

Developing a Drug in and for a Global Pandemic:

Learnings from the Covid DARPin[®] Case on How to Overcome Barriers

October 2020, Patrick Amstutz, CEO

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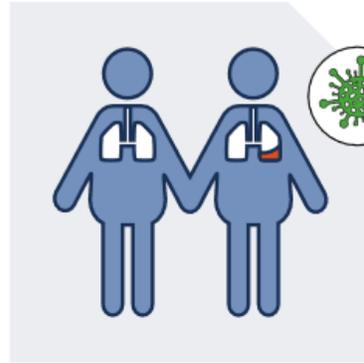
Prophylactic / Therapeutic options for COVID



Pre-exposure prophylaxis



Post-exposure prophylaxis



Out patient treatment high risk/care homes



Hospitalized mild/moderate



Hospitalized severe

Vaccines

COVID Therapeutics

Repurposed Therapeutics

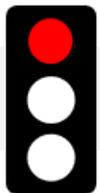
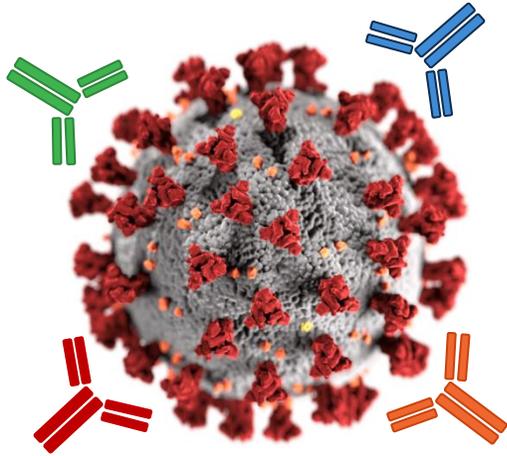
Size of population

Importance of inhibiting viral replication

Medical need

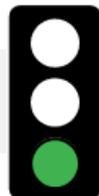
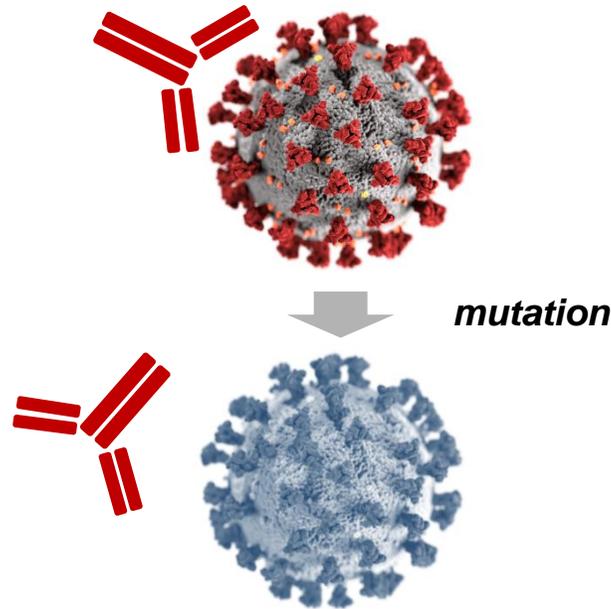
From natural antibody response to a mixture

