2022 (actual) Presentation at EAS May-2022 on O-13/-16 study design (actual)





## Leqvio<sup>®</sup> - siRNA (regulation of LDL-C)

### NCT05030428 VICTORION-2P (CKJX839B12302)

<b>Indication</b>	Secondary prevention of cardiovascular events in patients with elevated levels of LDL-C
<b>Phase</b>	Phase 3
<b>Patients</b>	15000
<b>Primary Outcome Measures</b>	1. Time to First Occurrence of 3P-MACE (3-Point Major Adverse Cardiovascular Events)
<b>Arms Intervention</b>	Arm 1: Experimental Inclisiran sodium, Subcutaneous injection Arm 2: Placebo Comparator, Placebo Subcutaneous injection
<b>Target Patients</b>	Participants with established cardiovascular disease (CVD)
<b>Readout Milestone(s)</b>	2027
<b>Publication</b>	TBD



## pelacarsen - Antisense oligonucleotide (ASO) targeting Lp(a)

### NCT04023552 Lp(a)HORIZON (CTQJ230A12301)

<b>Indication</b>	Secondary prevention of cardiovascular events in patients with elevated levels of lipoprotein(a)
<b>Phase</b>	Phase 3
<b>Patients</b>	8323
<b>Primary Outcome Measures</b>	Time to the first occurrence of MACE (cardiovascular death, non-fatal MI, non-fatal stroke and urgent coronary re-vascularization)
<b>Arms Intervention</b>	TQJ230 80 mg injected monthly subcutaneously or matched placebo
<b>Target Patients</b>	Patients with a history of Myocardial infarction or Ischemic Stroke, or a clinically significant symptomatic Peripheral Artery Disease, and Lp(a) $\geq$ 70 mg/dL
<b>Readout Milestone(s)</b>	2025
<b>Publication</b>	TBD



## XXB750 - NPR1 agonist

### NCT05562934 (CXXB750B12201)

<b>Indication</b>	Hypertension
<b>Phase</b>	Phase 2b
<b>Patients</b>	170
<b>Primary Outcome Measures</b>	Change from baseline in mean 24hr ambulatory systolic blood pressure at week 12
<b>Arms Intervention</b>	Arm 1 experimental: Dose 1 Arm 2 experimental: Dose 2 Arm 3 experimental: Dose 3 Arm 4 experimental: Dose 4 Arm 5 placebo comparator
<b>Target Patients</b>	Resistant Hypertension Patients
<b>Readout Milestone(s)</b>	2024
<b>Publication</b>	TBD



# Immunology



## Cosentyx® - IL-17A inhibitor

### NCT04181762 SELUNE (CAIN457Q12301)

<b>Indication</b>	Lupus Nephritis
<b>Phase</b>	Phase 3
<b>Patients</b>	460
<b>Primary Outcome Measures</b>	Proportion of subjects achieving protocol-defined CRR
<b>Arms Intervention</b>	Secukinumab 300 mg s.c. Placebo s.c.
<b>Target Patients</b>	Patients with active lupus nephritis (ISN/RPS Class III or IV, with or without co-existing class V features)
<b>Readout Milestone(s)</b>	2025
<b>Publication</b>	TBD

## Cosentyx® - IL-17A inhibitor

### NCT04930094 GCAPTAIN (CAIN457R12301)

<b>Indication</b>	Giant cell arteritis
<b>Phase</b>	Phase 3
<b>Patients</b>	348
<b>Primary Outcome Measures</b>	Number of participants with sustained remission
<b>Arms Intervention</b>	Experimental: Secukinumab 300 mg Placebo Comparator: Placebo
<b>Target Patients</b>	Patients with Giant Cell Arteritis (GCA)
<b>Readout Milestone(s)</b>	Primary 2025 Final 2026
<b>Publication</b>	TBD



## ianalumab - BAFF-R inhibitor

### NCT03217422 AMBER (CVAY736B2201)

<b>Indication</b>	Autoimmune hepatitis
<b>Phase</b>	Phase 2
<b>Patients</b>	65
<b>Primary Outcome Measures</b>	Alanine aminotransferase (ALT) normalization
<b>Arms Intervention</b>	VAY736 Placebo control with conversion to active VAY736
<b>Target Patients</b>	Autoimmune hepatitis patients with incomplete response or intolerant to standard treatment of care
<b>Readout Milestone(s)</b>	2024
<b>Publication</b>	TBD

## ianalumab - BAFF-R inhibitor

### NCT05126277 SIRIUS-LN (CVAY736K12301)

<b>Indication</b>	Lupus Nephritis
<b>Phase</b>	Phase 3
<b>Patients</b>	420
<b>Primary Outcome Measures</b>	Frequency and percentage of participants achieving complete renal response (CRR) [ Time Frame: week 72 ]
<b>Arms Intervention</b>	Arm 1: Experimental - ianalumab s.c. q4w in addition to standard of care (SoC) Arm 2: Experimental - ianalumab s.c. q12w in addition to SoC Arm 3: Placebo comparator - Placebo s.c. q4w in addition to SoC
<b>Target Patients</b>	Patients with active Lupus Nephritis
<b>Readout Milestone(s)</b>	Primary 2027
<b>Publication</b>	TBD



## ianalumab - BAFF-R inhibitor

### NCT05349214 NEPTUNUS-2 (CVAY736A2302)

<b>Indication</b>	Sjögren's syndrome
<b>Phase</b>	Phase 3
<b>Patients</b>	489
<b>Primary Outcome Measures</b>	Change from baseline in EULAR Sjögren Syndrome Disease Activity Index (ESSDAI) score at Week 48 as compared to placebo
<b>Arms Intervention</b>	Arm 1: Experimental - ianalumab exposure level 1 Arm 2: Experimental - ianalumab exposure level 2 Arm 3: Placebo comparator
<b>Target Patients</b>	Patients with active Sjogren's syndrome
<b>Readout Milestone(s)</b>	Primary 2026
<b>Publication</b>	TBD

