



## **Novadip Biosciences presents data at 30<sup>th</sup> annual EURAPS Research Council Meeting**

- Data demonstrates safety and efficacy of allogenic 3D scaffold-free tissue engineered product for deep thickness skin regeneration

**Mont-Saint Guibert, Belgium, 23 May 2019:** Novadip Biosciences (“Novadip”), a regenerative medicine company and pioneer in the development of three-dimensional tissue products derived from adipose stem cells for critical hard and soft tissue reconstruction, announces that *in vivo* preclinical data presented in an oral presentation at the 8<sup>th</sup> European Society of Plastic Surgery (“EURAPS”) Research Council meeting, demonstrated the safety and efficacy of a scaffold-free tissue product for deep thickness skin regeneration with an allogenic 3D-graft. The data, from the study with NVD002 was presented by Dr. Ali Modarressi from the University of Geneva, a collaborator on the *in vivo* study, at EURAPS, in Helsinki, on 22 May 2019.

### **Title**

An allogenic 3D scaffold-free tissue engineered product for deep thickness skin regeneration: *in vitro* development to *in vivo* proof of concept.

### **Authors**

Gaëtan Thirion, Modarressi Ali, Sophie Vériter, Valérie Lebrun, Pierre-Yves Adnet, Céline Caty, Denis Dufrane"

### **Methodology**

Adipose-derived stromal cells (ASCs) were isolated from human adipose tissue to constitute the 3D-scaffold free graft by the production of the extracellular matrix (ECM, n=9). The ultrastructure of the graft was assessed by microtomography/SEM. The protein and growth factors contents were determined by proteomic analysis (LC-MS/MS) and ELISA, respectively. The *in vivo* biocompatibility (inflammatory reaction, biodegradation) was assessed in preclinical models, alongside the safety in terms of tumorigenicity/toxicity/biodistribution. The efficacy was then evaluated in a xenogenic model of ischemic (vs. non-ischemic) wound (n=42, 3D grafts vs. sham/Ctrl+).

### **Results**

Results showed the 3D-graft to be a translucent and malleable membrane with a mean of  $175 \pm 86$  cells/mm<sup>2</sup> found to be embedded in the ECM with a low level of mineralization ( $0.30 \pm 0.31\%$  v/v). The proteomic and genes analysis revealed the stimulation of the biological pathways involved in early wound healing and the over-expression of pro-angiogenic genes<sup>1</sup> in the graft (in comparison to ASCs alone), respectively. The VEGF/SDF1a contents ( $181 \pm 12$  and  $663 \pm 27$  ng/g, respectively) were also shown to be improved in the scaffold-free implant. The biocompatibility and the safety of the 3D-graft were confirmed at 4 and up to 24 weeks post-implantation, respectively. The 3D-graft was easily handled and applied (by a simple bandage) on the ischemic/hyperglycemic wounds (on the leg) and promoted an earlier wound closure (27

1. (ANG, ANGPT1, EPHB4, VEGFA, VEGFB, VEGFC, EDN1, THBS1, PTGS1, LEP)

vs. 34 days for sham, respectively) associated with angiogenesis, dermis/epidermis reconstruction, transient and reversible increase of aSMA, lymphocytes/macrophages recruitment at 10-15 days.

**Dr Modarressi commented:** *“Deep thickness skin wounds remain a major challenge for reconstructive surgery. These data demonstrate that this scaffold-free tissue product is safe and efficacious in a stringent xenogenic model of hyperglycemic and ischemic deep-thickness wound.”*

**Dr Denis Dufrane, Chief Scientific Officer and co-founder, Novadip, added:** *“Novadip is focused on developing next generation regenerative medicines to address serious bone and skin tissue reconstruction and transform the lives of patients who currently have limited treatment options. We’re very encouraged by this in vivo data, which supports our conviction that we are developing a viable option for patients with an unmet need such as in the case of severe burns.”*

The full abstract can be found [here](#). Further information on EURAPS is available [here](#).

- Ends -

#### **Notes to editors**

#### **Novadip Biosciences**

Novadip Biosciences is a regenerative medicine spin-off company from Université Catholique de Louvain (UCL) and Cliniques Universitaires St-Luc founded in 2013 based on the research of Dr. Denis Dufrane. The creation of Novadip was supported by the Louvain Technology Transfer Office (LTTO), Sopartec and VIVES II. A Series A Round of EUR 27.7 million was raised in 2015 with New Science Ventures, Fund+, SRIW, Intégrale, Epimède, VIVES II, Nivelinvest and private investors. Novadip is developing 3-dimensional tissue products derived from adipose stem cells for critical hard and soft tissue reconstruction.

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