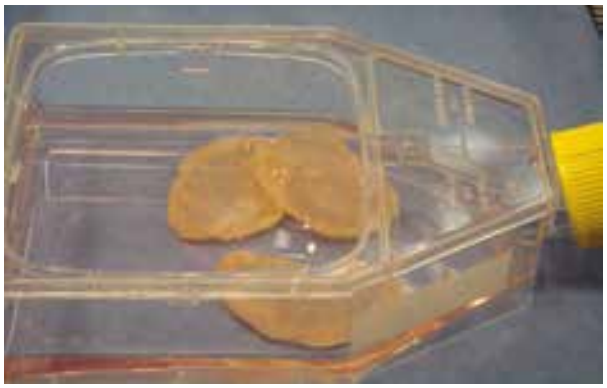
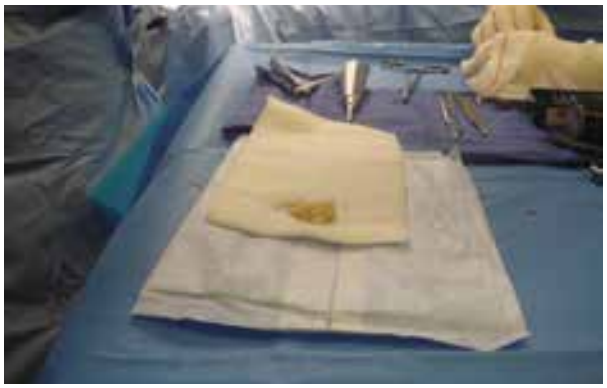
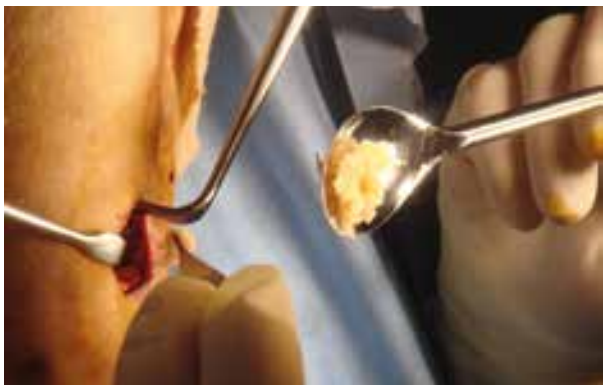
Building bones from fat cells

Novadip has developed a revolutionary therapeutic product. Using stem cells selectively taken from the fat of a patient, their researchers have succeeded in forming a three dimensional bone graft. Known as Creost, this piece of bone has the appearance of plasticine. It is designed to facilitate bone reconstruction in patients. Professor Denis Dufrane, Novadip co-founder and Chief Scientific Officer, says the procedure has already been performed successfully on young children, even before Novadip came into existence. Which has undoubtedly helped the Belgian company to raise Euro 28 million in a series A financing round, led by New Science Ventures.







It was on the basis of Mr. Dufrane's research that Novadip was created, in 2013. As part of the Unversité Catholique de Louvain and the Cliniques Universitaires Saint-Luc in Brussels, he sought to find a way to obtain a three dimensional graft without the need for scaffolding. He explains that he and his team compared the use of bone marrow and adipose cells to construct such a graft, before deciding on adipose cells as these, in their view, have a better safety and efficacy profile, as well as many other beneficial effects: harvesting adipose cells is a much less invasive procedure than harvesting bone marrow from a patient, notably. Adipose cells are basically fat cells. "We just need a very small sample of the patient's fat," Mr. Dufrane points out. "Adipose tissue is procured under local anesthesia in the subcutaneous abdominal region. Thanks to a particular signal that is transmitted to them, these cells can be differentiated. Depending on the signal they receive, the cells can reconstruct various tissues including bone tissue having all the properties of native bone." As part of the Unversité Catholique de Louvain and the Saint-Luc Hospital team, Mr. Dufrane performed the procedure on children who had diverse clinical indications; their common denominator was that their fractures wouldn't heal. One 13-year-old boy they treated had a fracture and disorder that prevented his body from repairing bones. Within 14 months of the treatment, the boy was able to play sports again.

This and other success stories made the team decide to set up Novadip and further develop this concept of regenerative medicine. The aim is to become a product company and commercialise Creost as a solid, three dimensional graft, says Mr. Dufrane. "We're in a unique position as a startup as we have long established proof of concept. The next step is to perform a multi-centre clinical study at international scale, to demonstrate the safety of the treatment and its effectiveness. This should take around three years. "Creost will initially be investigated for complex lumbar spine fusion, an unmet medical need affecting more than 100,000 patients per year worldwide. Meanwhile Novadip is also researching whether it is also possible, from stem punctured in the fat of any individual, to create other types of tissue or organs.

NOVADIP
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