Vaccine/polyclonal antibodies



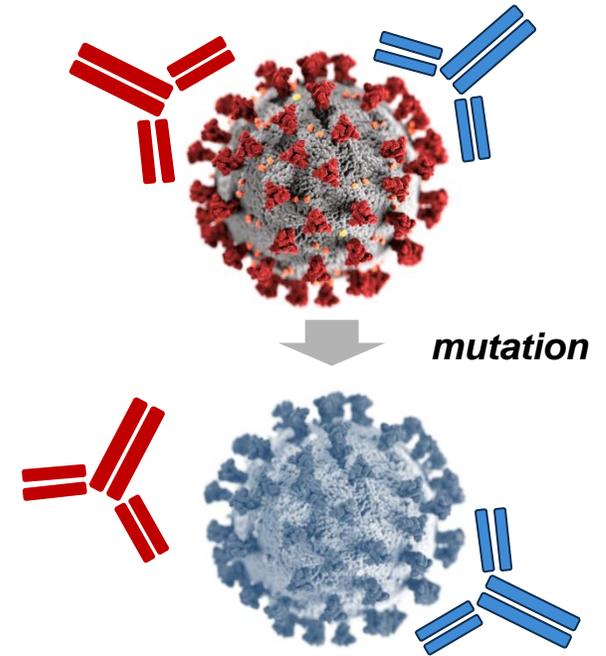
Controls the virus

Monoclonal antibody



Virus may escape

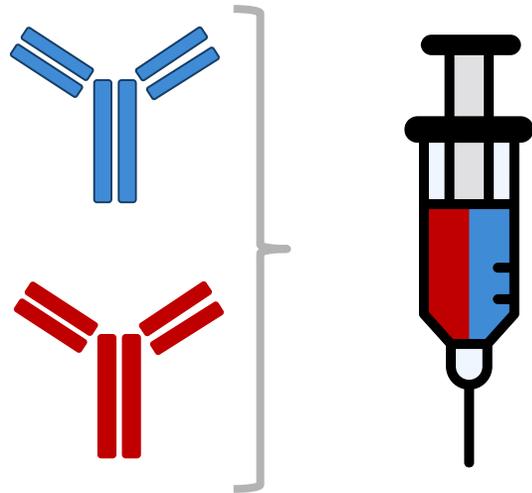
Monoclonal antibody mixture



Controls the virus

Why an antibody mixture is likely not a global solution

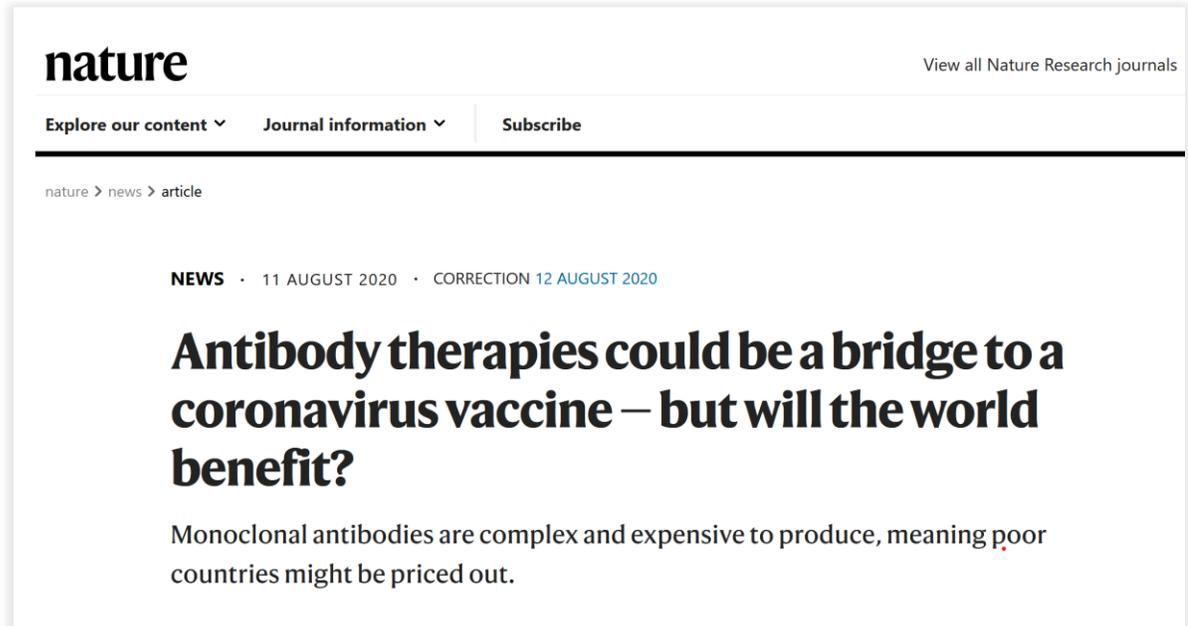
Antibody mixture



✓ **Effective**

VS.

