

Custom Built Biology for Patients

November 2022

Molecular Partners AG, Switzerland (SIX: MOLN, NASDAQ: MOLN)

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Molecular Partners Highlights

Science Highlights:

MP0533: Tri-specific T-cell engager for AML

- On track to reach clinical initiation by end 2022
- Oral presentation at ASH 2022

MP0317: Bi-specific CD40 local agonist

- In Phase 1 enrollment ongoing at 3 mg/kg dose level
- Positive initial data presented at SITC

DARPin-radioligand therapies:

- Deal with Novartis on 2 targets: CHF 18.6 million received, to date
- Internal research ongoing with initial targets nominated in H1 23

Abicipar:

- FDA supports single safety trial for approval
- Reviewing path forward outside MP

Operational Highlights:

- Reported cash and equivalents as of September 30, 2022: CHF ~267 million
- Consistent, disciplined spend rate
 - Runway into 2026

Strategy: Highly Differentiated Programs, True Patient Value

PATIENT VALUE

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P	

We aim to drive **true patient value** with an **early clinical read-out** by directly changing the course of disease

DARPin ADVANTAGE

(in)

We leverage the advantages of **DARPins** to provide **unique solutions** to patients with high medical need, no satisfactory solutions and well-defined disease biology





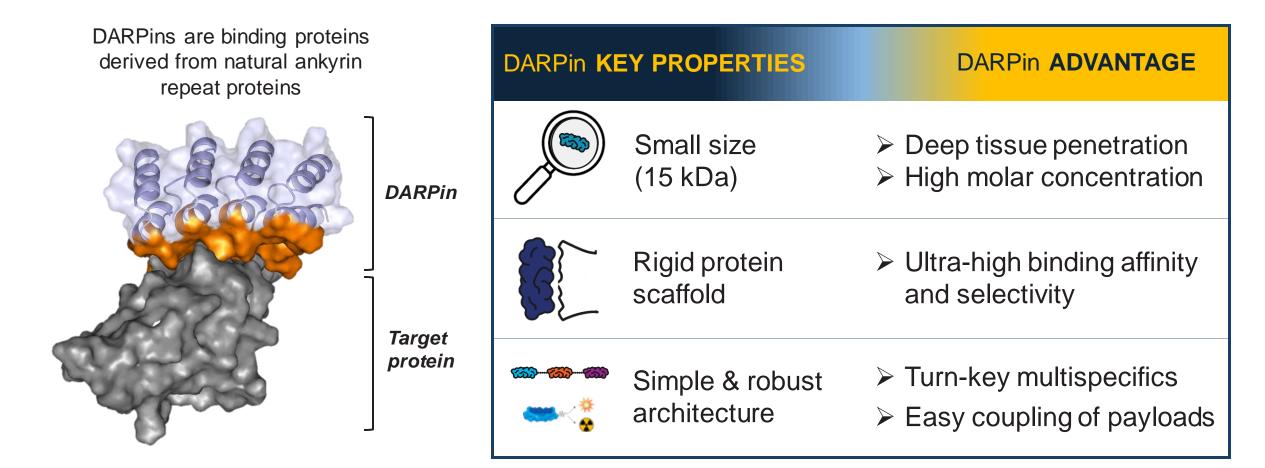
We target **biological hypothesis** that can be tested in relevant preclinical models with translatable value – focus on oncology and virology

PARTNERING

We share an open mindset and **collaborate** with world leading companies, scientists and clinicians from ideation to approval



DARPins: The Core of our Drug Engine



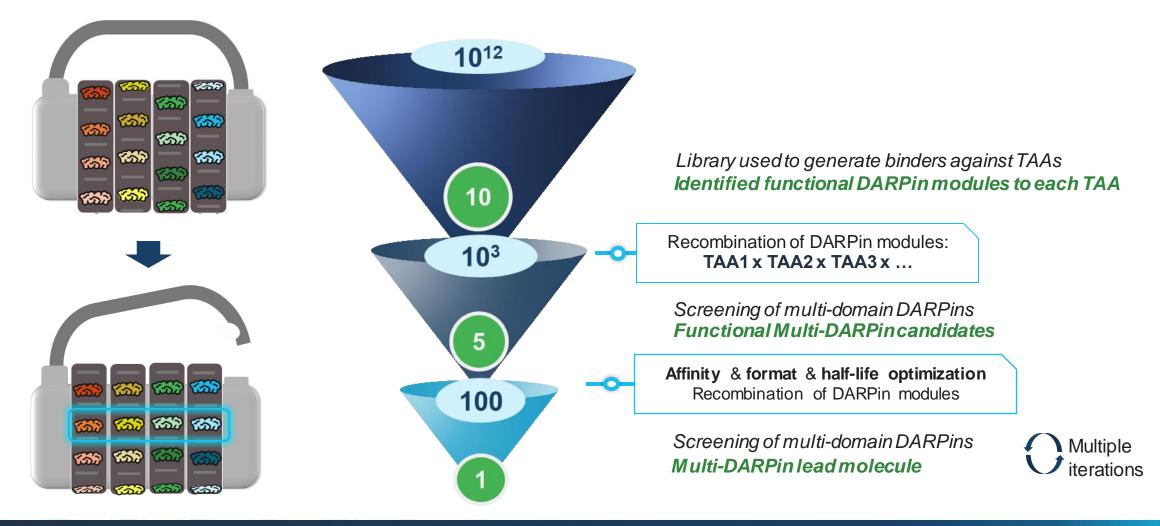


Translating DARPin Properties into Differentiated Therapeutics

Delivery vectors "radical simplicity"	Multi-specificity-enabled possibilities			Conditional activation "radical complexity"
RLT & DDC	Ensovibep	MP0310 & MP0317	MP0533	SWITCH
Small size: high affinity delivery, limited systemic exposure	Cooperative binding to inhibit SARS-Cov-2 and prevent escape	Tumor localized clustering activates effector cells in tumor	Avidity driven TCE for tumor specificity and heterogeneity	Programming highly potent effectors to omit off-tumor activity
Drug Conjugate		Immune cell	T cell T cell Tumor cell	Tumor cell

