Molecular Partners Demonstrates Reduction of Mortality and Potent Therapeutic Activity of Anti-COVID-19 DARPin® Candidates in Advanced COVID-19 Disease Model

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- **DARPin® candidates demonstrate 100% survival in an aggressive viral challenge model**
- **Data support utility of anti-COVID-19 DARPin® candidates as potent therapeutics**
- **First-in-human clinical trial initiation of MP0420 planned for November 2020**

Zurich-Schlieren, Switzerland, October 6, 2020. Molecular Partners AG (SIX: MOLN), a clinical-stage biotech company that is developing a new class of custom-built protein drugs known as DARPin® therapeutics, today announced supportive preclinical data from in vivo assessments of its DARPin® candidates targeting SARS-CoV-2. These candidates show robust activity in an aggressive viral challenge hamster model, supporting potential efficacy as therapeutic options in patients with late-stage disease.

In a highly susceptible COVID-19 challenge model developed by expert virologists at Freie Universität Berlin, hamsters were first infected with SARS-CoV-2 and then administered either select doses of the anti-COVID-19 DARPin® candidates, MP0420 or MP0423, or placebo, at either 0, 6, or 24 hours. In the five-day experiment, all animals treated with DARPin® molecules recovered and survived, while 83% of animals in the placebo group had to be euthanized due to severe disease progression.

“The clinical efficacy observed in both prophylactic and post exposure settings, especially in the context of the severity of disease displayed by our novel COVID-19 model, holds promise for this class of virus-neutralizing inhibitors in later line settings,” said Jakob Trimpert, DVM, Ph.D., Freie Universität Berlin, Institute of Virology, who served as lead investigator of the study.

“These recent data underscore the potent mechanism of action of our DARPin® therapeutic candidates in both prophylactic and therapeutic animal models, opening the door for clinical trials in both settings. We now have evidence that our candidates may offer therapeutic benefit for patients receiving intensive care or in rapid decline,” said Patrick Amstutz, chief executive officer of Molecular Partners. “We would like to thank our collaborators in Berlin for pioneering this novel hamster model to test COVID therapies. This model might be the only one that mimics a severe disease progression in humans, as most hamsters become terminally ill as early as day two after viral infection.”

First-in-human studies for MP0420 are anticipated to begin in November 2020, and clinical studies for the second antiviral candidate, MP0423, are expected to initiate in H1 2021.

About Molecular Partners’ anti-COVID-19 program

Molecular Partners has developed a series of tri-specific antiviral DARPin® candidates with strong binding and neutralizing potency targeting multiple epitopes on the SARS-CoV-2 spike protein that are crucial for infection. The source of these constructs is a pool of hundreds of mono-DARPin® binders which individually bind and inhibit the virus with high potency. The construction of multi-specific candidates from monospecific proteins is the foundation of Molecular Partners’ drug discovery engine and has yielded multiple clinical candidates in other indications.

These building blocks are designed to target different sites on the virus for multiple concurrent effects. These include blocking viral binding to the human ACE2 receptor (Receptor Binder Domain or RBD), the primary docking mechanism to host cells, as well as allosteric inhibition or “molecular handcuffing”, of the spike protein, preventing the conformational change it undergoes prior to injection of viral RNA into the human cell.

The formatting as tri-specific candidates is designed for cooperative binding, extremely high potencies and prevention of viral escape via mutations. The candidates are formatted with a half-life enhanced DARPin® domain that binds to human serum albumin (HSA) to support long-acting activity. All DARPin® candidates are constructed to benefit from high-yield and low-cost microbial manufacturing. Molecular Partners is investigating whether the high thermal stability of DARPin® molecules can be used to overcome cold-chain requirements.

The ability of DARPin® products to be produced in E.coli-based biofermentation is a major advantage over antibodies, which often require substantial manufacturing process optimization and protein modification, significantly increasing cost and complexity. By contrast, DARPin® molecules are much smaller molecules that do not require glycosylation or extensive post-translational modification by producer cells, making simple, highly scalable bacterial fermentation feasible.

Molecular Partners is collaborating with AGC Biologics to support development of its anti-COVID-19 program, and has reached an agreement with the Swiss Government regarding rights to purchase up to 3.2 million doses of MP0420, if it is approved in Switzerland.

About Molecular Partners AG

Molecular Partners AG is a clinical-stage biotech company developing a new class of custom-built protein drugs known as DARPin® therapeutics, designed to address challenges current modalities cannot. The company has compounds in various stages of clinical and preclinical development with a focus on oncology. Molecular Partners has formed partnerships with leading pharmaceutical companies to advance DARPin® therapeutics across multiple therapeutic areas.

For more information regarding Molecular Partners AG, go to: www.molecularpartners.com

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