Monoclonal antibodies drawbacks



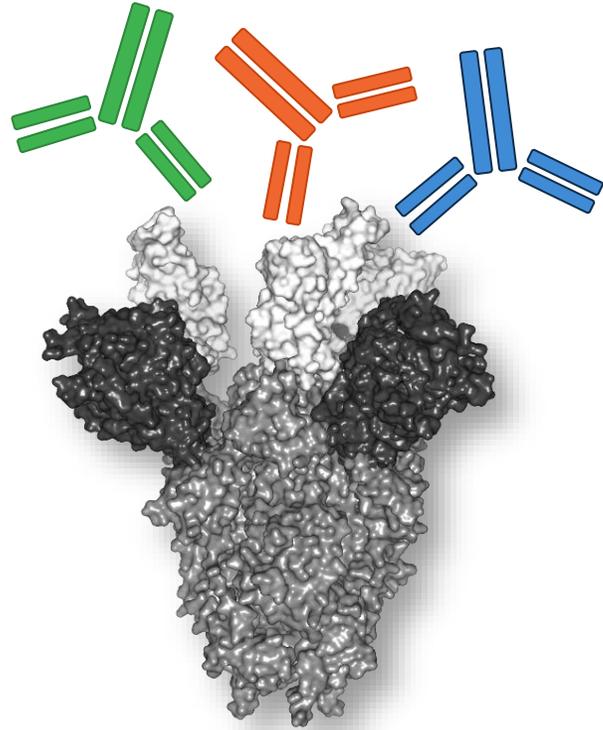
✗ **High cost**

✗ **Amounts limited**

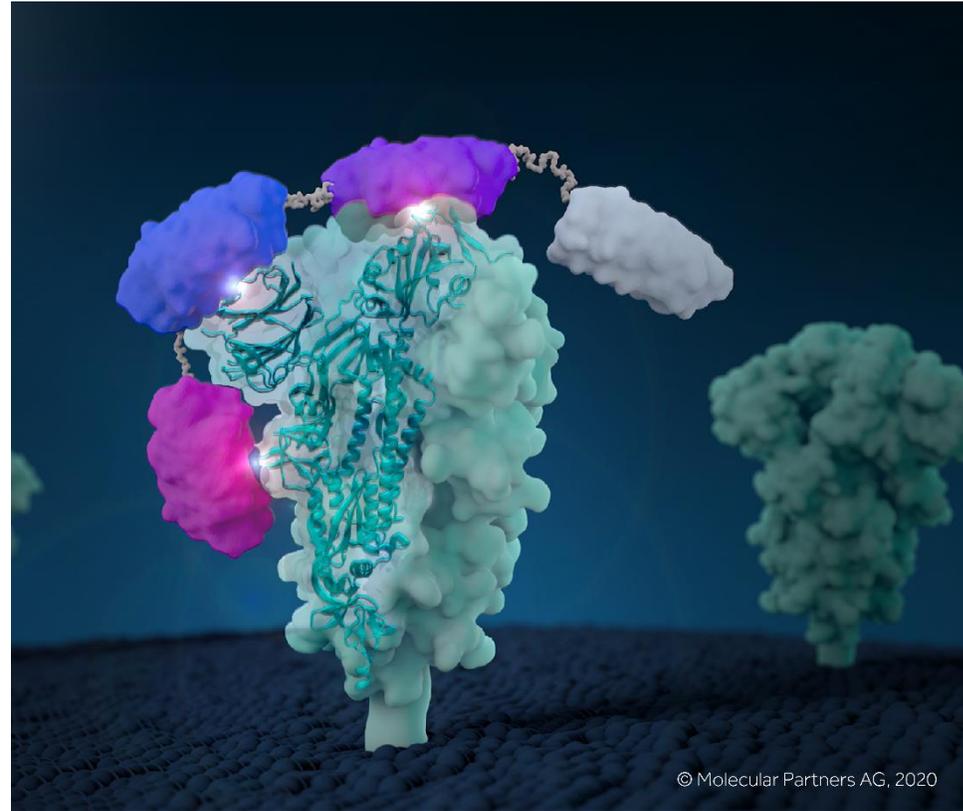
✗ **Unstable**

✗ **Infused**

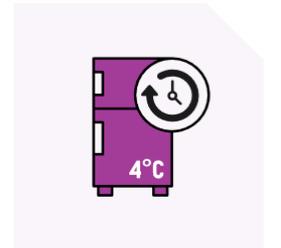
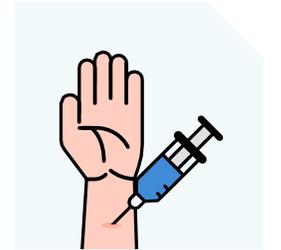
One molecule to do the work of several



Antibody cocktail



A single DARPin® with multi-specific binding

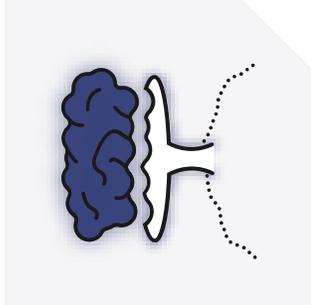


How it all began:
Imperative to act, initiative, teamwork & passion



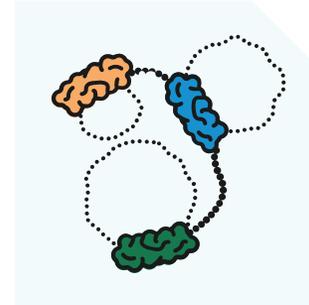
What are DARPin?

Custom-built therapies based on natural proteins with unique advantages



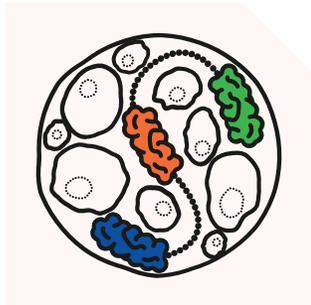
High affinity and specificity

High potency with lower risk of off-target effects



Multi-specificity

Can act on up to 6 distinct targets at once



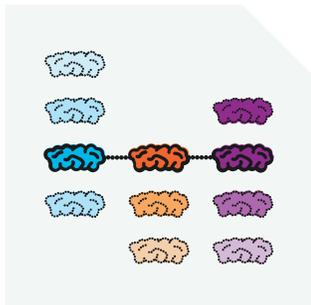
Small size (10 kDa)