## ianalumab - BAFF-R inhibitor

### NCT05350072 NEPTUNUS-1 (CVAY736A2301)

<b>Indication</b>	Sjögren's syndrome
<b>Phase</b>	Phase 3
<b>Patients</b>	268
<b>Primary Outcome Measures</b>	Change from baseline in EULAR Sjögren Syndrome Disease Activity Index (ESSDAI) score at Week 48 as compared to placebo
<b>Arms Intervention</b>	Arm 1: Experimental - ianalumab Arm 2: Placebo comparator
<b>Target Patients</b>	Patients with active Sjogren's syndrome
<b>Readout Milestone(s)</b>	Primary 2026
<b>Publication</b>	TBD



Cardiovascular

**Immunology**

Neuroscience

Oncology

Other

## iscalimab - CD40 inhibitor

### NCT03905525 TWINSS (CFZ533B2201)

<b>Indication</b>	Sjögren's syndrome
<b>Phase</b>	Phase 2
<b>Patients</b>	260
<b>Primary Outcome Measures</b>	Change in EULAR Sjögren's syndrome Disease Activity Index (ESSDAI) score and EULAR Sjögren's syndrome Patient Reported Index (ESSPRI) score
<b>Arms Intervention</b>	Three dose arms of CFZ533 Placebo
<b>Target Patients</b>	Patients with Sjögren's syndrome
<b>Readout Milestone(s)</b>	2022
<b>Publication</b>	2023





## ligelizumab - IgE Inhibitor

### NCT04984876 (CQGE031G12301)

<b>Indication</b>	Food allergy
<b>Phase</b>	Phase 3
<b>Patients</b>	486
<b>Primary Outcome Measures</b>	1. Proportion of participants who can tolerate a single dose of $\geq 600$ mg (1044 mg cumulative tolerated dose) of peanut protein without dose-limiting symptoms at Week 12
<b>Arms Intervention</b>	<p>Arm 1: ligelizumab 240 mg subcutaneous injection for 52 weeks</p> <p>Arm 2: ligelizumab 120 mg subcutaneous injection for 52 weeks</p> <p>Arm 3: Placebo subcutaneous injection for first 8 weeks and ligelizumab 120 mg subcutaneous injection for 44 weeks</p> <p>Arm 4: Placebo 16 weeks and ligelizumab 120 mg/240 mg subcutaneous injection for 36 weeks</p> <p>Arm 5: Placebo subcutaneous injection for first 8 weeks and ligelizumab 240 mg subcutaneous injection for 44 weeks</p>
<b>Target Patients</b>	Participants with a medically confirmed diagnosis of IgE-mediated peanut allergy
<b>Readout Milestone(s)</b>	2025
<b>Publication</b>	TBD



## LNA043 - ANGPTL3 agonist

### NCT04864392 ONWARDS (CLNA043A12202)

<b>Indication</b>	Knee osteoarthritis
<b>Phase</b>	Phase 2
<b>Patients</b>	550
<b>Primary Outcome Measures</b>	Change from baseline in the cartilage thickness of the medial compartment of the knee as assessed by imaging
<b>Arms Intervention</b>	LNA043 injection to the knee with dosing regimen A LNA043 injection to the knee with dosing regimen B LNA043 injection to the knee with dosing regimen C LNA043 injection to the knee with dosing regimen D Placebo injection to the knee
<b>Target Patients</b>	Patients with Symptomatic knee osteoarthritis
<b>Readout Milestone(s)</b>	Primary 2024
<b>Publication</b>	TBD



## remibrutinib - BTK inhibitor

### NCT05030311 REMIX-1 (CLOU064A2301)

<b>Indication</b>	Chronic spontaneous urticaria
<b>Phase</b>	Phase 3
<b>Patients</b>	450
<b>Primary Outcome Measures</b>	Change from baseline in UAS7 (Scenario 1 with UAS7 as primary efficacy endpoint)
<b>Arms Intervention</b>	Arm 1: LOU064 (blinded) LOU064 (blinded) taken orally for 24 weeks, followed by LOU064 (open-label) taken orally open label for 28 weeks. Randomized in a 2:1 ratio (arm 1:arm 2) Arm 2: LOU064 placebo (blinded) LOU064 placebo (blinded) taken orally for 24 weeks, followed by LOU064 (open-label) taken orally for 28 weeks. Randomized in a 2:1 ratio (arm 1:arm 2)
<b>Target Patients</b>	Adult Chronic Spontaneous Urticaria (CSU) patients inadequately controlled by H1-antihistamines
<b>Readout Milestone(s)</b>	2024
<b>Publication</b>	TBD

## remibrutinib - BTK inhibitor

### NCT05032157 REMIX-2 (CLOU064A2302)

<b>Indication</b>	Chronic spontaneous urticaria
<b>Phase</b>	Phase 3
<b>Patients</b>	450
<b>Primary Outcome Measures</b>	1. Change from baseline in UAS7 (Scenario 1 with UAS7 as primary efficacy endpoint) 2. Absolute change in ISS7 an absolute change in HSS7 (Scenario 2 with ISS7 and HSS7 as co-primary efficacy endpoints)
<b>Arms Intervention</b>	Arm 1: LOU064 (blinded) LOU064A (blinded) taken orally b.i.d. for 24 weeks, followed by LOU064 (open-label) taken orally open label for 28 weeks Arm 2: LOU064 placebo (blinded) LOU064A placebo (blinded) taken orally for 24 weeks, followed by LOU064 (open-label) taken orally open label for 28 weeks Eligible participants randomized to the treatment arms in a 2:1 ratio (arm 1: arm 2)
<b>Target Patients</b>	Adult participants suffering from chronic spontaneous urticaria (CSU) inadequately controlled by H1-antihistamines in comparison to placebo
<b>Readout Milestone(s)</b>	2024
<b>Publication</b>	TBD