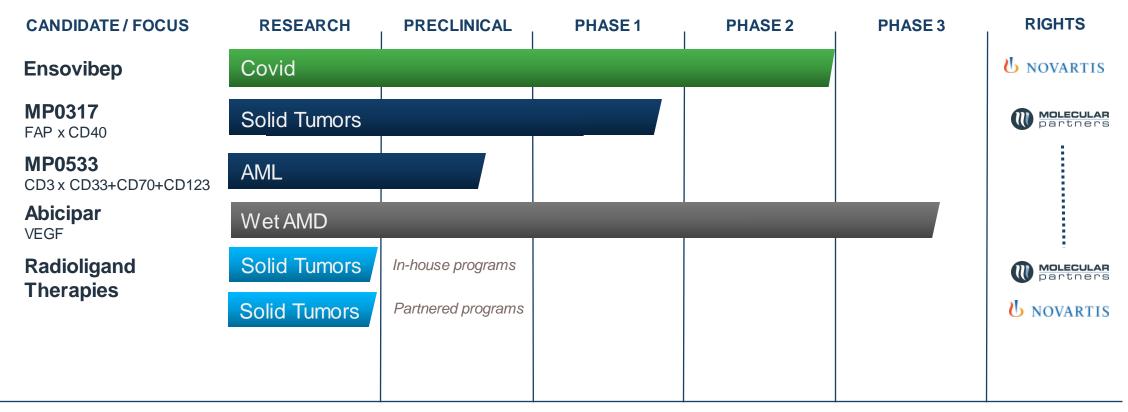


Exploiting the Multi-DARPin Platform Allows screening for function sweet spot





Pipeline



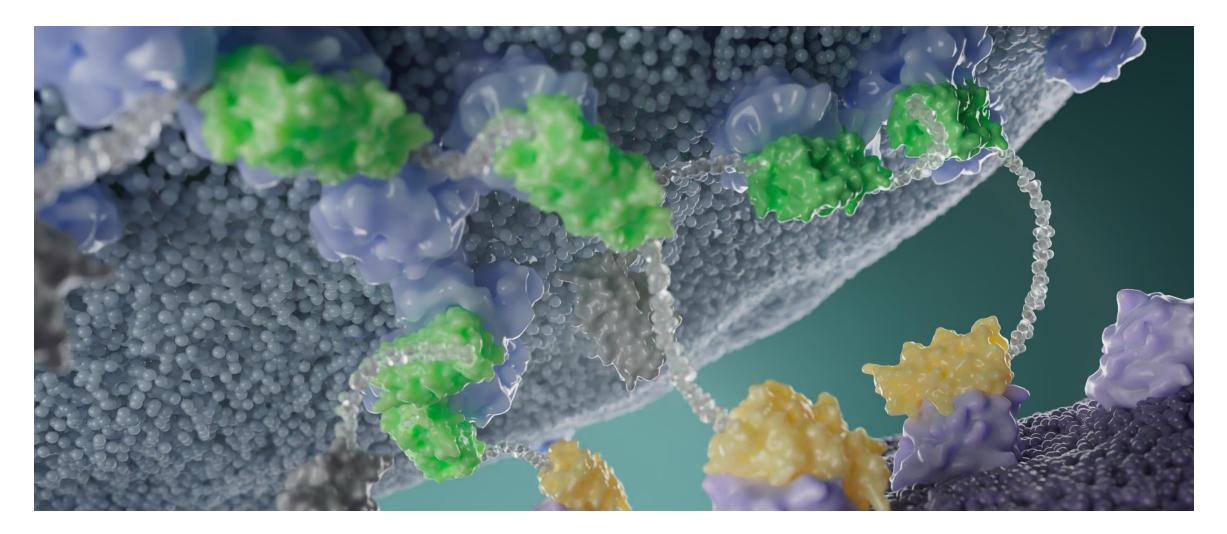
PLATFORM DISCOVERY

Targeted delivery; Conditional activation





MP0317: A Phase 1 Localized CD40 Engager





Initial clinical data demonstrates tumor localized immune activation without systemic toxicity Phase 1 dose-escalation trial ongoing with MP0317 – 1 mg/kg dose reached without systemic toxicity

- ✓ 3mg/kg ongoing at Q3 dosing, weekly dosing ongoing at .5mg/kg
- PD markers from paired biopsies to demonstrate tumor local immune cell activation (Q1/23)
- Partnering for combination trials (H1/23)

MP0317: Localized CD40 Engager

 Half-life extender
 Localizer
 Immune activator
 Immune activator

FAP

CD40

CD40

HSA

- Immune Checkpoint Inhibitors have transformed cancer treatment, yet most patients still fail to respond
 - One cause of resistance or lack of activity is the absence of intra-tumoral immune cell activation
 - Current CD40 agonists activate intra-tumoral but also peripheral immune cells, leading to dose-limiting toxicity
 - MP0317: Long-acting DARPin co-targeting both FAP and CD40
 - FAP is a stromal target stably expressed at high density in various tumors and absent systemically
 - CD40 requires multimerization for its activation
- MP0317 aims for FAP-dependent CD40 multimerization for intra-tumoral immune activation w/o systemic tox
- Reason to believe

