

Valneva Reports Positive Phase 1 Interim Results for Its Chikungunya Vaccine Candidate

Phase 1 interim results showed an excellent immunogenicity profile after a single-shot vaccination and an acceptable safety profile, supporting further development

- 100% seroconversion rate achieved at Day 28 after a single-shot vaccination in a pooled analysis¹ of all dose groups
- Pooled analysis showed a high antibody response based on geometric mean titre
- No serious adverse events or adverse events of special interest were reported up to Day 28

Saint Herblain (France), January 7, 2019 – Valneva SE (“Valneva” or “the Company”), a biotech company developing and commercializing vaccines for infectious diseases with major unmet medical needs, today announced positive Phase 1 interim results for its Chikungunya vaccine candidate, VLA1553.

The primary objective of VLA1553-101 Phase 1 study was to assess the overall safety and immunogenicity profile 28 days after a single vaccination across three dose levels.

The interim results showed an excellent immunogenicity profile after a single vaccination with a 100% seroconversion rate² achieved at Day 28 in a pooled analysis³ of all vaccinated groups. Results also showed 96.5% of subjects achieved at least a 16-fold increase in antibody titres and a high geometric mean titre, fully supporting VLA1553’s differentiated target product profile.

The pooled safety profile of all groups was considered acceptable and supports further development. No serious adverse events nor adverse events of special interest were reported up to Day 28 and the local tolerability was considered excellent. Systemic adverse events included short-term fever, headache and fatigue. As with other live-attenuated vaccines, transient cases of reduced levels of neutrophils, lymphocytes or leucocytes without clinical symptoms were observed in the pooled analysis.

Wolfgang Bender, M.D., Ph.D., Chief Medical Officer of Valneva commented, “*These results mark an important milestone towards our goal of developing a single-shot vaccine against Chikungunya. We are making every commitment to advance our vaccine quickly so that we can address this serious threat to public health. Phase 1 revaccination data post month six is expected by mid-year and will be key to define development acceleration options. The recent award of FDA Fast Track designation will allow us to work closely with the FDA on this development strategy.*”

¹The Phase 1 study continues blinded with re-vaccinations to potentially obtain a first indication of efficacy, the interim results were therefore not analyzed by dose group but through a pooled analysis of all dose groups.

² SCR was defined as the proportion of subjects achieving a CHIKV specific neutralizing antibody titre of NT50≥20

Valneva is committed to advance its Chikungunya vaccine candidate as quickly as possible into pivotal trials, after dialogue and alignment with the authorities.

The Company expects unblinded safety and immunogenicity data at dose group level by mid-2019 including additional information on whether subjects are protected from Chikungunya viremia. This may allow Valneva to determine the final dose for development.

About The Phase 1 Clinical Study VLA1553-101

This study is a randomized, observer-blinded, multicenter, dose-escalation Phase 1 clinical study investigating three dose levels of VLA1553 after a single immunization.

The study enrolled 120 healthy volunteers, 18 to 45 years of age, in the United States. Subjects were randomized in three different study groups to receive one of three dose levels (30 subjects in the low and medium and 60 subjects in the high dose group).

The protocol includes a re-vaccination at Month 6 or Month 12 to confirm that a single vaccination will be sufficient to induce high titer neutralizing antibodies and protect subjects from Chikungunya viremia (intrinsic viral challenge).

Study participants will be followed up until 13 months after initial vaccination.

The interim results included blinded, pooled safety and immunogenicity data up to Day 28. It did not provide group specific information or formal primary endpoint read-out.

An independent Drug Safety Monitoring Board (DSMB) continuously oversees the study and reviews data.

Additional information, including a detailed description of the study design, eligibility criteria and investigator sites, is available at ClinicalTrials.gov (NCT03382964).

About Chikungunya

Chikungunya is a mosquito-borne viral disease caused by the Chikungunya virus (CHIKV), a *Togaviridae* virus, transmitted by *Aedes* mosquitoes. Clinical symptoms include acute onset of fever, debilitating joint and muscle pain, headache, nausea and rash, potentially developing into long-term, serious health impairments. Chikungunya virus causes clinical illness in 72-92% of infected humans around 4 to 7 days after an infected mosquito bite. Complications resulting from the disease include visual, neurological, heart and gastrointestinal manifestations; fatalities have been reported (case fatality rates of 0.1% to 4.9% from epidemics)⁴ in elderly patients at higher risk. Chikungunya outbreaks have been reported in Asia, Africa, the Americas and recently (2017) in Europe. As of 2017, there have been more than one million reported cases in the Americas⁵ and the economic impact is considered to be significant (e.g. Colombia outbreak 2014: \$73.6m⁶). The medical and economic burden is expected to grow as the CHIKV primary mosquito vectors continue to further spread geographically. There are no preventive vaccines or effective treatments available and, as such, Chikungunya is considered to be a major public health threat.