# Neuroscience



## Mayzent® - S1P1,5 receptor modulator

### NCT04926818 NEOS (CBAF312D2301)

<b>Indication</b>	Multiple sclerosis, pediatrics
<b>Phase</b>	Phase 3
<b>Patients</b>	180
<b>Primary Outcome Measures</b>	Annualized relapse rate (ARR) in target pediatric participants
<b>Arms Intervention</b>	Arm 1: Experimental ofatumumab - 20 mg injection/ placebo Arm 2: Experimental siponimod - 0.5 mg, 1 mg or 2 mg/ placebo Arm 3: Active Comparator fingolimod - 0.5 mg or 0.25 mg/ placebo
<b>Target Patients</b>	Children/adolescent patients aged 10-17 years old with Multiple Sclerosis (MS). The targeted enrollment is 180 participants with multiple sclerosis which will include at least 5 participants with body weight (BW) ≤40 kg and at least 5 participants with age 10 to 12 years in each of the ofatumumab and siponimod arms. There is a minimum 6 month follow up period for all participants (core and extension). Total duration of the study could be up to 7 years.
<b>Readout Milestone(s)</b>	2026
<b>Publication</b>	TBD



## MIJ821 - NR2B negative allosteric modulator (NAM)

### NCT04722666 (CMIJ821A12201)

<b>Indication</b>	Major depressiv disorder with acute suicidal ideation or behavior
<b>Phase</b>	Phase 2
<b>Patients</b>	195
<b>Primary Outcome Measures</b>	Change from baseline to 24 hours in the total score of the Montgomery Åsberg Depression Rating Scale (MADRS)
<b>Arms Intervention</b>	MIJ821 (mg/kg) very low dose for 40 minutes IV infusion on Day 1, Day 15 and Day 29 MIJ821 (mg/kg) low dose for 40 minutes IV infusion on Day 1, Day 15 and Day 29 MIJ821 (mg/kg) high dose for 40 minutes IV infusion on Day 1, Day 15 and Day 29 MIJ821 (mg/kg) very high dose for 40 minutes IV infusion on Day 1, Day 15 and Day 29 Placebo 40 minutes IV infusion of 0.9% sodium chloride on Day 1, Day 15 and Day 29 MIJ821 (mg/kg) high dose for 40 minutes IV infusion on Day 1 followed by Placebo 40 minutes IV infusion of 0.9% sodium chloride on Day 15 and Day 29 MIJ821 (mg/kg) very high dose for 40 minutes IV infusion on Day 1 followed by Placebo 40 minutes IV infusion of 0.9% sodium chloride on Day 15 and Day 29
<b>Target Patients</b>	Participants who have suicidal ideation with intent
<b>Readout Milestone(s)</b>	2023
<b>Publication</b>	TBD



## remibrutinib - BTK inhibitor

### NCT05147220 REMODEL-1 (CLOU064C12301)

<b>Indication</b>	Multiple sclerosis
<b>Phase</b>	Phase 3
<b>Patients</b>	800
<b>Primary Outcome Measures</b>	Annualized relapse rate (ARR) of confirmed relapses [Core Part]. ARR is the average number of confirmed MS relapses in a year
<b>Arms Intervention</b>	<p>Arm 1: Experimental; Remibrutinib - Core (Remibrutinib tablet and matching placebo of teriflunomide capsule)</p> <p>Arm 2: Active Comparator; Teriflunomide - Core (Teriflunomide capsule and matching placebo remibrutinib tablet)</p> <p>Arm 3: Experimental; Remibrutinib - Extension (Participants on remibrutinib in Core will continue on remibrutinib tablet)</p> <p>Arm 4: Experimental; Remibrutinib - Extension (on teriflunomide in Core) (Participants on teriflunomide in Core will switch to remibrutinib tablet)</p>
<b>Target Patients</b>	Patients with relapsing Multiple Sclerosis
<b>Readout Milestone(s)</b>	Estimated primary completion 2026
<b>Publication</b>	TBD

## remibrutinib - BTK inhibitor

### NCT05156281 REMODEL-2 (CLOU064C12302)

<b>Indication</b>	Multiple sclerosis
<b>Phase</b>	Phase 3
<b>Patients</b>	800
<b>Primary Outcome Measures</b>	Annualized relapse rate (ARR) of confirmed relapses
<b>Arms Intervention</b>	<p>Arm 1: Experimental; Remibrutinib – Core Remibrutinib tablet and matching placebo of teriflunomide capsule</p> <p>Arm 2: Active Comparator; Teriflunomide – Core Teriflunomide capsule and matching placebo remibrutinib tablet</p> <p>Arm 3: Experimental; Remibrutinib – Extension Participants on remibrutinib in Core will continue on remibrutinib tablet</p> <p>Arm 4: Experimental; Remibrutinib - Extension (on teriflunomide in Core) Participants on teriflunomide in Core will switch to remibrutinib tablet</p>
<b>Target Patients</b>	Patients with relapsing Multiple Sclerosis
<b>Readout Milestone(s)</b>	Estimated primary completion 2026
<b>Publication</b>	TBD



