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GE Healthcare and Valneva Collaboration Delivers Optimized Cell Culture Medium for Vaccine Production

- + *Collaboration jointly developed a new medium optimized for productivity of virus expression in EB66® cells*
- + *Robust production process will increase reliability and end-product quality*

Chalfont St. Giles, UK and Lyon, France – 2 November, 2016 – GE Healthcare’s Life Sciences business and Valneva SE, a fully integrated vaccine biotech company, are sharing the results of a successful collaboration to optimize virus productivity in Valneva’s EB66® cell-line, a proprietary technology for the production of a wide variety of vaccines, including human and animal health vaccines. Viral production in EB66® cells encompasses secreted viruses, such as measles, alphaviruses, influenza A and B strains, and intracellular viruses, such as the modified vaccinia Ankara (MVA) virus.

The collaboration has resulted in the creation of a commercial cell culture medium, HyClone™ CDM4Avian, developed specifically to address the challenges of media variability. The new medium supports efficient and predictable virus production for manufacturers utilizing EB66® cells, helping to increase production reliability and improve end-product quality. Suitable for use throughout the entire cell-growth process, CDM4Avian is chemically-defined and free from animal-derived components, which improves product consistency and simplifies the regulatory processes for new products developed in EB66® cells.

Morgan Norris, General Manager for Upstream and Cell Culture, GE Healthcare Life Sciences, said: “Working in close collaboration with Valneva, and capturing their expertise in vaccine production, has enabled us to successfully enhance productivity and create a novel cell culture medium for a vaccine industry undergoing a period of exciting change. The advent of cell-based production is helping manufacturers meet the growing need for vaccines to address global healthcare challenges.”

Thomas Lingelbach, President and CEO, and Franck Grimaud, Deputy CEO of Valneva, added: “This collaboration with GE has been very successful and we are extremely pleased that our EB66® licensees now have access to a medium that will greatly ease the development of their new products. Coupled with the recent European Medicine Agency’s (EMA) decision to allow the production of live attenuated vaccines in cell-lines like EB66®, this strongly supports the choice of EB66® as a modern cell technology platform for vaccine development and manufacturing.”

Until now, only inactivated vaccines could be developed in EB66® cells in Europe. The EMA recently decided to issue new guidelines on vaccine production in immortal cell lines allowing Valneva’s partners to now utilize the EB66® cell line to develop and manufacture live-attenuated vaccines (LAV), including Modified Vaccinia Ankara (MVA)-based vaccines, measles and oncolytic vaccines.

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About HyClone™ CDM4Avian

CDM4Avian cell culture medium is a chemically defined (CD), animal-derived component-free (ADCF) & serum free (SF) robust formulation for virus production in bioprocess applications. It is designed for scalable culture bioprocessing applications and can be used for the development of viral vaccines in EB66[®] cells, for the production of secreted viruses, such as measles, alphaviruses, influenza A and B strains and for the manufacturing of intracellular viruses, such as the modified vaccinia Ankara (MVA) virus. It is a single-medium formulation used for both cell propagation and viral production, available in liquid and dry powder form. The medium allows direct adaptation of cells with stable productivity and supports high peak cell density as well as enhanced viral infectivity and productivity.

About the EB66[®] Cell Line

Valneva's EB66[®] cell line is a highly efficient platform for vaccine production. It is derived from duck embryonic stem cells and today represents a compelling alternative to the use of chicken eggs for large scale manufacturing of human and veterinary vaccines. EB66[®] is one of the most extensively studied and characterized cell line available for use in human vaccine development. More than 20 different families of viruses have been shown to efficiently propagate in EB66[®] cells. To date, Valneva has more than 35 license agreements with the world's largest pharmaceutical companies for the use of its EB66[®] cell line technology in both human and animal health vaccines. The first human vaccine produced using the EB66[®] technology received marketing approval in 2014 and the first veterinary vaccine in 2012.

About GE Healthcare

GE Healthcare provides transformational medical technologies and services to meet the demand for increased access, enhanced quality and more affordable healthcare around the world. GE (NYSE: GE) works on things that matter - great people and technologies taking on tough challenges. From medical imaging, software & IT, patient monitoring and diagnostics to drug discovery, biopharmaceutical manufacturing technologies and performance improvement solutions, GE Healthcare helps medical professionals deliver great healthcare to their patients. For more information about GE Healthcare, visit our website at www.gehealthcare.com.

About Valneva SE

Valneva is a fully integrated vaccine company that specializes in the development, manufacture and commercialization of innovative vaccines with a mission to protect people from infectious diseases through preventative medicine.

The Group seeks financial returns through focused R&D investments in promising product candidates and growing financial contributions from commercial products, striving towards financial self-sustainability.



Valneva's portfolio includes two commercial vaccines for travellers, IXIARO[®]/JESPECT[®] for the prevention of Japanese Encephalitis and DUKORAL[®] indicated for the prevention of Cholera and, in some countries, prevention of diarrhea caused by ETEC. The Group has proprietary vaccines in development including candidates against *Pseudomonas aeruginosa*, *Clostridium difficile* and Lyme Borreliosis. A variety of partnerships with leading pharmaceutical companies complement the Company's value proposition and include vaccines being developed using Valneva's innovative and validated technology platforms (EB66[®] vaccine production cell line, IC31[®] adjuvant). Valneva is listed on Euronext-Paris and the Vienna stock exchange and has operations in France, Austria, Scotland, Canada and Sweden with approximately 400 employees. More information is available at www.valneva.com.

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