Clinical Problem

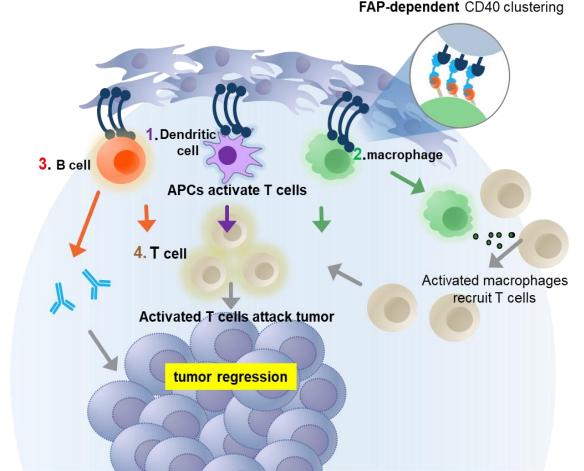
DARPin Solution

Next value



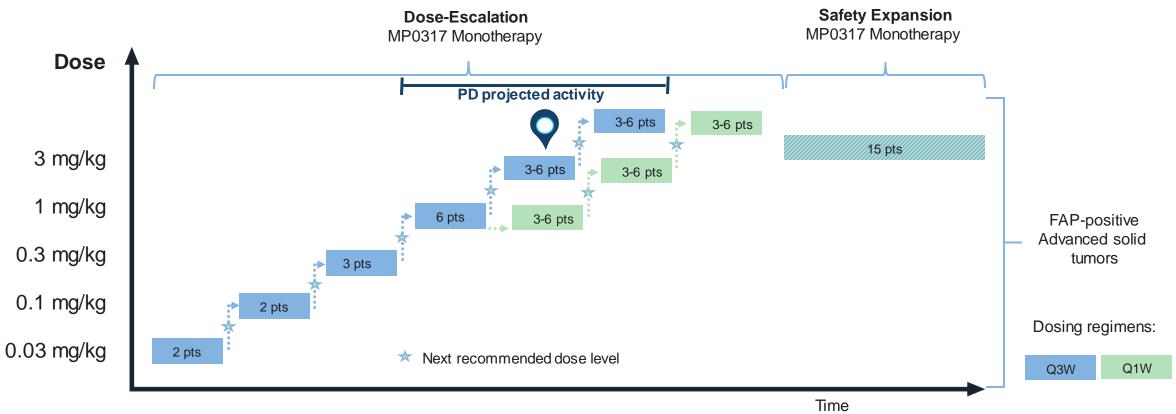
MP0317's Potential Promise

- CD40 is a clinically validated target involved in activation of antigen presenting cells (APCs)
- MP0317 holds the promise to overcome limitations of systemic CD40 agonists and expand therapeutic window
- Limited direct competition (most assets still systemic)
- Supportive preclinical package with single agent efficacy in a mouse FAP^{high} tumor model
- Encouraging early safety data supportive of partnering for combination therapies





MP0317-CP101 Clinical Trial Update



Next:

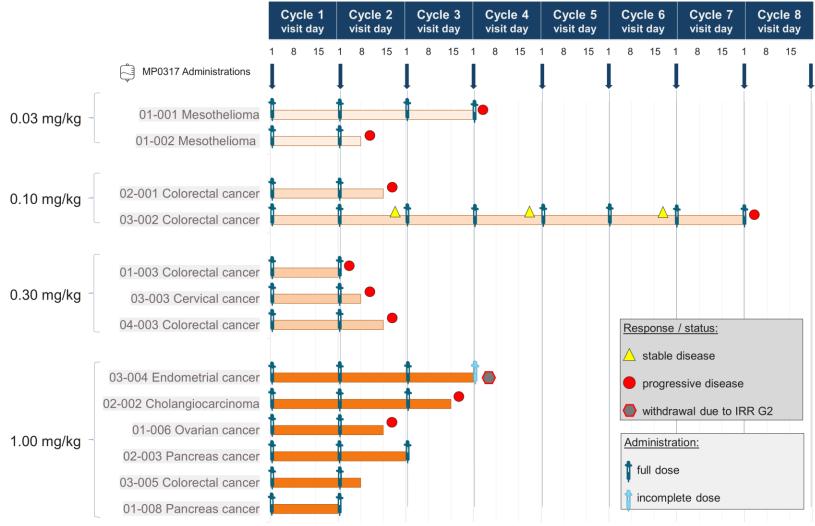
MOLECULAR

partners

- Communication of emerging clinical data in H2/22
- PD data on tumor-immune activation expected Q1-23
- Select partners for combination trials

Recruiting at 3 mg/kg dose

MP0317 Dose Escalation Ongoing- Interim Clinical Data (Cohort 1-4)



MOLECULAR partners

Characteristic	Patients (<i>N</i> = 13)
Age, median (range), y	55 (35 –75)
Female (%)	7 (54)
ECOG PS, <i>n</i> (%)	
0	7 (54)
1	6 (46)
Median prior regimens (range)	3 (1–13)

 Patients were escalated from 0.03 mg/kg to 1 mg/kg Q3W as per protocol, with additional Q3W and Q1W cohorts recruiting

Data cut-off 04 Oct. 2022

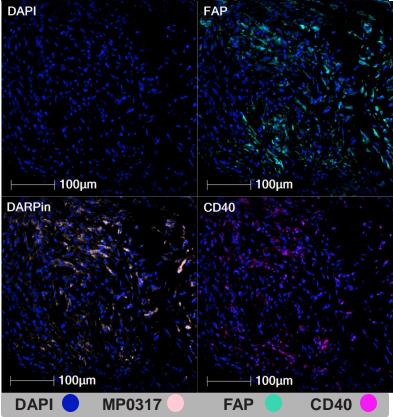
At Data Cut-off, MP0317 is Safe and Well-Tolerated

- No DLTs reported (Cohorts 1-4) & none of the grade ≥3 AEs were related to study treatment
- Of all AESIs that were pre-specified per protocol, only infusion-related reactions (IRR) were observed in more than one patient

	Number of Treatment-Emergent Events (Number of Patients Affected)				
MP0317 Dose Level	0.03 mg/kg	0.1 mg/kg	0.3 mg/kg	1 mg/kg	Total
Number of patients	2	2	3	6	13
AEs	17 (2)	20 (2)	21 (3)	27 (5)	85 (12)
Related AEs	1 (1)	10 (2)	4 (3)	17 (4)	29 (10)
Grade ≥3 AEs	4 (2)	0 (0)	2 (2)	0 (0)	6 (4)
IRR AEs - all Grade 2	1 (1)	1 (1)	0 (0)	3 (1)	5 (3)
SAEs	2 (2)	0 (0)	2 (2)	1 (1)	5 (5)
Related SAEs	0 (0)	0 (0)	0 (0)	1* (1)	1 (1)
* IRR Grade 2 with hospitalization for patient monitoring					



MP0317 Colocalizes and Occupies FAP and CD40 in Tumor (Cohorts 1-3)



Representative multiplex immunofluorescence images of MP0317 colocalization with FAP and CD40 in a tumor verified area (pan cytokeratin positive) for subject 03-003, a cervical cancer patient dosed at 0.3 mg/kg

DARPin target occupancy in tumor with FAP and CD40

Subject	Cohort	% FAP at baseline	% FAP occupied by MP0317	% CD40 occupied by MP0317
01-001	1	18.0	3.6	33.4
01-002	1	38.3	ND	ND
02-001	2	0.2	ND	ND
03-002	2	47.8	6.4	27.0
01-003*	3	0.2	no sample	no sample
03-003	3	22.8	26.0	47.1
04-003	3	pending	pending	pending

*No Cycle 2 Day 8 sample collected; ND: not detected; For patient 04-003, multipleximm unofluorescence paired biopsy data are pending bioanalysis (together with cohort 4 batch)