## Zolgensma® - SMN1 gene replacement therapy

### NCT05089656 STEER (COAV101B12301)

<b>Indication</b>	Spinal muscular atrophy (IT administration)
<b>Phase</b>	Phase 3
<b>Patients</b>	125
<b>Primary Outcome Measures</b>	1. Change from baseline in Hammersmith functional motor scale - Expanded (HFMSSE) total score at the end of follow-up period 1 in treated patients compared to sham controls in the ≥ 2 to < 18 years age group
<b>Arms Intervention</b>	Arm 1: Experimental OAV101. Administered as a single, one-time intrathecal dose Arm 2: Sham Comparator: Sham control. A skin prick in the lumbar region without any medication.
<b>Target Patients</b>	Patients Type 2 Spinal Muscular Atrophy (SMA) who are ≥ 2 to < 18 years of age, treatment naive, sitting, and never ambulatory
<b>Readout Milestone(s)</b>	2024
<b>Publication</b>	TBD

## Zolgensma® - SMN1 gene replacement therapy

### NCT05386680 STRENGTH (COAV101B12302)

<b>Indication</b>	Spinal muscular atrophy (IT administration)
<b>Phase</b>	Phase 3B
<b>Patients</b>	28
<b>Primary Outcome Measures</b>	Number and percentage of participants reporting AEs, related AEs, SAEs, and AESIs [ Time Frame: 52 weeks ]
<b>Arms Intervention</b>	Experimental: OAV-101 Single intrathecal administration of OAV101 at a dose of $1.2 \times 10^{14}$ vector genomes
<b>Target Patients</b>	Participants with SMA who discontinued treatment With Nusinersen or Risdiplam (STRENGTH)
<b>Readout Milestone(s)</b>	2024
<b>Publication</b>	TBD





# Oncology



Cardiovascular

Immunology

Neuroscience

Oncology

Other

## ianalumab - BAFF-R inhibitor

### NCT05653349 VAYHIT1 (CVAY736I12301)

<b>Indication</b>	1L Immune Thrombocytopenia
<b>Phase</b>	Phase 3
<b>Patients</b>	225
<b>Primary Outcome Measures</b>	Time from randomization to treatment failure (TTF)
<b>Arms Intervention</b>	Arm 1: Experimental: Ianalumab Lower dose administered intravenously with corticosteroids oral or parentally (if clinically justified) Arm 2: Ianalumab Higher dose administered intravenously with corticosteroids oral or parentally (if clinically justified) Arm 3: Placebo Comparator administered intravenously with corticosteroids oral or parentally (if clinically justified)
<b>Target Patients</b>	Adult patients with primary ITP
<b>Readout Milestone(s)</b>	2025
<b>Publication</b>	TBD

### NCT05653219 VAYHIT2 (CVAY736Q12301)

<b>Indication</b>	2L Immune Thrombocytopenia
<b>Phase</b>	Phase 3
<b>Patients</b>	150
<b>Primary Outcome Measures</b>	Time from randomization to treatment failure (TTF)
<b>Arms Intervention</b>	Arm 1: Experimental: eltrombopag and Ianalumab lower dose Arm 2: Experimental: eltrombopag and Ianalumab higher dose Arm 3: eltrombopag and placebo
<b>Target Patients</b>	Primary ITP patients who failed steroids
<b>Readout Milestone(s)</b>	2025
<b>Publication</b>	TBD



Cardiovascular

Immunology

Neuroscience

Oncology

Other

## lanalumab - BAFF-R inhibitor

### NCT05648968 VAYHIA (CVAY736O12301)

<b>Indication</b>	Warm autoimmune hemolytic anemia
<b>Phase</b>	Phase 3
<b>Patients</b>	90
<b>Primary Outcome Measures</b>	Binary variable indicating whether a patient achieves a durable response Durable response: hemoglobin level $\geq 10$ g/dL and $\geq 2$ g/dL increase from baseline, for a period of at least eight consecutive weeks between W9 and W25, in the absence of rescue medication or prohibited treatment
<b>Arms Intervention</b>	Arm 1: experimental lanalumab low dose (intravenously) Arm 2: experimental lanalumab high dose (intravenously) Arm 3: placebo Comparator (intravenously)
<b>Target Patients</b>	Previously treated patients with warm Autoimmune Hemolytic Anemia
<b>Readout Milestone(s)</b>	2026
<b>Publication</b>	TBD



Cardiovascular

Immunology

Neuroscience

Oncology

Other

## iptacopan - CFB inhibitor

### NCT04889430 APPELHUS (CLNP023F12301)

<b>Indication</b>	Atypical haemolytic uraemic syndrome
<b>Phase</b>	Phase 3
<b>Patients</b>	50
<b>Primary Outcome Measures</b>	Percentage of participants with complete TMA response without the use of PE/PI and anti-C5 antibody
<b>Arms Intervention</b>	Single arm open-label with 50 adult patients receiving 200mg oral twice daily doses of iptacopan
<b>Target Patients</b>	Adult patients with aHUS who are treatment naive to complement inhibitor therapy (including anti-C5 antibody)
<b>Readout Milestone(s)</b>	2025
<b>Publication</b>	TBD

**Jakavi® - JAK1/2 inhibitor****NCT03491215 REACH4 (CINC424F12201)**

<b>Indication</b>	Acute graft versus host disease
<b>Phase</b>	Phase 2
<b>Patients</b>	45
<b>Primary Outcome Measures</b>	Measurement of PK parameters Overall Response Rate (ORR)
<b>Arms Intervention</b>	Ruxolitinib
<b>Target Patients</b>	Pediatric patients with grade II-IV acute graft vs. host disease after allogeneic hematopoietic stem cell transplantation
<b>Readout Milestone(s)</b>	2023
<b>Publication</b>	TBD

