

# CTC, a unique structure in Switzerland

► Inaugurated on May 2008, the cell therapy centre (CTC) of the Geneva University Hospitals (HUG) is the first one of its kind in Switzerland.

*Organ transplant* has been one of the great medical achievements in the last decades. Nowadays, new stages in this field are already revealing themselves. In fact, it seems that - in some cases - it might not be necessary to transplant the entire organ. For example, a few thousands of cells from the pancreas can fulfil the function of insulin synthesis and secretion. This is the principle behind the transplant of Langerhans islets. Even though bone marrow transplant has been carried out at HUG for thirty years to treat blood diseases, bone marrow cells could be used in the future for regenerating the tissues of the heart or the liver.

In order to allow Geneva to participate in preparing this future, the Geneva University Hospitals have decided to actively support the existent cell therapy programs. Yet, the

construction of the cell therapy centre fills in present requirements, like the necessity these programs have of working in optimum conditions and according to the most demanding international standards.

The cell therapy centre, headed by Prof. L. Bühler, hosts various teams which develop new strategies. The use of modified embryonic stem cells might lead the way to extraordinary therapeutic techniques, since these cells could regenerate the tissues of several organs. In this field, Geneva has been a pioneer, and the teams of Prof. K.H. Krause and Dr. M. Jaconi are preparing the creation of embryonic stem cell lines which could be used, in some years, to treat a wide variety of diseases.

Another strategy which will be developed at the centre is the vaccination against cancer. This approach is currently being studied by the team of Dr. N. Mach, in collaboration with Prof. Aebischer, from the EPFL.

The team of Prof. Passweg, in collaboration with Dr. J. Villard and Dr. V. Kindler, is working with the aim of isolating mesenchymal cells from bone marrow and allowing them to multiply, so that they can be used to modulate adverse immune responses in case of graft-versus-host disease, a complication that can occur after a bone marrow transplant.

Prof. P. Morel, Prof. T. Berney, and their team



carry on with the transplant of Langerhans islets program, and they also develop new strategies for long-term survival of transplanted cells. Dr A. Feki will coordinate the cryoconservation of ovarian tissue for patients undergoing chemotherapy and losing their fertility. Finally, the quality management of the Center is ensured by L. Schneider.

Transplant of organs, tissues and cells, as a part of highly specialised medicine, requires state-of-the-art technology, but also, and above all, the presence of people who are able to operate and apply the required equipment and techniques. Few other fields require as many specialist as transplant does: surgeons, internists, infectious disease

specialists, psychiatrists, and immunologists, among others. A successful transplant requires specialists to work together in a well-organized manner so that patients can benefit from this technology. The cell therapy centre is a multidisciplinary platform where the efforts of all those different specialists can converge

## CTC

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## F LE CTC, une structure unique en Suisse

*En mai 2008*, la thérapie cellulaire a franchi un pas supplémentaire avec l'inauguration du centre de thérapies cellulaires (CTC).

Si la transplantation d'organe a été un des grands succès de la médecine des dernières décennies, de nouvelles étapes s'annoncent déjà à l'horizon. En effet, il semble que pour certains organes, comme par exemple pour le pancréas, il ne soit pas nécessaire de transplanter l'ensemble de l'organe, mais que seulement quelques milliers de cellules suffisent à remplir la fonction de synthèse et de sécrétion de l'insuline. C'est le principe de la transplantation des îlots de Langerhans. Si la transplantation de la moelle osseuse se pratique déjà depuis près de 30 ans aux HUG pour des maladies du sang, il est possible que dans le futur on puisse utiliser

les cellules souches de la moelle pour régénérer des tissus comme le cœur ou le foie.

Afin de préparer le futur, le centre de thérapie cellulaire reçoit des équipes développant de nouvelles stratégies. L'utilisation de cellules souches embryonnaires modifiées et pouvant régénérer une multitude de tissus ou d'organes lésés pourrait ouvrir de nouvelles voies thérapeutiques extraordinaires. Là également, Genève a été pionnier et les équipes du Professeur K.H. Krause et de la Dr. M. Jaconi préparent la création de lignées cellulaires embryonnaires qui pourraient être utilisées cliniquement d'ici quelques années.

Une autre stratégie qui sera développée dans le centre est la vaccination contre les cancers. Cette approche est actuellement développée par l'équipe du Dr N. Mach en collaboration avec le Prof Aebischer de L'EPFL.