- Multiplex immunofluorescence data show colocalization of MP0317 with FAP and CD40 in 3 out of 5 eligible paired tumor biopsies, demonstrating preferential tumor targeting through FAP, and CD40 target occupancy
- More data and orthogonal validation across PD biomarkers are required to determine a FAP threshold for patient selection



Conclusions

- As of Oct 2022, MP0317 is well-tolerated and shows no sign of systemic toxicity or DLT in the first 13 patients enrolled across 4 dose levels (0.03 mg/kg – 1 mg/kg Q3W)
- Emerging PK data are consistent with a half-life extended DARPin suitable for a Q3W dosing with evidence of target-mediated drug disposition, suggestive of CD40 engagement
- Preliminary biomarker data show evidence of target occupancy and PD modulation in the tumor microenvironment, consistent with the expected mode of action of tumor-localized CD40-mediated activation
- Enrollment at higher Q3W doses and at Q1W is ongoing to validate those preliminary observations and define the recommended dose for expansion

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MP0317 Status Update and Next Steps

- Ongoing Phase I dosing escalation, expected to be completed in Q4 2022
 - No DLTs / drug-related SAEs up to Cohort 4 (1 mg/Kg)
 - Presently enrolling at 3mg/kg
 - Initiated weekly dosing in parallel to every-3-weeks
 - Presently enrolling at 0.5mg/kg
- Continue enrolment and prepare for cohort expansions
- Establish ideal combination partners for Phase II





MP0533: Trispecific T-cell Engager for AML

MP0533 – Avidity-driven Selective Killing of Blasts & LSC in AML **CD33 CD123** HSA

- AML remains a deadly disease for most patients, especially non-transplant eligible ones
- Leukemic stem cells (LSCs) play a key role in initiating and sustaining AML, while blasts drive disease intensity
- LSCs are less sensitive to chemo and their selective targeting is a challenge, lack of selective markers
- MP0533: DARPin binding to CD33xCD70xCD123 (optimized affinity) and CD3 (T-cell activation)
 - Blasts and LSC co-express CD33, CD70 and CD123, while healthy cells (HSC) show mostly mono-expression
 - Killing of cells that co-express 2 or more targets, while mono expressing cells are spared
- MP0533 is designed to preferentially kill Blasts and LSCs, opening a therapeutic window
- Preclinical results from cell-based and animal models demonstrate MoA described above
- Ex-vivo patient samples: preferential killing of LSCs & Blasts (potentially to open therapeutic window)
- FIH clinical studies initiating in H2/2022, mono-activity expected
- Oral Presentation accepted for ASH 2022

CD70

AML

antigen

Half-life

extender

Cancer

antigen

AML

antigen

CD3

Immun

activator



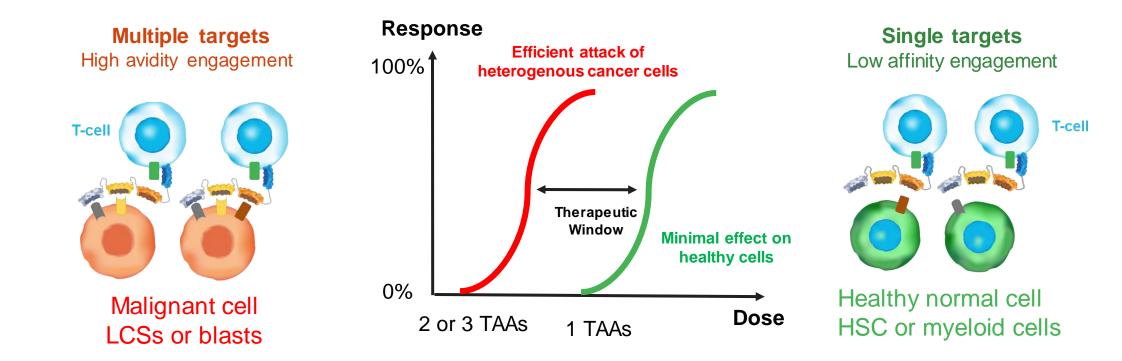


Problem Clinical

value Next

Avidity-Driven Specificity Against Leukemic Stem Cells and Blasts in AML

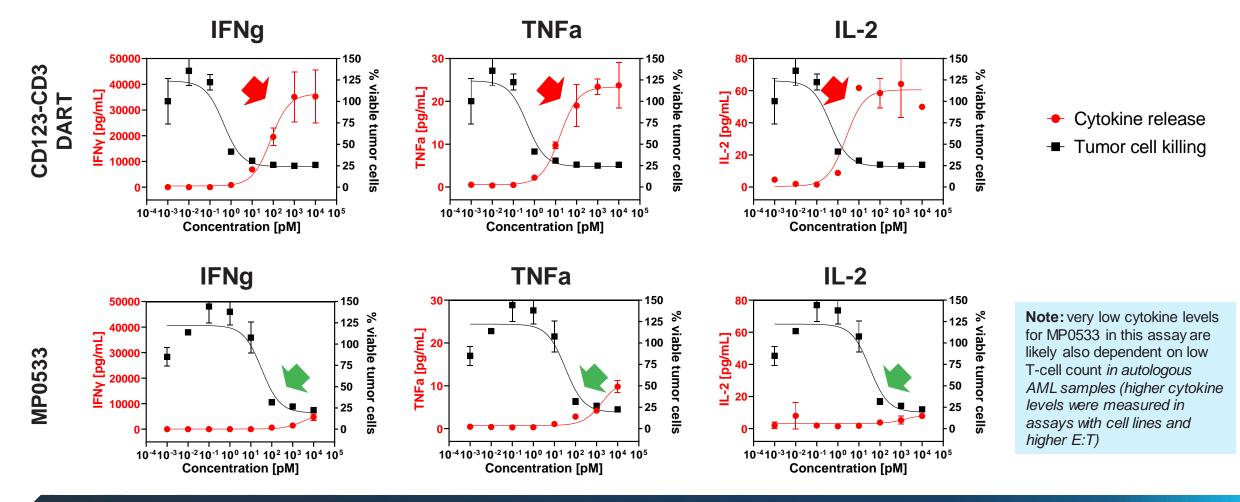
- Persistence of LSCs is the driver of relapse in AML
- Targets in AML are also on healthy cells, leading to on-target toxicity (unclean targets)
- Goal: avidity-driven killing of LSCs and blasts, with reduced killing of HSCs and other healthy cells