**Jakavi® - JAK1/2 inhibitor****NCT03774082 REACH5 (CINC424G12201)**

<b>Indication</b>	Chronic graft versus host disease
<b>Phase</b>	Phase 2
<b>Patients</b>	45
<b>Primary Outcome Measures</b>	Overall Response Rate (ORR)
<b>Arms Intervention</b>	Ruxolitinib 5mg tablets / pediatric formulation
<b>Target Patients</b>	Pediatric subjects with moderate and severe chronic Graft vs. Host disease after allogeneic stem cell transplantation
<b>Readout Milestone(s)</b>	2023
<b>Publication</b>	TBD



Cardiovascular

Immunology

Neuroscience

Oncology

Other

## JDQ443 - KRAS inhibitor

### NCT05132075 KontRASt-02 (CJDQ443B12301)

<b>Indication</b>	Non-small cell lung cancer, 2/3L
<b>Phase</b>	Phase 3
<b>Patients</b>	360
<b>Primary Outcome Measures</b>	Progression free survival (PFS)
<b>Arms Intervention</b>	Arm 1 Experimental: JDQ443 Arm 2 Active Comparator: Participant will be treated with docetaxel following local guidelines as per standard of care and product labels
<b>Target Patients</b>	Patients with advanced non-small cell lung cancer (NSCLC) harboring a KRAS G12C mutation who have been previously treated with a platinum-based chemotherapy and immune checkpoint inhibitor therapy either in sequence or in combination.
<b>Readout Milestone(s)</b>	2024
<b>Publication</b>	NA



Cardiovascular

Immunology

Neuroscience

**Oncology**

Other

## Kisqali® - CDK4 inhibitor

### NCT03701334 NATALEE (CLEE011O12301C)

<b>Indication</b>	Adjuvant treatment of hormone receptor (HR)-positive, HER2-negative, early breast cancer (EBC)
<b>Phase</b>	Phase 3
<b>Patients</b>	5101
<b>Primary Outcome Measures</b>	Invasive Disease-Free Survival for using STEEP criteria (Standardized Definitions for Efficacy End Points in adjuvant breast cancer trials)
<b>Arms Intervention</b>	Ribociclib + endocrine therapy Endocrine therapy
<b>Target Patients</b>	Pre and postmenopausal women and men with HR-positive, HER2-negative EBC, after adequate surgical resection, who are eligible for adjuvant endocrine therapy
<b>Readout Milestone(s)</b>	2023
<b>Publication</b>	TBD



## NIS793 - TGF $\beta$ inhibitor

### NCT04935359 daNIS-2 (CNIS793B12301)

<b>Indication</b>	1L metastatic pancreatic ductal Adenocarcinoma
<b>Phase</b>	Phase 3
<b>Patients</b>	501
<b>Primary Outcome Measures</b>	Safety run-in part: Percentage of participants with dose limiting toxicities (DLTs) during the first cycle (4 weeks) of treatment Randomized part: Overall survival (OS)
<b>Arms Intervention</b>	Safety run-in part: NIS793+gemcitabine+nab-paclitaxel  Randomized portion of the study: Arm 1: NIS793+gemcitabine+nab-paclitaxel Arm 2: placebo+gemcitabine+nab-paclitaxel
<b>Target Patients</b>	Patients with Metastatic Pancreatic Ductal Adenocarcinoma (mPDAC), first line treatment
<b>Readout Milestone(s)</b>	Primary: 2024
<b>Publication</b>	NA





## Piqray® - PI3K-alpha inhibitor

### NCT04729387 EPIK-O (CBYL719K12301)

<b>Indication</b>	Ovarian Cancer
<b>Phase</b>	Phase 3
<b>Patients</b>	358
<b>Primary Outcome Measures</b>	Progression Free Survival (PFS) based on Blinded Independent Review Committee (BIRC) assessment using RECIST 1.1 criteria
<b>Arms Intervention</b>	<p>Arm 1 Experimental: Alpelisib+olaparib: Alpelisib 200 mg orally once daily and olaparib 200 mg orally twice daily on a continuous dosing schedule</p> <p>Arm 2 Active Comparator: Paclitaxel or PLD. Investigator's choice of one of 2 single agent cytotoxic chemotherapies: Paclitaxel 80 mg/m<sup>2</sup> intravenously weekly or Pegylated liposomal Doxorubicin (PLD) 40-50 mg/m<sup>2</sup> (physician discretion) intravenously every 28 days.</p>
<b>Target Patients</b>	Patients with platinum resistant or refractory high-grade serous ovarian cancer, with no germline BRCA mutation detected
<b>Readout Milestone(s)</b>	2023
<b>Publication</b>	TBD



## Pluvicto® - Radioligand therapy target PSMA

### NCT04689828 PSMAfore (CAAA617B12302)

<b>Indication</b>	Metastatic castration-resistant prostate cancer, pre-taxane
<b>Phase</b>	Phase 3
<b>Patients</b>	450
<b>Primary Outcome Measures</b>	Radiographic Progression Free Survival (rPFS)
<b>Arms Intervention</b>	<p>Arm 1: Participants will receive 7.4 GBq (200 mCi) +/- 10% <sup>177</sup>Lu-PSMA-617 once every 6 weeks for 6 cycles. Best supportive care, including ADT may be used</p> <p>Arm 2: For participants randomized to the ARDT arm, the change of ARDT treatment will be administered per the physician's orders. Best supportive care, including ADT may be used</p>
<b>Target Patients</b>	mCRPC patients that were previously treated with an alternate ARDT and not exposed to a taxane-containing regimen in the CRPC or mHSPC settings
<b>Readout Milestone(s)</b>	Primary Analysis: 2022 (actual) Final Analysis: 2025
<b>Publication</b>	TBD