Allows greater tissue penetration



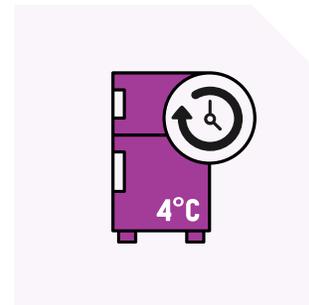
Simple high-yield manufacturing

Highly validated bacterial fermentation simplifies production and scaling



Modular structure 1 DARPin, 1 function

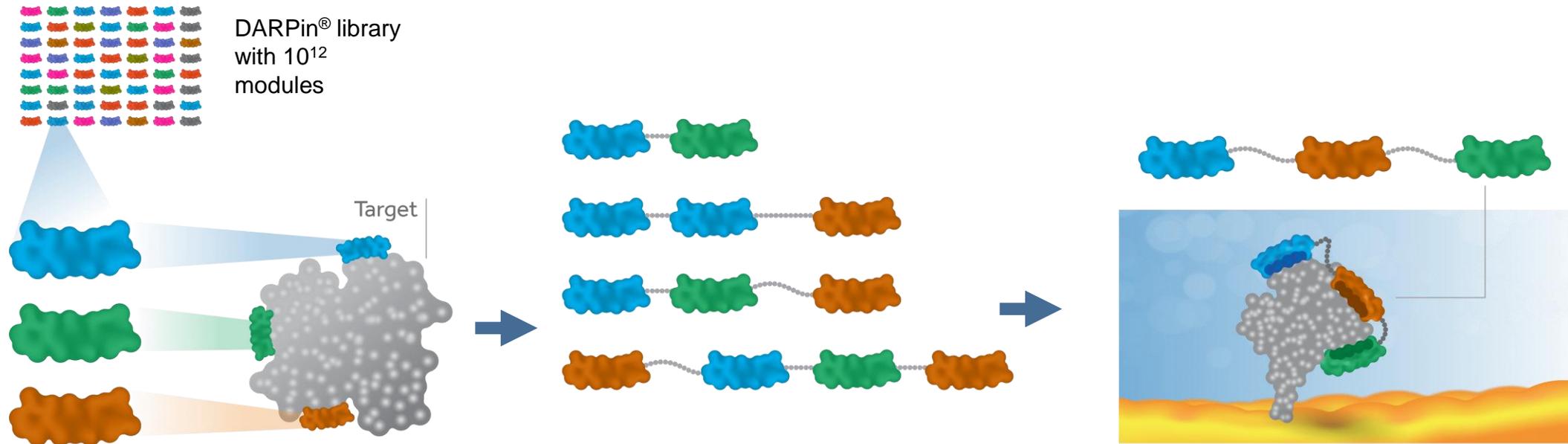
Rapid creation of multi-functional candidates