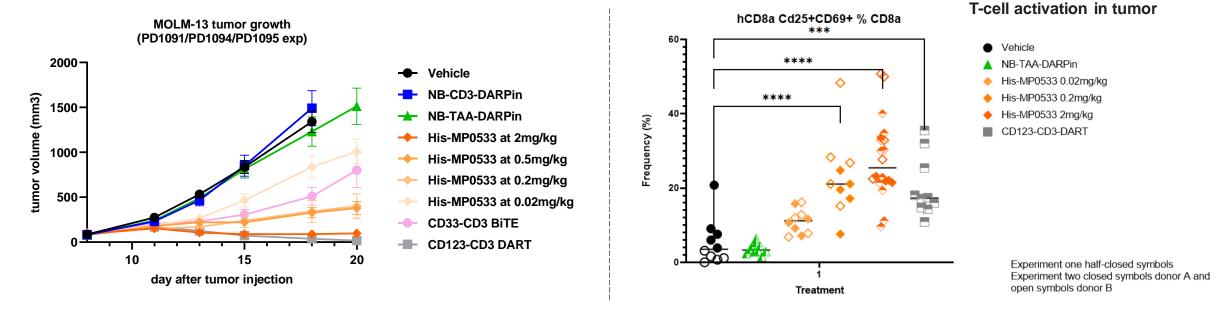
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Low Cytokine Release Under 'Close-to-patient' Conditions Primary autologous setting

> Primary AML BMMCs (bone marrow mononuclear cells) with 80% blast content in bone marrow (E:T of ≈1:20); 5-day assay



Good *in-vivo* efficacy of His-MP0533* in AML tumors In vivo efficacy in line with competitors

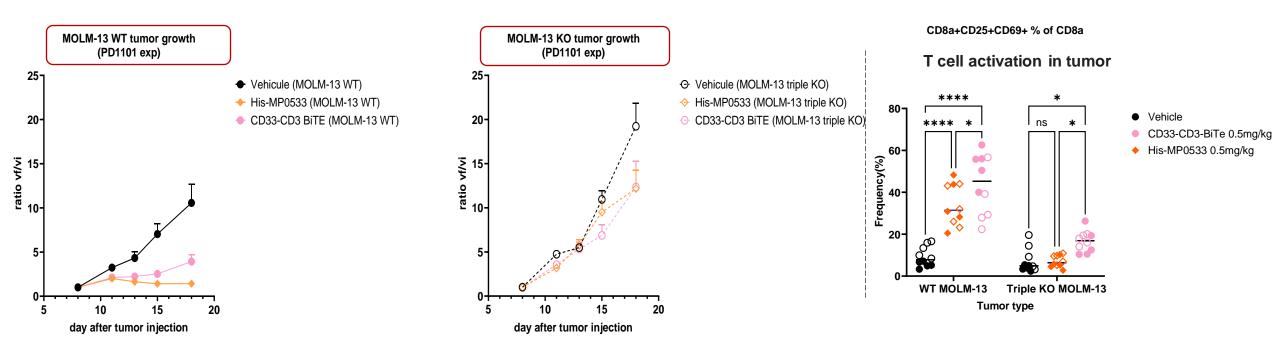


✓ His-MP0533 showed a significant efficacy in MOLM-13 WT tumors

- ✓ His-MP0533 induced T-cell activation in MOLM-13 tumors. Level of T-cells activation correlated with His-MP0533 efficacy in vivo.
- ✓ No increase of cytokines/chemokines released in mouse serum only in tumors.
- ✓ Level of cytokines/chemokines release correlate with His-MP0533 efficacy and T-cell activation in tumors only.



No Off-target Killing *in vivo* In vivo selectivity to TAA-expressing MOLM-13 tumors



✓ His-MP0533 showed a significant efficacy in MOLM-13 WT (wild-type) tumors

✓ But no efficacy in MOLM-13 triple KO (knock-out) tumors (growing on the same mice) ✓ His-MP0533 induced T-cell activation only in MOLM-13 WT tumors (expressing 3x TAAs)

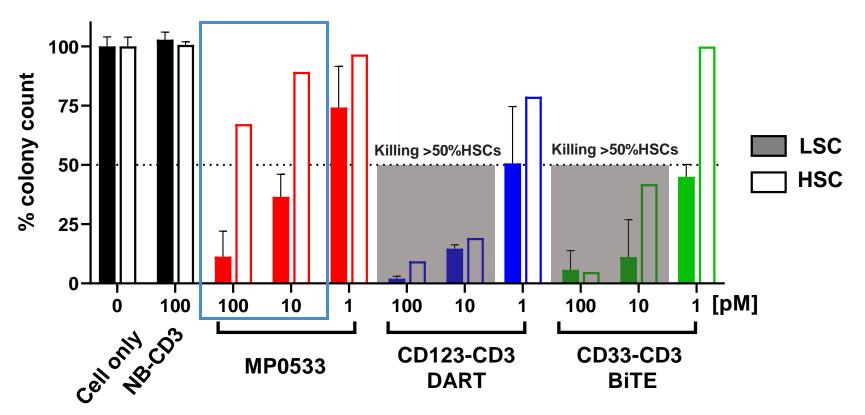


MP0533 Shows Larger Therapeutic Window Compared to CD123-DART and CD33-BiTE

Successfully killing leukemic stem cells (LSC, full bars) while sparing hematopoietic stem cells (HSC, empty bars) *in vitro*

Killing of sorted CD34+ LSC or HSC by colony formation assay

using allogenic T-cells (E:T of 1:1, 4 d) / CFU counted after 2 weeks semi-solid media





MP0533 Phase 1: Open Label, Multicenter Dose Escalation Study in AML or HR-MDS Patients

Main inclusion criteria:

- Diagnosis of AML or MDS/AML according to the ELN recommendation 2022 refractory or relapsed to pretreatment with HMA (with or without venetoclax), induction chemotherapy or allogeneic HSCT
 - No active active GvHD requiring immune-suppressive therapy
 - No signs of CNS AML
 - No leucostasis
 - No use of immunosuppressive drug
- Number of patients: 20-45

Primary endpoint:

• Safety and Tolerability

Main secondary/ exploratory endpoints:

- Efficacy
- Pharmacokinetics
- T-cell Activation
- Cytokine Release
- Effect on LSCs