## Pluvicto® - Radioligand therapy target PSMA

### NCT04720157 PSMAddition (CAAA617C12301)

<b>Indication</b>	Metastatic hormone sensitive prostate cancer
<b>Phase</b>	Phase 3
<b>Patients</b>	1126
<b>Primary Outcome Measures</b>	Radiographic Progression Free Survival (rPFS)
<b>Arms Intervention</b>	<p>Arm 1: <sup>177</sup>Lu-PSMA-617 Participant will receive 7.4 GBq (+/- 10%) <sup>177</sup>Lu-PSMA-617, once every 6 weeks for a planned 6 cycles, in addition to the Standard of Care (SOC); ARDT +ADT is considered as SOC and treatment will be administered per the physician's order</p> <p>Arm 2: For participants randomized to Standard of Care arm, ARDT +ADT is considered as SOC and treatment will be administered per the physician's order</p>
<b>Target Patients</b>	Patients with metastatic Hormone Sensitive Prostate Cancer (mHSPC)
<b>Readout Milestone(s)</b>	Primary Analysis: 2024
<b>Publication</b>	TBD



Cardiovascular

Immunology

Neuroscience

**Oncology**

Other

## Rydapt® - Multi-targeted kinase inhibitor

### NCT03591510 (CPKC412A2218)

<b>Indication</b>	Acute myeloid leukemia, pediatrics
<b>Phase</b>	Phase 2
<b>Patients</b>	20
<b>Primary Outcome Measures</b>	Occurrence of dose limiting toxicities Safety and Tolerability
<b>Arms Intervention</b>	Chemotherapy followed by Midostaurin
<b>Target Patients</b>	Newly diagnosed pediatric patients with FLT3 mutated acute myeloid leukemia (AML)
<b>Readout Milestone(s)</b>	2026
<b>Publication</b>	TBD



## sabatolimab - TIM3 antagonist

### NCT04150029 STIMULUS-AML1 (CMBG453C12201)

<b>Indication</b>	Unfit acute myeloid leukaemia
<b>Phase</b>	Phase 2
<b>Patients</b>	86
<b>Primary Outcome Measures</b>	Incidence of dose limiting toxicities (Safety run-in patients only) Percentage of subjects achieving complete remission (CR)
<b>Arms Intervention</b>	Single arm safety and efficacy study of sabatolimab in combination with azacitidine and venetoclax
<b>Target Patients</b>	Newly diagnosed adult AML patients who are not suitable for treatment with intensive chemotherapy
<b>Readout Milestone(s)</b>	2023
<b>Publication</b>	TBD

## sabatolimab - TIM3 antagonist

### NCT04266301 STIMULUS-MDS2 (CMBG453B12301)

<b>Indication</b>	Myelodysplastic syndrome
<b>Phase</b>	Phase 3
<b>Patients</b>	500
<b>Primary Outcome Measures</b>	Overall survival
<b>Arms Intervention</b>	Sabatolimab 800 mg + azacitidine 75 mg/m <sup>2</sup> Sabatolimab 800 mg + azacitidine 75 mg/m <sup>2</sup> + placebo
<b>Target Patients</b>	Patients with intermediate, high or very high risk Myelodysplastic Syndrome (MDS) as Per IPSS-R, or Chronic Myelomonocytic Leukemia-2 (CMML-2)
<b>Readout Milestone(s)</b>	2024
<b>Publication</b>	TBD



Cardiovascular

Immunology

Neuroscience

Oncology

Other

## Scemblix® - BCR-ABL inhibitor

### NCT04971226 ASC4FIRST (CABL001J12301)

<b>Indication</b>	Chronic myeloid leukemia, 1st line
<b>Phase</b>	Phase 3
<b>Patients</b>	402
<b>Primary Outcome Measures</b>	Major Molecular Response (MMR) at week 48
<b>Arms Intervention</b>	Arm 1: asciminib 80 mg QD Arm 2: Investigator selected TKI including one of the below treatments: - Imatinib 400 mg QD - Nilotinib 300 mg BID - Dasatinib 100 mg QD - Bosutinib 400 mg QD
<b>Target Patients</b>	Patients with newly diagnosed philadelphia chromosome positive chronic myelogenous leukemia in chronic phase
<b>Readout Milestone(s)</b>	2024
<b>Publication</b>	TBD



Cardiovascular

Immunology

Neuroscience

**Oncology**

Other

## TNO155 - SHP2 inhibitor

### NCT03114319 (CTNO155X2101)

<b>Indication</b>	Solid tumors (single agent)
<b>Phase</b>	Phase 1
<b>Patients</b>	255
<b>Primary Outcome Measures</b>	Number of participants with adverse events Number of participants with dose limiting toxicities
<b>Arms Intervention</b>	Drug: TNO155 Drug: TNO155 in combination with EGF816 (nazartinib)
<b>Target Patients</b>	Adult patients with advanced solid tumors in selected indications
<b>Readout Milestone(s)</b>	2024
<b>Publication</b>	TBD