Long shelf-life and stability

Can be stored for years at 4°C, simplifying supply chain management

Incredible speed to multi-specific DARPin Candidates



> 400 anti-COVID
DARPin Modules

Week: 1

> 100 tri-specific DARPin
Candidates

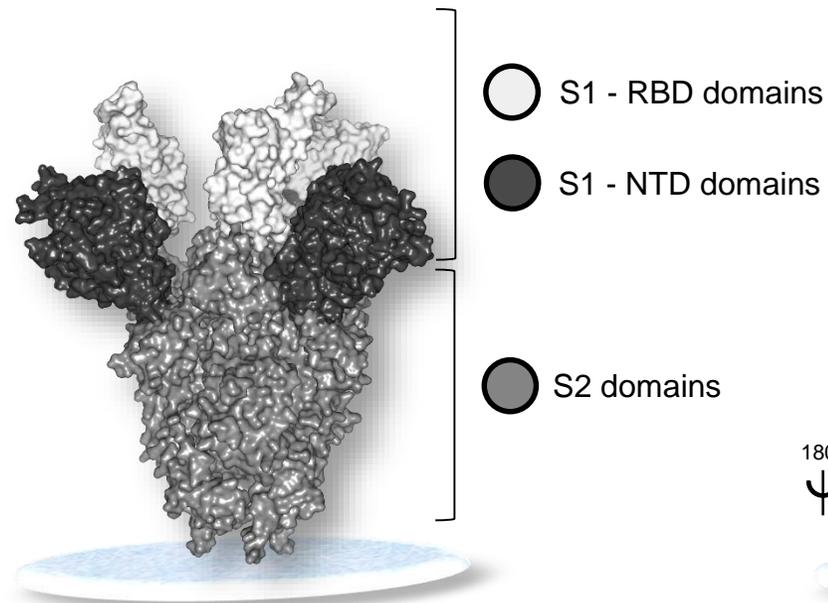
Week: 3

Design and identification of
MP0420 & MP0423

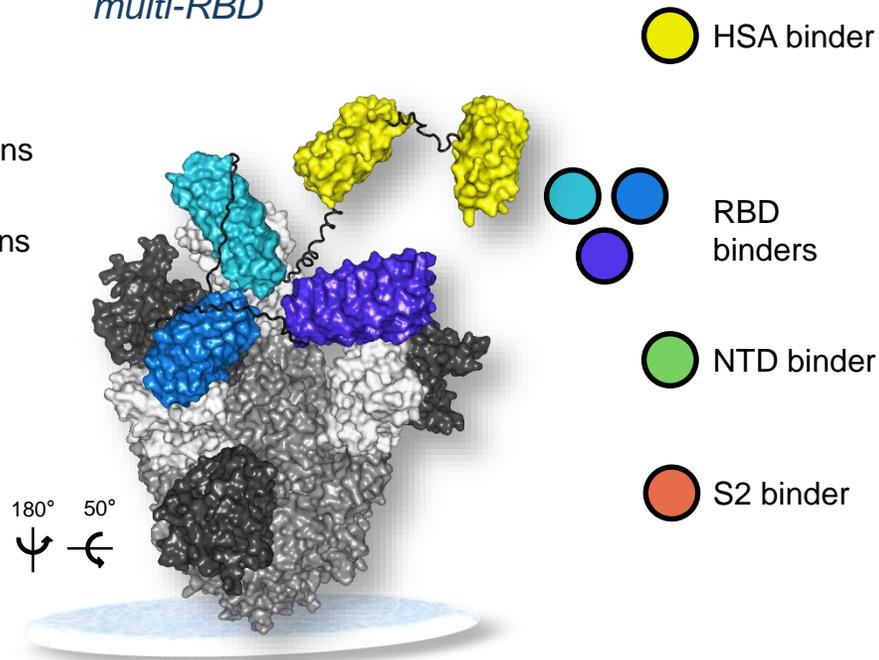
Week: 6

MP0420 & MP0423: Two COVID-DARPin candidates

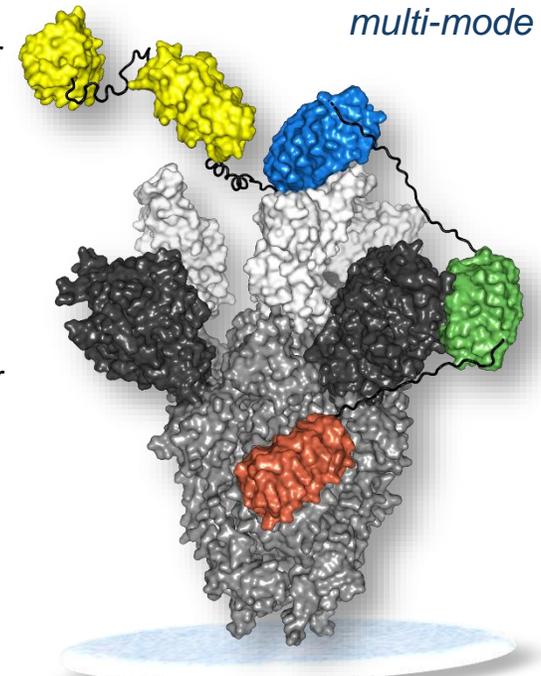
Spike protein
trimeric "open" conformation



MP0420
multi-RBD



MP0423
multi-mode

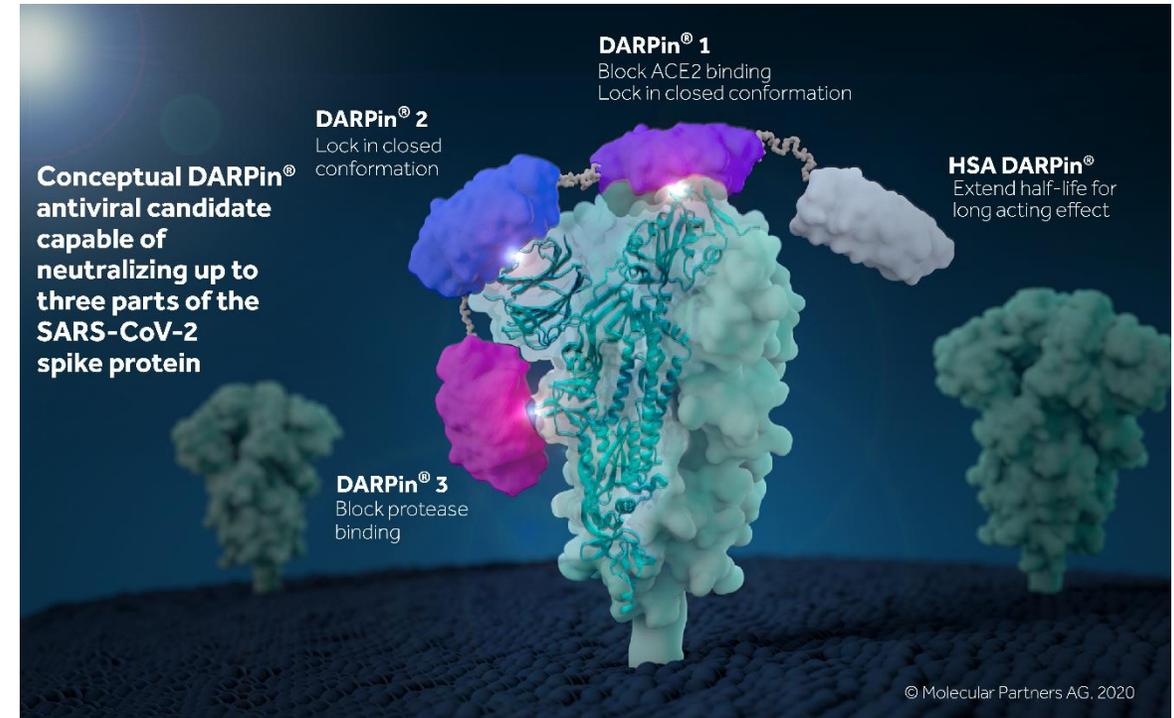
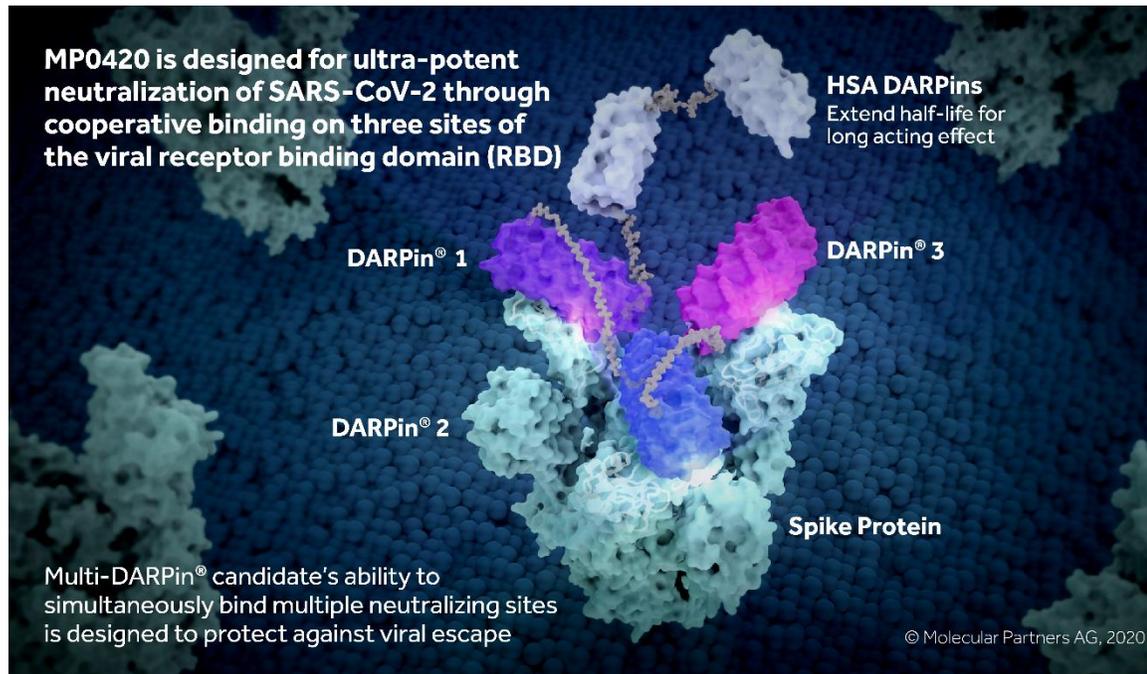