Trial initiation planned for late 2022

Abbreviations: AML = Acute myeloid leukemia; HR-MDS = high-risk myelodysplastic syndrome; ELN = European LeukemiaNet; HMA = hypomethylating agents; HSCT = Hematopoietic Stem Cell Transplantation ; GvHD = graft vs host disease; LSC = leukemic stem cells;



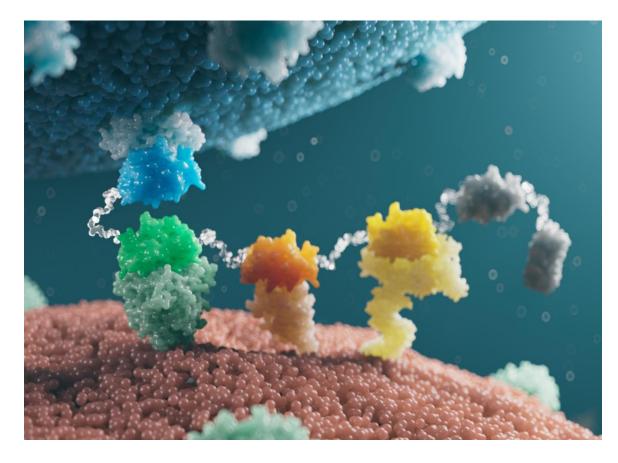
MP0533: A Unique DARPin Solution for AML Patients

- Very good progress on translational data generation path
- Advanced clinical interactions with KOLs and CROs will enable timely protocol completion and submission

✓ Progress requirements met:

- Critical data on MoA, safety & efficacy
- TPP refinement
- Biomarker plan
- Competition analysis
- CMC feasibility

Phase 1 clinical trial initiation H2 2022





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DARPin Radio-Ligand-Therapy (RLT) and DARPin Drug-Conjugates

DARPin-based Radioligand Therapy (RLT)

Tumor Targeting DARPin Radionuclide

Radiation provides a highly effective way to kill tumor cells

Clinical Problem

DARPin Solution

Reason to believe

Next value

- External beam radiation is successful, however limited to well-localized tumor lesions
- The delivery of therapeutic radionuclides by tumor-targeting vectors is a powerful methodology for the treatment of disseminated cancers, but is restricted by either low tumor accumulation and/or dose-limiting toxicities
- Small, mono-DARPin with ultra-high affinity to a tumor-associated antigen, coupled to a radionuclide
 - High tumor accumulation, limited systemic exposure, deep tumor penetration and long tumor retention
 - Generation of optimized DARPin platform with limited kidney toxicity
- ✓ Affinity driven tumor accumulation of small-sized / ultra-high affinity mono-DARPins in mouse tumor models
- ✓ Ongoing collaboration with Novartis, a leader in RLTs: US\$20 million up-front
- Optimize RLT-DARPin platform for limited kidney exposure
- Validate DARPin RLT potential and select first drug candidate(s)
 - Novartis: US\$560 million milestones, up to double digit royalties if drugs receive market authorization

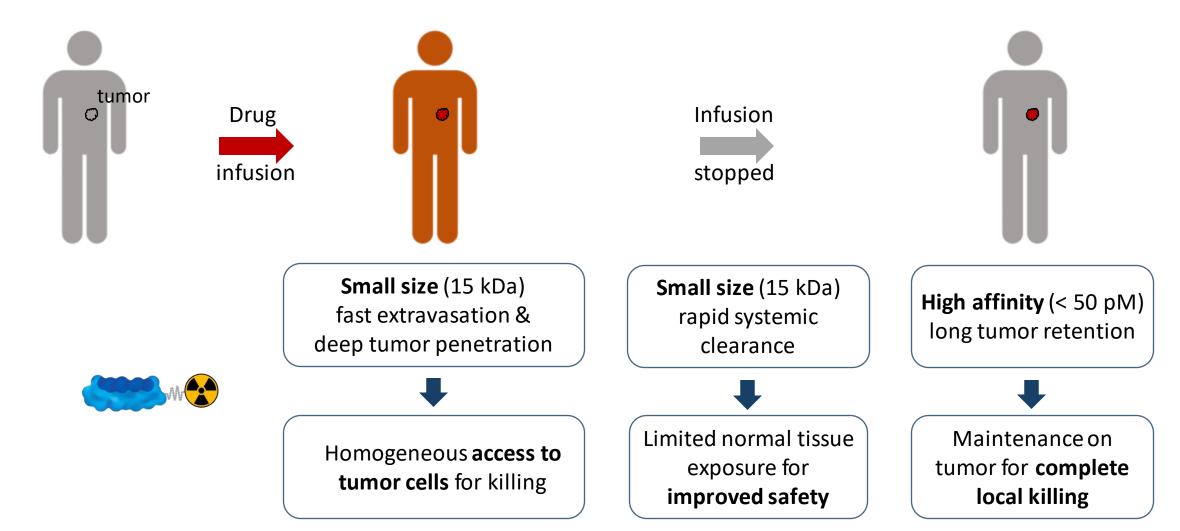
Challenges of Delivery Vectors for Radionuclides

	~~*	
	mAB	LMW compounds
Size	150 kDa	1-2 kDa
Affinity	high (bivalent)	low
Specificity	high	limited
High tumor load	+	+
Deep tumor penetration ➢ access site of action	-	+
Long tumor retention → maintenance at site of action	+	-
Limited normal tissue exposure > improved safety profile		(+)



Mono-DARPins as Ideal Delivery Vectors for Radionuclides

Designed for efficient tumor targeting with limited systemic exposure







Summary and financial guidance

Q3 2022 Financial Highlights

- Strong financial position with CHF 267 million in cash (incl. short term deposits) as of September 30, 2022
- Operating profit of CHF 132 million and net profit of CHF 135 million for the nine months ended September 30, 2022
- Company continues to expect to be funded into 2026, excluding any potential payments from R&D partnerships
- Updated FY 2022 expense guidance of CHF 70-75 million
- 3.5 million treasury shares created on Aug 25, 2022

