OSE Immunotherapeutics Announces COVID-19 Prophylactic Vaccine Program

- **Vaccine leverages expertise in peptide selection and optimization and proprietary Memopi® technology to explore a T lymphocyte immune response for COVID-19**
- **Uses artificial intelligence algorithm from MAbSilico to accelerate optimization of epitopes able to induce a robust cell memory immunity**
- **First preclinical results expected start of H2 2020, possible clinical trial by year end**

Nantes, France, **May 5, 2020 – 6:00 p.m. CET** – **OSE Immunotherapeutics** (ISIN: FR0012127173; Mnémo: OSE) today announced that the Company is committed to the fight against COVID-19. Its team of immunologists is actively working on the development of a prophylactic vaccine against the pandemic virus SARS-CoV-2.

To conduct this program, OSE Immunotherapeutics leverages its expertise in the selection and optimization of peptides of interest and their GMP (Good Manufacturing Practices) formulation for a specific type of combination of multiple peptides. The Company uses the know-how from its Memopi® epitope (neo-epitope) optimization technology, recently successfully validated in the first step of a Phase 3 clinical testing for Tedopi®, a combination of antitumor neo-epitopes, to increase the memory immune response of T lymphocytes against specific antigens.

Using bioinformatics approaches and algorithms for predicting immunogenicity in the virus genome, OSE Immunotherapeutics' R&D team has screened a large number of peptides derived from different proteins of SARS-CoV-2, SARS-CoV (virus responsible for SARS disease) and MERS-CoV (coronavirus of the Middle East respiratory syndrome) and selected the immuno-dominant epitopes from 4 major proteins of coronaviruses. OSE Immunotherapeutics is collaborating with deeptech company MAbSilico to benefit from its know-how and versatile solutions in artificial intelligence algorithms to accelerate optimization of these neo-epitopes and increase their immunogenicity capacity to induce robust T cell memory immunity.

To date, more than 20,000 SARS-CoV-2 neo-epitopes and as many peptide / HLA structural models have been evaluated. OSE Immunotherapeutics has selected the most specific epitopes with high potential for immunogenicity to move into preclinical testing and validate efficacy of the vaccine.

Nicolas Poirier, Chief Scientific Officer of OSE Immmunotherapeutics, comments: *"Our COVEPIT vaccine technology, developed using SARS-CoV-2 optimized neo-epitopes, is complementary to conventional approaches targeting antibodies and could significantly contribute to fight COVID-19 by promoting prophylactic vaccine research focused on memory T cells. Research on COVID-19 has shown the potential of antibodies in the fight against the virus, but several studies on SARS-COV or SARS-COV-2[1, 2, 3, 4] have shown that the antibody response is highly variable, not always neutralizing and generally quite limited in time. The advantage of a T lymphocyte response is that it can last over time, which is necessary to eliminate*

infected cells and avoid developing serious forms. This is why we are applying our scientific rationale and validated know-how to participate in the fight against COVID-19."

Alexis Peyroles, Chief Executive Officer of OSE Immunotherapeutics, concludes: *"OSE Immunotherapeutics wants to contribute to the fight against the COVID-19 pandemic and participate in the collective effort by developing a vaccine against this virus as soon as possible. Our objective is to use our scientific expertise in immunotherapy, and in particular our Memopi® technology, to develop a COVID-19 vaccine based on peptides. This same technology has been applied to develop Tedopi®, our neo-epitope-based vaccine in advanced lung cancer, which has shown efficacy and good tolerance in this indication. We expect the first preclinical results at the start of the second half of 2020 and, if possible, to launch a clinical trial before the end of the year."*

(1) Wu et al. Neutralizing antibody responses to SARS-CoV-2 in a COVID-19 recovered 2 patient cohort and their implications MedRxiv April 6, 2020

(2) Huang et al. A systematic review of antibody mediated immunity to coronaviruses: antibody kinetics, correlates of protection, and association of antibody responses with severity of disease. MedRxiv April 17, 2020

(3) Tang et al. Lack Peripheral Memory B Cell Responses in Recovered Patients with Severe Acute Respiratory Syndrome: A Six-Year Follow-Up Study. Journal of Immunology 2011

(4) Ho et al. Neutralizing Antibody Response and SARS Severity. Emerg Infect Dis. 2005

ABOUT OSE Immunotherapeutics

OSE Immunotherapeutics is a clinical-stage biotechnology company focused on developing and partnering therapies to control the immune system for immuno-oncology and autoimmune diseases. The company has several scientific and technological platforms including neoepitopes and agonist or antagonist monoclonal antibodies, all ideally positioned to fight cancer and autoimmune diseases. Its first-in-class clinical and preclinical portfolio has a diversified risk profile:

- **Tedopi®** (innovative combination of neoepitopes) : the company's most advanced product ; **positive results for Step-1 of the Phase 3 trial** (Atalante 1) in **Non-Small Cell Lung Cancer** post checkpoint inhibitor failure; due to Covid-19, voluntary definitive suspension of new patient accrual in the Step-2 initially planned in the trial.
  In **Phase 2 in pancreatic cancer** (TEDOPaM, sponsor GERCOR) in combination with checkpoint inhibitor Opdivo®.
- **BI 765063** (OSE-172, anti-SIRPα monoclonal antibody): developed in **partnership with Boehringer Ingelheim**; myeloid checkpoint inhibitor in **Phase 1 in advanced solid tumors**.
- **FR104** (anti-CD28 monoclonal antibody): **positive Phase 1 results**; **Phase 2-ready asset in autoimmune diseases or in transplantation**.
- **OSE-127** (humanized monoclonal antibody targeting IL-7 receptor): developed in **partnership with Servier**; **positive Phase 1 results**; two independent **Phase 2** planned in **ulcerative colitis** (OSE sponsor) and in **Sjögren's syndrome** (Servier sponsor) to start in 2020.
- **BiCKI®**: **bispecific fusion protein** platform built on the key backbone component anti-PD-1 (OSE-279) combined with new immunotherapy targets; 2nd generation of PD-(L)1 inhibitors to increase **antitumor efficacity**. **Additional innovative research programs**.
  Due to the COVID-19 crisis, accrual of new patients in the clinical trials TEDOPaM and BI 765063 is temporally suspended and initiation timelines for both Phases 2 OSE-127 may be impacted during the coming months.

For more information: **https://ose-immuno.com/en/**

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Forward-looking statements

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