- We are developing two distinct Covid-DARPin Candidates, MP0420 and MP0423
- MP0420 is a Best-in-Class RBD inhibitor, MP0423 is the only multi-mode approach to date
- Natural antibodies (& vaccines) target mostly the RBD; MP0423 protects that Achilles heel

MP0420 & MP0423: DARPin® solutions to SARS-Cov2

MP0420 – best-in-class

- 3 different DARPins blocking the RBD (mAB mixture in one) for highest potency & to prevent viral escape
- Long half-life – single injection
- s.c. injection – simple application in ambulatory setting
- Low costs and high numbers of doses available



MP0423 – first-in-class

- 3 DARPins blocking different domains of the viral spike
- High activity even if RBD mutates heavily and escapes all vaccines and therapeutic antibodies
- All other benefits of MP0420

MP0420-DARPin Features and their Benefits

Highest potent drug avoiding viral escape:

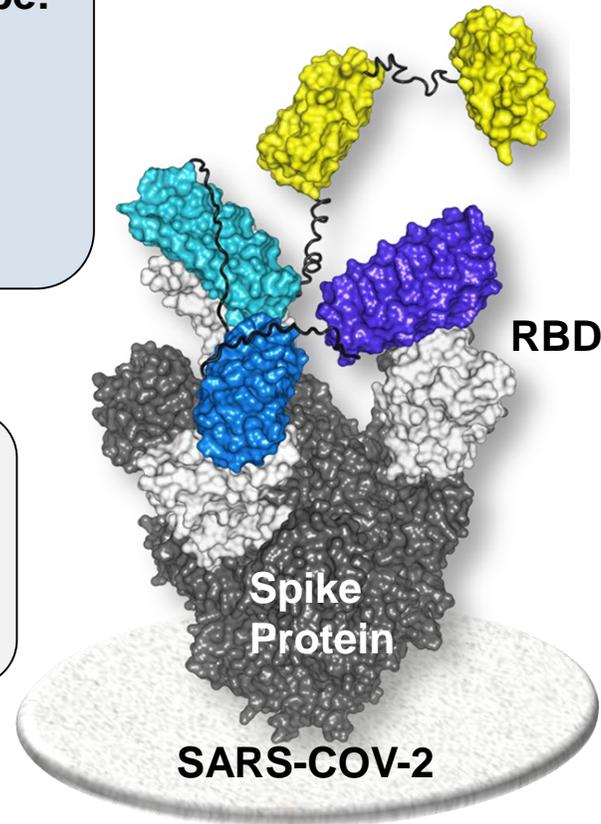
Triple RBD – DARPin binder

- Cooperative binding for highest potency
- Multi-specificity to prevent viral escape
- *in vivo* POC established

Simple out-patient dosing opportunity

High solubility and stability

- Ideal for s.c. injection (100 mg/ml)
- Opportunity to cut cold-chain



Long-acting and safe drug candidate:

HSA DARPin Technology*

- Single injection carries out for months
- Lung penetration via HSA
- No risk of antibody-dependent enhancement
- Low immunogenicity risk

Produce large amounts for global use:

Ideal microbial production properties

- 3 g purified drug per liter per week
- ~1'200'000 doses/months** (100 mg dose)
- No competition with antibodies capacity

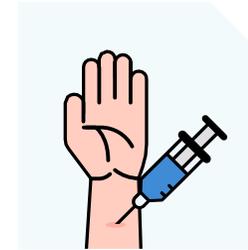
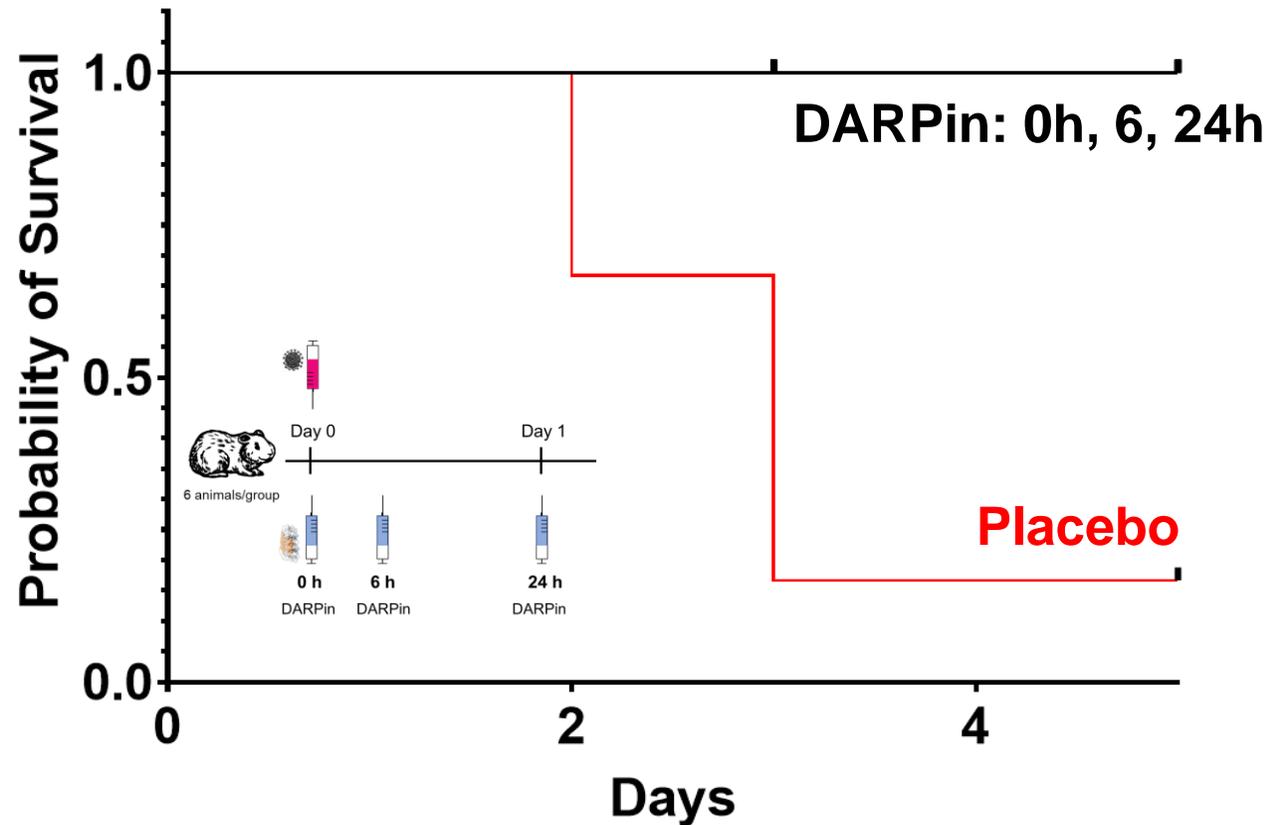
Speed to FIH: 4Q/2020

* 20 days systemic half-life in human predicted

** Up to 120 kg/month from 10'000 L vessel

Therapeutic effect, designed for global impact

Survival of Animals Over Study Duration



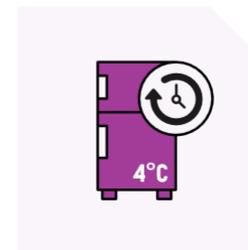
Subcutaneous injection

High solubility and potency allows low volume injection



Simple high-yield manufacturing

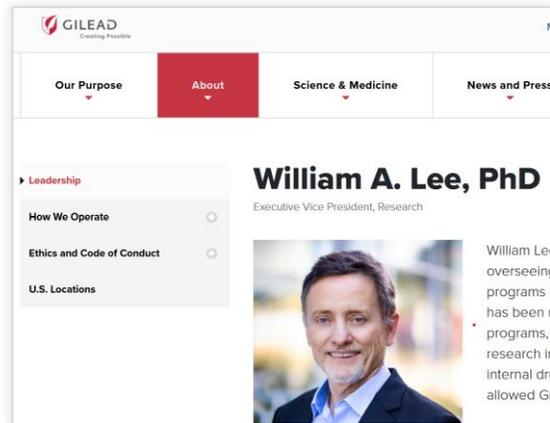
Highly validated bacterial fermentation simplifies production and scaling