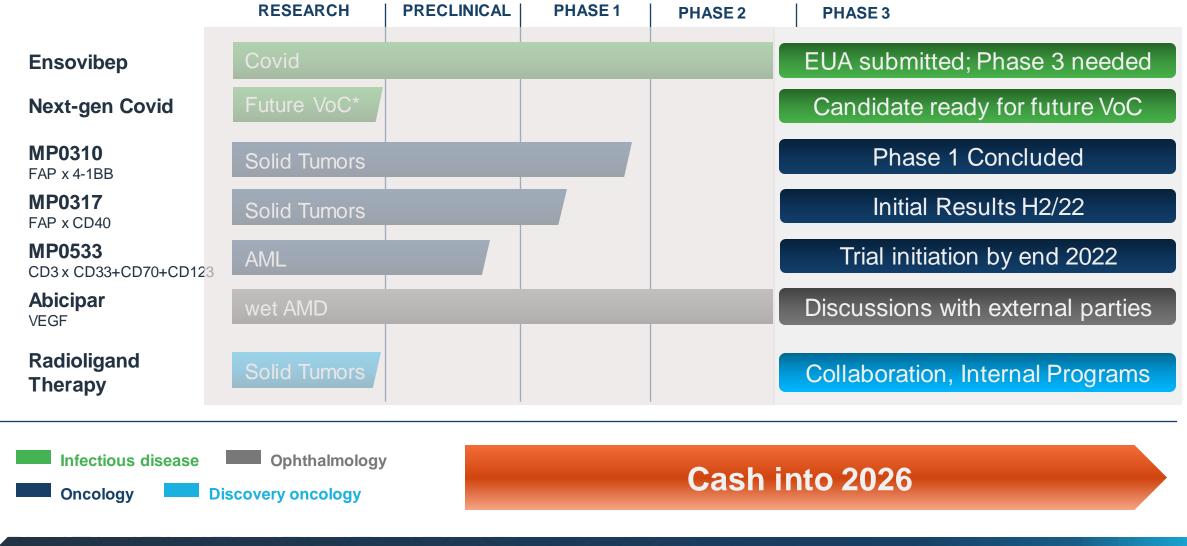


Financial Guidance for Full-Year 2022

- Total expenses of CHF 70-75 million for FY2022, of which around CHF 9 million non-cash effective costs
- With CHF 267 million cash at hand (incl. short-term time deposits) and no debt, the Company is funded into 2026, excluding any potential receipts from R&D partners
- Guidance subject to progress and changes of pipeline as well as financial markets



Summary and H2 Newsflow



Molecular partners

* VoC = Variant of Concern, including the F486V mutation 34



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Molecular Partners Leadership



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Michael Pitzner General Counsel, SVPLegal



Michael Stumpp, PhD EVP, Projects



Renate Gloggner EVP, People and Community



Daniel Steiner, PhD SVP Research



Nicolas Leupin, MD, PhD Chief Medical Officer



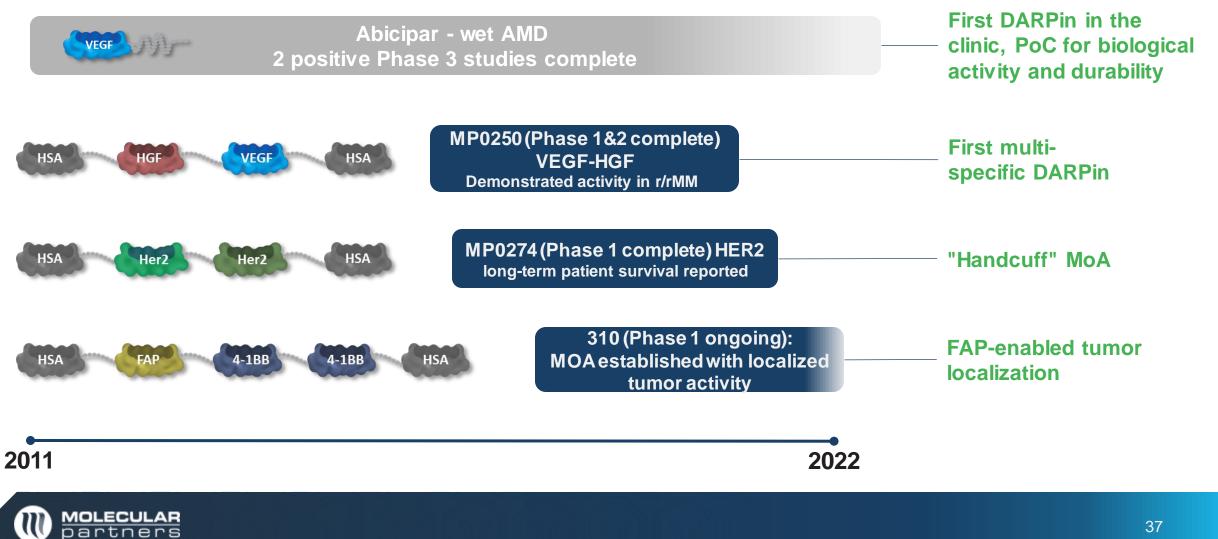
Alexander Zürcher, PhD Chief Operating Officer



Anne Goubier, DVM, PhD SVP, Head of Biology

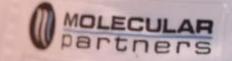


Established Assets for External Collaboration









Abicipar – Long-acting Anti-VEGF in Wet AMD

wAMD market & remaining medical need

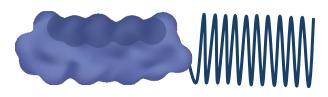
- US 10 bn\$ /year
- Competitors: Eylea & Faricimab fix 8 weeks, treat and extend (T&E) to 16 week
- T&E is sub-optimal in the real-world setting: patients lose vision

Abicipar history, value and path forward

- Abicipar has two successful Ph3 trials (Cedar, Sequoia; 2019); non-inferiority with 12-week dosing
- Abicipar was returned to MP last year (2021), following an FDA CRL in 2020 (15% inflammation)
- Potential inflammation causing agent identified in preclinical studies and to be removed for future clinical studies (2021/22)

• Path forward: FDA supports single safety trial as path to approval

- Single safety trial vs Eylea
- 550 pts total
- 40 week read out



Anti-VEGF

DARPin



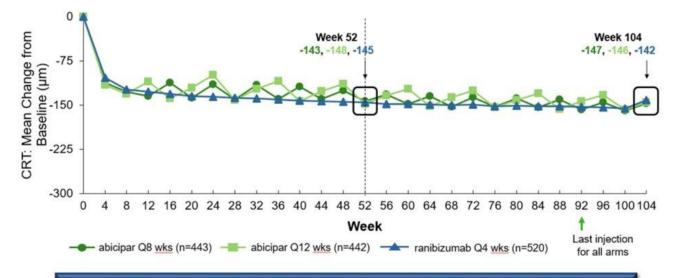
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Abicipar Non-inferiority Shown in CEDAR & SEQUOIA (Phase 3)

Phase III CEDAR &

SEQUOIA

Secondary Endpoint: Mean Change in CRT From Baseline at Weeks 52 and 104



CRT improvement after initial doses were maintained to Week 104 with quarterly abicipar injections (10) vs. monthly ranibizumab injections (25)

CRT = central retinal thickness

Abicipar is under investigation and the safety and efficacy of this product have not been established.

