

Valneva Reports Excellent Final Phase 1 Results for its Chikungunya Vaccine Candidate, Confirms Plans

Final Phase 1 results up to Month 13 confirm the excellent immunogenicity and safety profile for VLA1553, its single-shot vaccine candidate.

- **Company plans to accelerate program to pivotal Phase 3 trial in 2020 (subject to FDA agreement)**
 - **Supportive studies on track to support End of Phase 2**
- **Excellent and sustained immunogenicity profile in all dose groups**
 - **100% seroconversion achieved at Day 14 after a single vaccination**
 - **Sustained at 100 % after 12 months with no decline in neutralizing antibody titers in the groups after a single vaccination**
- **Generally safe in all dose groups**
 - **Well-tolerated with superior safety profile in low and medium dose groups compared to high dose group with excellent local tolerability**

Saint Herblain (France), November 18, 2019 – Valneva SE (“Valneva” or “the Company”), a biotech company developing and commercializing vaccines for infectious diseases with major unmet medical needs, today announced excellent final Phase 1 results for its single-shot chikungunya vaccine candidate, VLA1553.

The objectives of the Phase 1 study (VLA1553-101) were to assess the safety and immunogenicity profile of VLA1553 after a single vaccination across three dose levels. Today’s final analysis of the study includes the safety and immunogenicity results up to Month 13 and full results from the “intrinsic human viral challenge.”

The safety profile observed in the prior analysis, announced in May 2019¹, was confirmed. VLA1553 was generally safe in all dose groups. The low and medium dose groups were well tolerated and showed a superior safety profile, including viremia, compared to the high dose group. No adverse events of special interest (e.g. chikungunya infection related) and no vaccine related Serious Adverse Events (SAEs) were reported up to Month 13. The product candidate’s local tolerability profile was excellent.

The final results showed an excellent immunogenicity profile in all vaccinated dose groups after a single vaccination, with a 100% seroconversion² achieved at Day 14 after a single vaccination in all dose groups and titers were sustained at 100% at Month 12.

¹Valneva PR: [Valneva Reports Further Positive Results for Its Chikungunya Vaccine Candidate](#)

²Seroconversion is defined as the proportion of subjects achieving a CHIKV-specific neutralizing antibody titer of NT₅₀ ≥20.

The study was designed so that all study participants would be re-vaccinated either after 6 months (n=26) or after 12 months (n=68). There was no anamnestic response observed after re-vaccination (either after 6 or 12 months) demonstrating that a single vaccination of VLA1553 is sufficient to induce a sustained high titer of neutralizing antibodies. All subjects receiving a second shot (at Month 6 or Month 12) of the vaccine were protected from vaccine-induced viremia and associated clinical symptoms, serving as “intrinsic human viral challenge” providing first indications of efficacy.

While the study finalization was ongoing, Valneva successfully progressed a number of supportive studies including mosquito transmission, biodistribution and persistence in non-human primates (NHPs) as well as a passive transfer study in NHPs to develop a Correlate Of Protection (COP) using human sera from VLA1553-101. Valneva expects that the data provided from these studies will support the Company’s submission for an end-of-Phase 2 meeting.

Wolfgang Bender, M.D., Ph.D., Chief Medical Officer of Valneva commented, “These fantastic results confirm that VLA1553 is a highly differentiated and promising vaccine candidate that has the potential to address a serious threat to public health. On the basis of all our data, we aim to work with the regulators towards an accelerated approval pathway potentially allowing us to enter directly into pivotal Phase 3 next year.”

About The Phase 1 Clinical Study VLA1553-101

This study was a randomized, observer-blinded, multicenter, dose-escalation Phase 1 clinical study investigating three dose levels of VLA1553 after a single immunization. It enrolled 120 healthy volunteers, 18 to 45 years of age, in the United States. Subjects were randomized into 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 with the live-attenuated vaccine candidate VLA1553 at Month 6 (for 30 subjects in the high dose group) or Month 12 (for all others) to confirm that a single vaccination will be sufficient to induce high titer neutralizing antibodies and protect subjects from vaccine-induced viremia (intrinsic viral challenge). Study participants were followed up until 13 months after initial vaccination. An independent Drug Safety Monitoring Board (DSMB) continuously oversaw the study and reviewed safety data. Additional information, including a detailed description of the study design, eligibility criteria and investigator sites, is available at [ClinicalTrials.gov \(NCT03382964\)](https://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)³ 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

³ WHO, PAHO



the Americas⁴ and the economic impact is considered to be significant (e.g. Colombia outbreak 2014: \$73.6m⁵). 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 Administration (FDA) in December 2018⁶.

In July 2019, CEPI awarded up to US\$23.4 million to Valneva for the programs late-stage development⁷. The investment comes from the EU's Horizon 2020 research and innovation programme under grant agreement No. 857934.

The vaccine candidate is designed for prophylactic, active, single-dose immunization against chikungunya in humans over one year old. The vaccine targets 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 approximately 490 employees. More information is available at www.valneva.com.

⁴ PAHO/WHO data: Number of reported cases of Chikungunya Fever in the Americas – EW 51 (December 22, 2017)

⁵ Cardona-Ospina et al. 2015, *Trans R Soc Trop Med Hyg* 109:793-802.

⁶ Valneva PR: [Valneva Awarded FDA Fast Track Designation for Chikungunya vaccine candidate](#)

⁷ Valneva PR: [CEPI awards up to US\\$23.4 million to Valneva for late-stage development of a single-dose chikungunya vaccine](#)

⁸ Company estimate supported by an independent market study

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

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

Valneva Investor and Media Contacts

Laetitia Bachelot-Fontaine
Global Head of Investor Relations &
Corporate Communications
M +33 (0)6 4516 7099
investors@valneva.com

Teresa Pinzolit
Corporate Communications Specialist
T +43 (0)1 20620 1116
communications@valneva.com

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," "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.