Long shelf-life and stability

Can be stored for years at 4°C, simplifying supply chain management

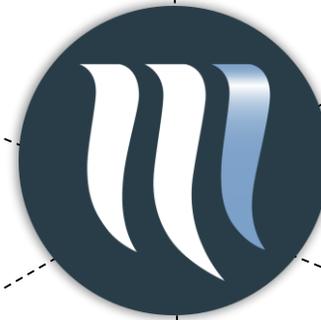
Collaborations essential during a global pandemic



Utrecht University



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra



AGC Biologics



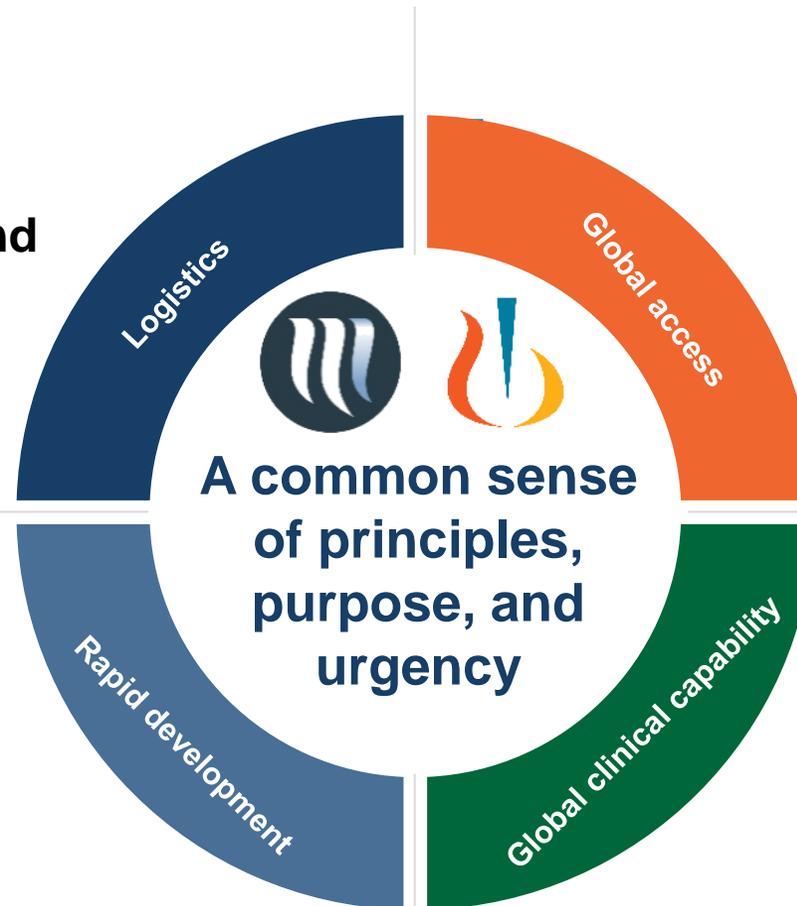
NOVARTIS

- A shared moral imperative to act rapidly as one cross-functional team
- Information flow in a true spirit of collaboration

Why are we entering into the agreement with Novartis

Novartis:
manufacturing, supply and logistics for global reach

Both parties commit to global access, aiming to make candidates available to all countries in need



Molecular Partners: two multi-specific anti-COVID candidates

Novartis has the clinical expertise and capabilities fast development

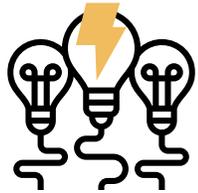
Key messages

- **Molecular Partners** used its pioneering DARPin[®] expertise to rapidly deliver two **anti-COVID candidates** with the potential to **change the course of the pandemic**
- **Novartis** has the **manufacturing, supply** and **logistics** expertise and capabilities to make DARPin candidates available to the world in time to change the course of the pandemic
- **Novartis** brings the **clinical, regulatory and global distribution** expertise and capabilities to bring our candidates to the world
- **Both parties** commit to **global access**, aiming to make anti-COVID-19 DARPin[®] candidates available to all countries in need

Commercial Framework

- Near term milestones total CHF 210M
 - CHF 60M ‘upfront’, including subscription of CHF 40M worth of MOLN ordinary shares at a price of CHF 23/share
 - Receipt of CHF 150M milestone upon commercial exercise (potentially achievable in before YE 2021)
- 22% royalties in commercial markets
 - MP acknowledges and supports Novartis’ goal of making this drug globally available, including in markets and countries where financial resources might otherwise limit access, where MP will forgo any potential royalties.

Key *Barriers* overcome



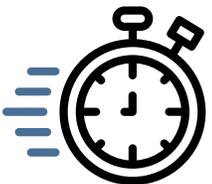
Delivering a unique therapeutic approach

Creating the first multi-specific anti-viral biologic drug



Building collaborations with clarity

Uniting a passionate internal team with purpose-driven external experts



Moving fast and far enough to meet the pandemic's urgency

Bringing a drug to human studies in less than 9 months



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