

# Effimune

## Three scientific publications confirm the effectiveness of the FR104, Effimune's leading molecule in the immune regulation.

*Hopes for patients with rheumatoid arthritis and psoriasis thanks to new in vivo models*

Nantes, the 30<sup>th</sup> November 2015 - Effimune announced today, the publication in leading scientific journals of three different studies confirming the efficacy of FR104 in new preclinical models, and suggesting that it could be a potent new treatment for rheumatoid arthritis and psoriasis.

The three studies confirm **CD28 as an interesting target and FR104 as a potential tool in immune regulation**. They demonstrate the effectiveness of the drug candidate in different preclinical models of autoimmune inflammatory diseases:

- Two models of skin inflammation similar to human psoriasis
- A model of joint inflammation associated with rheumatoid arthritis

*A molecule in a Phase I clinical trial with numerous possible therapeutic indications*



« These three publications, added to the two previously published articles this year, show the great potential of FR104 in immune regulation. A Phase I clinical study in humans has been underway since April with promising results in terms of the antagonistic activity of the molecule » explains Maryvonne Hiance Effimune' CEO, a « The preclinical proof of concept of the FR104 efficacy has now been made for applications in transplantation, multiple sclerosis, rheumatoid arthritis and most recently for psoriasis. »

**FR104** is a **monoclonal antibody fragment** which is a specific antagonist of CD28, a key element in the T-lymphocyte signalling pathway. FR104 blocks, in a targeted manner, the destructive function of effector T-cells but not the function of regulatory T-cells, thus promoting immune tolerance.

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## *Psoriasis*



The article to be published soon in the **Journal of Immunology** shows the role of CD28 in controlling the memory T cell response and demonstrates that selectively blocking CD28 with FR104 also inhibits the long-term response of the memory cells. Blocking this cell type presage a real remission of the disease and not a mere reduction in its appearance.



In the article published in October 2015 in **Experimental Dermatology**, the authors demonstrate the efficacy of FR104 in a new model of skin inflammation close to human psoriasis. In collaboration with UMR INSERM 1064, a new model for preclinical validation was generated with a topical application of Aldara, a cream containing 5% Imiquimod. In addition to showing the efficacy of FR104, this new model which is more similar to the human disease can be used to test other therapeutic approaches to psoriasis.

## *Rheumatoid Arthritis*



The third article, published in November in the **Clinical & Experimental Immunology**, demonstrates the effectiveness of FR104 in a new collagen-induced pre-clinical model of rheumatoid arthritis. In collaboration with the primatology center of Rijswijk and the University of Groningen in the Netherlands, the authors conducted a comparative study of the efficacy of FR104 and Orencia® (abatacept), a standard treatment in rheumatoid arthritis. The results show at least equal efficiency of FR104 on symptoms and a better efficiency on disease markers with a different mode of action on immune cells suggesting longer-term effects on the disease.

### Sources :

<http://www.ncbi.nlm.nih.gov/pubmed/26597009>

<http://www.ncbi.nlm.nih.gov/pubmed/26540618>

<http://www.ncbi.nlm.nih.gov/pubmed/26513536>

Articles are available under request to [gilles.petitot@acorelis.com](mailto:gilles.petitot@acorelis.com)

### About Effimune

Located in Nantes, France, Effimune is a Biotech company **specialized in Immune Regulation** for applications in transplantation, autoimmunity and cancer immunotherapy.

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The **originality of Effimune's therapeutic strategy**, compared to conventional immunosuppression, is **the modification in the balance between effector and regulatory immune cells**. The biological drugs Effimune develops are aimed at restoring the natural balance of these cells by targeting the molecular checkpoint.

The expertise of the company lies in its ability to identify new therapeutic targets and **develop effective biomolecules** for the pharmaceutical industry by guaranteeing the manufacture of pilot and clinical batches and by validating preclinical and clinical proofs of concept.

Effimune is a spin-off of the Nantes Institute of Transplantation Urology Nephrology-(ITUN), created in December 2007. Since then, Effimune has received 4.7 million euros of public and has raised 5 million of private funds. For the development of FR104, Effimune was supported by local and regional public authorities: Loire Territories Innovation, Atlanpole Biotherapies, Bpifrance, and by the government through the *Prime d'aménagement du territoire* and by the European Union through the FEDER and FP7.

## Contacts

### Effimune

Maryvonne Hiance, Chairman  
Phone : +33 (0) 240 412 834  
Mobile : 33 (0) 680 060 183  
mhiance@effimune.com  
www.effimune.com

### Acorelis

Gilles Petitot  
Phone: 33 (0) 145 83 13 84  
Mobile : 33 (0) 620 27 65 94  
gilles.petitot@acorelis.com



EUROPEAN UNION

"The collaborative project - R&D Program of immune system regulation in transplantation: development of FR104-TX molecule carried out by Effimune is co-funded by the European Union. Europe is moving in the Pays de la Loire with the European Regional Development Fund"