Innovation: Pipeline overview

Innovation: Clinical trials

Abbreviations

Cardiovascular

Immunology

Neuroscience

Oncology

Other

Ophthalmology

Global Health

Biosimilars

# Other



Innovation: Pipeline overview

**Innovation: Clinical trials**

Abbreviations

Cardiovascular

Immunology

Neuroscience

Oncology

**Other**

**Ophthalmology**

Global Health

Biosimilars

# Ophthalmology





Innovation: Pipeline overview

Innovation: Clinical trials

Abbreviations

Cardiovascular

Immunology

Neuroscience

Oncology

Other

Ophthalmology

Global Health

Biosimilars

## Beovu® - VEGF Inhibitor

### NCT04278417 (CRTH258D2301)

<b>Indication</b>	Diabetic retinopathy
<b>Phase</b>	Phase 3
<b>Patients</b>	706
<b>Primary Outcome Measures</b>	Change from Baseline in BCVA
<b>Arms Intervention</b>	Arm1: RTH258 (brolucizumab) 6 mg/50uL Arm2: Panretinal photocoagulation laser initial treatment followed with additional PRP treatment as needed
<b>Target Patients</b>	Patients with proliferative diabetic retinopathy
<b>Readout Milestone(s)</b>	2024
<b>Publication</b>	TBD



Innovation: Pipeline overview

Innovation: Clinical trials

Abbreviations

Cardiovascular

Immunology

Neuroscience

Oncology

Other

Ophthalmology

Global Health

Biosimilars

## libvatrep - TRPV1 antagonist

### NCT04630158 SAHARA (CSAF312B12201)

<b>Indication</b>	Chronic ocular surface pain
<b>Phase</b>	Phase 2
<b>Patients</b>	150
<b>Primary Outcome Measures</b>	Change in mean pain severity Visual Analog Scale
<b>Arms Intervention</b>	Placebo Comparator: SAF312 Placebo. Randomized to a 1:1:1 topical eye drops, twice daily Experimental: SAF312 dose 1. Randomized to a 1:1:1 topical eye drops, twice daily Experimental: SAF312 dose 2. Randomized to a 1:1:1 topical eye drops, twice daily
<b>Target Patients</b>	Subjects with CICP persisting at least for 4 months after refractive surgery and chronicity confirmed during the observational period.
<b>Readout Milestone(s)</b>	2023
<b>Publication</b>	2023



Innovation: Pipeline overview

**Innovation: Clinical trials**

Abbreviations

Cardiovascular

Immunology

Neuroscience

**Oncology**

**Other**

Ophthalmology

**Global Health**

Biosimilars

# Global Health



Innovation: Pipeline overview

Innovation: Clinical trials

Abbreviations

Cardiovascular

Immunology

Neuroscience

Oncology

Other

Ophthalmology

Global Health

Biosimilars

## Adakveo® - P-selectin inhibitor

### NCT03474965 SOLACE-Kids (CSEG101B2201)

<b>Indication</b>	Sickle cell disease, pediatrics
<b>Phase</b>	Phase 2
<b>Patients</b>	100
<b>Primary Outcome Measures</b>	PK/PD and safety of SEG101 at 5 mg/kg
<b>Arms Intervention</b>	SEG101 (crizanlizumab) at a dose of 5 mg/kg by IV infusion ± Hydroxyurea/Hydroxycarbamide
<b>Target Patients</b>	Pediatric SCD patients with VOC
<b>Readout Milestone(s)</b>	H2-2021 (pediatric patients ≥12 year old) 2024 (pediatric patients <12 year old)
<b>Publication</b>	<p>1. Matthew M. Heeney, David C. Rees, Mariane de Montalembert, Isaac Odame, R. Clark Brown, Yasser Wali, Thu Thuy Nguyen, Du Lam, Raquel Merino Herranz, Julie Kanter; Study Design and Initial Baseline Characteristics in Solace-Kids: Crizanlizumab in Pediatric Patients with Sickle Cell Disease. <i>Blood</i> 2020; 136 (Supplement 1): 22–24. doi: <a href="https://doi.org/10.1182/blood-2020-137081">https://doi.org/10.1182/blood-2020-137081</a></p> <p>2. Matthew M. Heeney, David C. Rees, Mariane De Montalembert, Isaac Odame, R. Clark Clark Brown, Yasser Wali, Thu Thuy Nguyen, Du Lam, Nadege Pfender, Julie Kanter; Initial Safety and Efficacy Results from the Phase II, Multicenter, Open-Label Solace-Kids Trial of Crizanlizumab in Adolescents with Sickle Cell Disease (SCD). <i>Blood</i> 2021; 138 (Supplement 1): 12. doi: <a href="https://doi.org/10.1182/blood-2021-144730">https://doi.org/10.1182/blood-2021-144730</a></p>



Innovation: Pipeline overview

Innovation: Clinical trials

Abbreviations

Cardiovascular

Immunology

Neuroscience

Oncology

Other

Ophthalmology

Global Health

Biosimilars

## cipargamin - PfATP4 inhibitor

### NCT04675931 KARISMA (CKAE609B12201)

<b>Indication</b>	Malaria severe
<b>Phase</b>	Phase 2
<b>Patients</b>	252
<b>Primary Outcome Measures</b>	Percentage of participants achieving at least 90% reduction in Plasmodium falciparum (P. falciparum) at 12 hours [ Time Frame: Day 1 (12 Hours) ]
<b>Arms Intervention</b>	Arm 1: experimental, IV KAE609 Dose regimen 1 Arm 2: experimental, IV KAE609 Dose regimen 2 Arm 3: experimental, IV KAE609 Dose regimen 3 Arm 4: active comparator, IV Artesunate Arm 5: Coartem, Standard of care
<b>Target Patients</b>	Patients with Malaria, severe
<b>Readout Milestone(s)</b>	2024
<b>Publication</b>	TBD