About VLA1553

VLA1553 is a monovalent, single dose, live-attenuated vaccine candidate for protection against Chikungunya and was granted Fast Track designation by the U.S. Food and Drug

⁴ WHO, PAHO

⁵ PAHO/WHO data: Number of reported cases of Chikungunya Fever in the Americas – EW 51 (December 22, 2017)

⁶ Cardona-Ospina et al., *Trans R Soc Trop Med Hyg* 2015

Administration (FDA) in December 2018⁷. The vaccine candidate is designed for prophylactic, active, single-dose immunization against Chikungunya in humans over one year old. The vaccine aims for long-lasting protection and an anticipated safety profile similar to licensed vaccines for active immunization in adults and children. The target population segments are travelers, military personnel and individuals at risk living in endemic regions. The global market for vaccines against Chikungunya is estimated at up to €500 million annually⁸.

VLA1553 is based on an infectious clone (CHIKV LR2006-OPY1) attenuated by deleting a major part of the gene encoding the non-structural replicase complex protein nsP3, aiming for protection against various Chikungunya virus outbreak phylogroups and strains⁹.

In pre-clinical development, a single-vaccine shot was shown to be highly immunogenic in vaccinated Non-Human Primates (NHP) (*cynomolgus* macaques) and showed no signs of viremia after challenge¹⁰. In NHPs, VLA1553 induced a strong, long lasting (more than 300 days) neutralizing antibody response comparable to wild-type CHIKV infections combined with a good safety profile.

About Valneva SE

Valneva is a biotech company developing and commercializing vaccines for infectious diseases with major unmet needs. Valneva's portfolio includes two commercial vaccines for travelers: IXIARO®/JESPECT® indicated 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 Company has various vaccines in development including a unique vaccine against Lyme disease. Valneva has operations in Austria, Sweden, the United Kingdom, France, Canada and the US with over 450 employees. More information is available at www.valneva.com.

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Forward-Looking Statements

This press release contains certain forward-looking statements relating to the business of Valneva, including with respect to the progress, timing and completion of research, development and clinical trials for product candidates, the ability to manufacture, market, commercialize and achieve market acceptance for product candidates, the ability to protect intellectual property and operate the business without infringing on the intellectual property rights of others, estimates for future performance and estimates regarding anticipated operating losses, future revenues, capital requirements and needs for additional financing. In addition, even if the actual results or development of Valneva are consistent with the forward-looking statements contained in this press release, those results or developments of Valneva may not be indicative of their in the future. In some cases, you can identify forward-looking statements by words such as "could,"

⁷ Valneva PR: [Valneva Awarded FDA Fast Track Designation for Chikungunya vaccine candidate](#)

⁸ Company estimate support by an independent market study

⁹ Hallengård et al. 2013 J. Virology 88: 2858-2866

¹⁰ Roques et al. 2017JCI Insight 2 (6): e83527





"should," "may," "expects," "anticipates," "believes," "intends," "estimates," "aims," "targets," or similar words. These forward-looking statements are based largely on the current expectations of Valneva as of the date of this press release and are subject to a number of known and unknown risks and uncertainties and other factors that may cause actual results, performance or achievements to be materially different from any future results, performance or achievement expressed or implied by these forward-looking statements. In particular, the expectations of Valneva could be affected by, among other things, uncertainties involved in the development and manufacture of vaccines, unexpected clinical trial results, unexpected regulatory actions or delays, competition in general, currency fluctuations, the impact of the global and European credit crisis, and the ability to obtain or maintain patent or other proprietary intellectual property protection. In light of these risks and uncertainties, there can be no assurance that the forward-looking statements made during this presentation will in fact be realized. Valneva is providing the information in these materials as of this press release, and disclaim any intention or obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events, or otherwise.

