Emergex Receives Patent Protection for First-in-Class Influenza A Vaccines with Potential to Provide Long-Term T Cell Immunity

- *Breakthrough patent represents a significant leap in influenza pandemic preparedness, solidifying the company's innovative approach for influenza vaccine development with viral peptides derived from a negative-sense strand of the viral genome*

Abingdon, United Kingdom, 22 August 2024 – Emergex Vaccines Holding Limited ('Emergex', or the 'Company'), a clinical-stage biotechnology company addressing major global infectious diseases through the development of synthetic T cell-priming vaccine candidates, today announced that Emergex has received patent protection from the United States Patent and Trademark Office (USPTO) for its novel class of influenza vaccines that have the potential to provide long-term T cell immunity against all legacy strains of influenza A since 1918, as well as seasonal variants and heterosubtypic changes. This groundbreaking patent covers Emergex's vaccine comprising in part immunogenic peptides encoded by a negative sense open reading frame (ORF) from segment 8 of the influenza A genome. To Emergex's knowledge, this represents the first known patent for viral peptides derived from antigenomic translation suggesting that segment 8 of influenza A is ambisense.(negative and positive sense ORFs).[1] In addition, this grants the company exclusive rights to develop a vaccine that incorporates these immune elements, offering a level of immune recognition that existing flu vaccines are unable to provide either because of composition or method of administration This also further expands Emergex's impressive portfolio of approximately 100 technology inventions across various technologies and jurisdictions.

A large ORF in the negative sense strand of segment 8 in human influenza A virus (NEG8) has been conserved for over 100 years.[2] The length of the NEG8 ORF is represented by three epochs and each epoch change (i.e pandemic index strain) has corresponded to the onset of a global H1N1 pandemic. Although previously not thought to be translated, Emergex has successfully identified a number of peptides that are presented by MHC class I molecules on influenza-infected cells and that are encoded by NEG8. Cluster stacks of these NEG8-derived epitopes as determined by immunoproteomics are conserved across influenza A serotypes (epoch related) and are potential key targets for inducing heterologous CD8 T cell immunity and therefore are optimal for inclusion in pandemic preparedness vaccines. Additionally, incorporation of avian- and equine species-specific NEG8 derived peptides in a vaccine also has the potential to expand protection to zoonotic transmissions.

Professor Thomas Rademacher, Co-Founder and Chief Executive Officer at Emergex, commented*: "Our research into NEG8 has revealed exciting potential for a new approach to influenza vaccines. We believe that a vaccine composition including conserved NEG8-derived MHC class I peptides could provide protection against past, existing, and emerging human influenza viruses, as well as prevent zoonotic influenza viruses from establishing themselves in the human population and causing a pandemic. Emergex aims to leverage this NEG8 epitope-containing vaccine to generate a durable and broadly-protective cellular immune response upon vaccination."*

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[1] Strauss JH, Strauss EG. Overview of Viruses and Virus Infection. Viruses and Human Disease. 2008:1–33.

Emergex is set to advance its first-in-class influenza into the clinic, with Phase I trials anticipated to begin in the first half of 2025.

About Emergex

Emergex is a clinical-stage, privately held biotechnology company, headquartered in Abingdon, Oxon, UK, with an operating subsidiary in Doylestown, Pennsylvania, a microneedle manufacturing facility in Fremont, CA, USA and GMP production vaccine facility in Milton Park, UK. . The Company is pioneering the development of 100% synthetic T cell-priming vaccine candidates designed to mimic the body's natural T cell immune response to destroy and to clear pathogen-infected cells, , in order to protect against some of the world's most urgent health threats. The candidates are also specifically designed for administration using novel microneedles via skin immunisation into the epidermal layer, intended to reduce the burden and logistics associated with conventional preventative measures. Emergex's first indications pursued are against infectious diseases: [i] viral infectious diseases, amongst which are Betacoronaviruses, Dengue Fever and Pandemic Influenza candidates, as well as [ii] intra-cellular bacterial infectious disease, such as tularemia caused by *Francisella tularensis*. Emergex has a growing proprietary pipeline of innovative candidates with potential to deliver rapid, broad (strain and variant agnostic) and long-lasting prevention to reduce serious illness associated with infectious diseases.

Find out more online at www.emergexvaccines.com.
Visit our LinkedIn page or Twitter (X) account for updates.

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[2] Clifford M, Twigg J, Upton C. Evidence for a novel gene associated with human influenza A viruses. *Virol J.* 2009;6:198.