Innovation: Pipeline overview

Innovation: Clinical trials

Abbreviations

Cardiovascular

Immunology

Neuroscience

Oncology

Other

Ophthalmology

Global Health

Biosimilars

## Coartem® - PGH-1 (artemisinin combination therapy)

### NCT04300309 CALINA (CCOA566B2307)

<b>Indication</b>	Malaria, uncomplicated (<5kg patients)
<b>Phase</b>	Phase 3
<b>Patients</b>	44
<b>Primary Outcome Measures</b>	Artemether Cmax
<b>Arms Intervention</b>	Experimental: artemether lumefantrine (2.5 mg:30 mg) artemether lumefantrine (2.5 mg:30 mg) bid over 3 days, from 1-4 tablets per dose
<b>Target Patients</b>	Infants and Neonates <5 kg body weight with acute uncomplicated plasmodium falciparum malaria
<b>Readout Milestone(s)</b>	Primary outcome measure: 2023
<b>Publication</b>	TBD



Innovation: Pipeline overview

Innovation: Clinical trials

Abbreviations

Cardiovascular

Immunology

Neuroscience

Oncology

Other

Ophthalmology

Global Health

Biosimilars

## ganaplacide - Non-artemisinin plasmodium falciparum inhibitor

### NCT04546633 KALUMI (CKAF156A2203)

<b>Indication</b>	Malaria, uncomplicated
<b>Phase</b>	Phase 2
<b>Patients</b>	292
<b>Primary Outcome Measures</b>	PCR-corrected and uncorrected Adequate Clinical and Parasitological Response (ACPR)
<b>Arms Intervention</b>	KAF156 and LUM-SDF QD (once daily) for 2 days in fasted condition KAF156 and LUM-SDF QD (once daily) for 2 days in fed condition
<b>Target Patients</b>	Malaria patients 6 months to < 18 years old
<b>Readout Milestone(s)</b>	2023
<b>Publication</b>	TBD



Innovation: Pipeline overview

Innovation: Clinical trials

Abbreviations

Cardiovascular

Immunology

Neuroscience

Oncology

Other

Ophthalmology

Global Health

Biosimilars

# Biosimilars





Innovation: Pipeline overview

Innovation: Clinical trials

Abbreviations

Cardiovascular

Immunology

Neuroscience

Oncology

Other

Ophthalmology

Global Health

Biosimilars

## afibercept - VEGF inhibitor

### NCT04864834 Mylight (CSOK583A12301)

<b>Indication</b>	Ophthalmology indication (as originator)
<b>Phase</b>	Phase 3
<b>Patients</b>	460
<b>Primary Outcome Measures</b>	Best-corrected visual acuity (BCVA) will be assessed using the ETDRS testing charts at an initial distance of 4 meters. The change from baseline in BCVA in letters is defined as difference between BCVA score between week 8 and baseline
<b>Arms Intervention</b>	Arm 1 Biological: SOK583A1 (40 mg/mL) Arm 2 Biological: Eylea EU (40 mg/mL)
<b>Target Patients</b>	Patients with neovascular age-related macular degeneration
<b>Readout Milestone(s)</b>	2023
<b>Publication</b>	tbd



# Abbreviations

AI	Auto-injector	IgAN	IgA nephropathy
AIH	Autoimmune hepatitis	IPF	Idiopathic pulmonary fibrosis
aHUS	atypical Hemolytic Uremic Syndrome	ITP	Immune thrombocytopenia
ALL	Acute lymphoblastic leukemia	LBCL	Large B-cell lymphoma
ALS	Amyotrophic lateral sclerosis	LN	Lupus nephritis
AML	Acute myeloid leukemia	mCRPC	Metastatic castration-resistant prostate cancer
BC	Breast cancer	MDS	Myelodysplastic syndrome
C3G	C3 glomerulopathy	mHSPC	Metastatic hormone sensitive prostate cancer
CART	Chimeric androgen receptor T	mPDAC	Metastatic pancreatic ductal adenocarcinoma
CLL	Chronic lymphocytic leukemia	MS	Multiple sclerosis
CML	Chronic myeloid leukemia	NASH	Non-alcoholic steatohepatitis
CRC	Colorectal cancer	nmCRPC	Non-metastatic castration-resistant prostate cancer
COPD	Chronic obstructive pulmonary disease	NPR1	Natriuretic peptide receptor 1
COSP	Chronic ocular surface pain	nr-axSpA	Non-radiographic axial spondyloarthritis
CSU	Chronic spontaneous urticaria	NSAI	Non-steroidal aromatase inhibitor
CVRR-Lp(a)	Secondary prevention of cardiovascular events in patients with elevated levels of lipoprotein (a)	NSCLC	Non-small cell lung cancer
CVRR-LDL	Secondary prevention of cardiovascular events in patients with elevated levels of LDL	OS	Overall survival
DME	Diabetic macular edema	PFS	Prefilled syringe
DLBCL	Diffuse large B-cell lymphoma refractory	PNH	Paroxysmal nocturnal haemoglobinuria
ESCC	Esophageal squamous-cell carcinoma	PsA	Psoriatic arthritis
FL	Follicular lymphoma	rHR	Resistant hypertension
GCA	Giant cell arteritis	rMS	Relapsing multiple sclerosis
GVHD	Graft-versus-host disease	rPFS	Radiographic progression free survival
GRPR	Gastrin releasing peptide receptor	SLE	Systemic lupus erythematosus
HCC	Hepatocellular carcinoma	SMA Type 1	Spinal muscular atrophy (IV formulation)
HD	Huntington's disease	SMA Type 2/3	Spinal muscular atrophy (IT formulation)
HR LBCL	High risk large B-cell lymphoma	SpA	Spondyloarthritis
IA	Interim analysis	T1DM	Type 1 Diabetes mellitus
iAMD	Intermediate age-related macular degeneration	wAIHA	Warm autoimmune hemolytic anemia
IC-MPGN	Immune complex membranoproliferative glomerulonephritis		