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## NEOVACS SCIENTIFIC ADVISORY BOARD ENDORSES COMPANY'S UPDATED IFN $\alpha$ -KINOID DEVELOPMENT PLAN

- IFN $\alpha$ -Kinoid program to target Systemic Lupus Erythematosus (SLE) as first indication
- Important pipeline extension to dermatomyositis, an orphan condition linked to IFN $\alpha$
- SAB concludes final review of TNF-Kinoid Phase IIb data

**Paris, March 4, 2015 – NEOVACS (Alternext Paris : ALNEV)**, a leader in active immunotherapies for the treatment of autoimmune diseases, today provided details about its updated clinical path forward, focusing on IFN $\alpha$ -Kinoid. The Company's decision to focus on IFN $\alpha$ -Kinoid was based on conclusions from its international Scientific Advisory Board (SAB) meeting, which took place in New York on February 12, 2015.

Neovacs' international SAB, comprised of leaders in immune therapy, chronic inflammatory and autoimmune diseases, reviewed the Company's clinical results and development plans, and made the following recommendations to the management.

### **Moving forward with IFN $\alpha$ -Kinoid in Systemic Lupus Erythematosus (SLE)**

Neovacs' SAB reviewed the pre-clinical trials of IFN $\alpha$ -Kinoid, conducted from 2005-2009, as well as the results of the Phase I/IIa trial on 28 patients which concluded in 2011 (*Lauwerys et al., Arthritis & Rheumatism, 2013*). Study results demonstrated:

- The Kinoid was well tolerated by patients;
- Patients experienced a strong immune response with a significantly higher production of binding antibodies than that observed with the TNF Kinoid in humans;
- significant production of antibodies with strong neutralizing capacity.

The SAB further reviewed a comparative analysis conducted by Neovacs in 2013, evaluating IFN $\alpha$ -Kinoid against an anti-IFN $\alpha$  monoclonal antibody under clinical development. In this comparative trial, Neovacs' IFN $\alpha$ -Kinoid achieved strong neutralization of all 13 subtypes of IFN $\alpha$ , while the monoclonal antibody used in the study strongly neutralized only two of these subtypes.<sup>1</sup>

Based on these findings, SAB members expressed full support for the forthcoming Phase IIb trial of IFN $\alpha$ -Kinoid in approximately 160 patients in Europe, Latin-America and Asia. The SAB also made recommendations regarding trial protocol and recruitment criteria, which have been discussed with the Clinical Lupus Board and integrated into the study design. This Phase IIb study is expected to begin mid

<sup>1</sup> Abstract FRI0378 Eular Congress 2014 Paris. Abstract available at <https://b-com.mci-group.com/AbstractList/EULAR2014.aspx>

2015. A second Phase I/IIa trial for SLE using IFN $\alpha$ -Kinoid in the U.S. is planned to commence by early 2016.

### **Extension of IFN $\alpha$ -Kinoid development program to include dermatomyositis**

As a result of the positive safety profile and encouraging results from IFN $\alpha$ -Kinoid thus far, the SAB recommended broadening Neovacs' scope of IFN $\alpha$ -Kinoid treatment targets to dermatomyositis, another indication where a positive IFN $\alpha$  signature plays a decisive role. Clinical trials conducted in this indication further validate the scientific consensus in this matter.

Dermatomyositis (DM) is a severe, sometimes fatal, disease affecting mainly children (60 percent of the patient population), with significant unmet medical need as no biological treatment has been registered to date in this indication. Dermatomyositis is considered an orphan disease both in North America and in Europe, where there are fewer than 20,000 affected patients respectively.

Following this recommendation, Neovacs is working to rapidly integrate DM in both adult and pediatric patients into the Company's clinical development plan for IFN $\alpha$ -Kinoid. Because of the recognized orphan status of DM, Neovacs estimates that clinical development of active immunotherapy in this indication could be considerably shortened (phase III trials may not be necessary), with the potential to bring a treatment to market in a few years.

### **Final Review of TNF-Kinoid Phase IIb results in Rheumatoid Arthritis (RA)**

The final outcome of the February Neovacs' SAB meeting was the analysis of the Company's TNF-Kinoid development plan that led to the December 2014 Phase IIb results in RA. Findings included:

- Preclinical results of TNF-Kinoid in a mouse model of arthritis showed significant binding and neutralizing antibody responses, and clinical efficacy nearly identical to the comparator (*infliximab*), justifying fully the start of clinical development (*Delavallée et al., 2009 Arthritis Research & Therapy*)
- The results of the Phase IIa RA trial in 40 patients demonstrated a good tolerance of the product, as well as a significant increase of binding anti-TNF antibodies, with indication of an association between antibodies and clinical response (*Durez et al, 2014 PlosOne*). The protocol and design of Phase IIb trial with TNF Kinoid in RA were informed based on these Preclinical and Phase IIa results.
- The results of the phase IIb trial in RA confirmed both the good tolerance and the immunogenicity of TFN-Kinoid. However, trial participants' immune response proved insufficient, with no generation of neutralizing antibodies. The lack of neutralizing antibodies appears to be the most likely explanation for the lack of clinical improvement versus placebo.

Neovacs has conducted preliminary analyses following the Phase II trial results in RA and has identified two hypotheses to explain these outcomes:

- The cytokine TNF could be formed in a way that makes it impossible to date to obtain in human a sufficient neutralization with self-antibodies. The lack of success observed by two other companies also working on an active immunotherapy, using different technologies, would support this assumption.

- The strong level of inactivation of the very toxic cytokine TNF, necessary in the production of TNF-Kinoid may have modified the structure of the cytokine, thereby affecting its immunogenicity and inhibiting the production of neutralizing antibodies.

Jacques Banchereau, Chairman of Neovacs' SAB and Director concluded, *"Our February session was extremely productive and offers an interesting perspective on Neovacs' IFN $\alpha$ -Kinoid development program and planned pipeline extension. We also conducted a deep review of the TNF-Kinoid data, and these conclusions will inform the Company's ongoing research and development initiatives. It remains very clear for us that results obtained with that Kinoid product are specific to TNF, its target cytokine, and do not preclude in any way the further development of kinoids with other cytokines."*

#### **About Neovacs**

Created in 1993, Neovacs is today a leading biotechnology company focused on an active immunotherapy technology platform (Kinoids) with applications in autoimmune and/or inflammatory diseases. On the basis of the company's proprietary technology for inducing a polyclonal immune response (covered by five patent families that potentially run until 2032) Neovacs is focusing its clinical development efforts on IFN $\alpha$ -Kinoid, an immunotherapy being developed for the indication of lupus. Neovacs is also conducting preclinical development works on other therapeutic vaccines in the fields of auto-immune diseases, oncology and allergies. The goal of the Kinoid approach is to enable patients to have access to safe treatments with efficacy that is sustained in these life-long diseases.

**For more information about Neovacs, please visit [www.neovacs.fr](http://www.neovacs.fr)**

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