1. Khurana RN, et al. Presented at AAO 2019 Annual Meeting in San Francisco, CA, USA; Oct 12-15, 2019.

- Abicipar as effective as Lucentis
 - 10 injections instead of 25 (2 y)
 - CRT "biomarker" for activity
- Fixed Q12w regimen proven
 - Potential to simplify visits
- Side effect profile (15% inflammation) lead to CRL
- Potential inflammation causing agent identified and to be removed

exploring opportunities to develop Abicipar outside MP



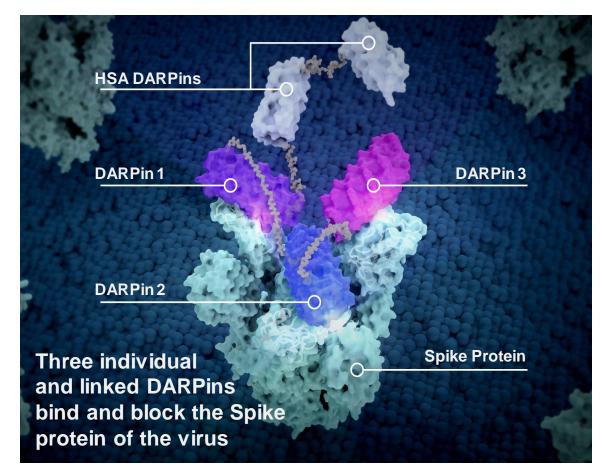


Ensovibep:

Advancement of COVID-19 Clinical Program

Structure and Features of Ensovibep Neutralizing the SARS-CoV-2 Spike Protein

3D model of a DARPin molecule



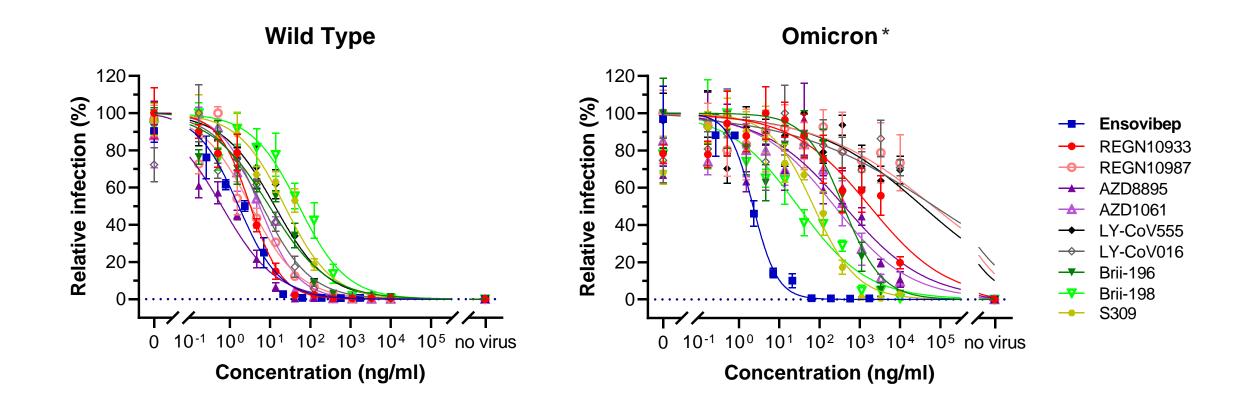
Characteristics

- <u>High potency</u>: high binding affinity and avidity leads to one of the highest anti-viral potencies reported to date
- <u>Pan variant activity</u>: cooperative binding of different sites allows blocking of all described variants of concern, so far
- <u>Simple administration</u>: long-half life, high solubility and low dose activity can allow for single administration via i.v., i.v. bolus, or s.c. injection
- <u>Supply</u>: microbial manufacturing in *E.Coli*, large scale GMP established at Sandoz



DARPin, designed ankyrin repeat proteins; RBD, receptor binding domain; HSA, human serum albumin; SARS-Cov-2, Severe acute respiratory syndrome coronavirus 2. Walser M. *Biorxiv.* 2021. https://doi.org/10.1101/2020.08.25.256339

Ensovibep Shows Multi-variant Activity

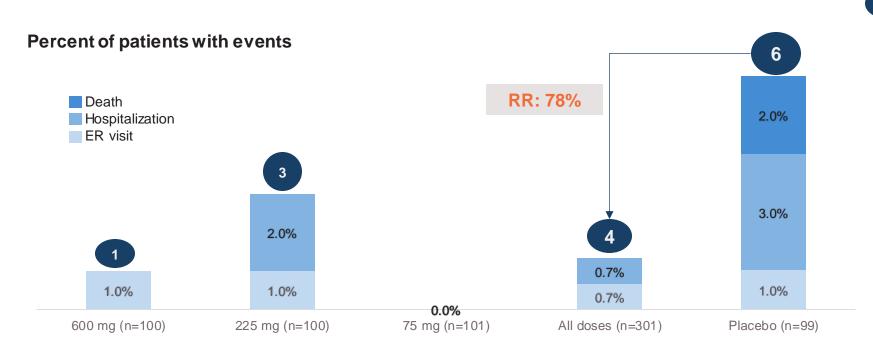




* A reduction in neutralization potency was observed with omicron sub-lineages BA.4/5, likely attributed to F486V mutation. The global circulation of BA.4/5 currently seems low, except for South Africa and Portugal. The potential of BA.4/5 to become relevant remains unknown.

Primary Endpoint (Viral reduction) Supported by Secondary Endpoint in Reductions in Hospitalization and/or ER Visit, or Death

Patients with hospitalization and/or ER visit related to COVID-19 or death



Numbers indicate absolute number of patients

Note:

In the hierarchy of ER-visit/ hospitalization/ death- patients are counted in the highest category

- ER visits exclude those resulting in hospitalization/ death
- Hospitalizations exclude those that resulted in death

