

## Stem Cell Therapy : limited success up to now, what can we expect?

Alcimed, an innovation and new business consulting firm, is committed to supporting the pharmaceutical industry in tapping in the potential of new technologies such as stem cell therapy.

The field of stem cell therapy is rapidly expanding and dynamic, which holds many promises for the future. Imagine: a diabetic patient never needing to inject himself with insulin again because the insulin-producing  $\beta$ -cells in his pancreas have been stimulated to re-grow. The heart attack patient, whose heart muscle could re-grow healthy. Multiple sclerosis patients whose nerves could regenerate... The potential of what stem cell therapy could achieve truly seems endless. Thus, the high number of clinical trials currently ongoing in different therapeutic areas, including cardiovascular diseases, diabetes or neurological disorders, comes as no surprise.

Despite the high hopes stem cell therapies raise, the most successful applications are currently limited to the field of hematology. Bone marrow transplants of blood-cell forming hematopoietic stem cells are routinely used for the treatment of blood disorders, including sickle-cell anemia or certain types of leukemia. With the exception of a few selected therapies such as for cardiovascular disease, most stem cell therapies in other clinical fields are still experimental and undergoing the extensive therapeutic areas needed before being able to enter the market.

“The field of stem cell therapy is currently booming and we observe a clear future trend” observes David Bariau, Cologne Business Unit Director and Partner at ALCIMED. “At this point in time however, it is not an easy business”. Recent technological advances include the generation of pluripotent stem cells from adult cells, a technology for which Shinya Yamanaka’s received the Nobel Prize in the year 2012. These induced pluripotent stem cells (iPSC) do not only help scientists to understand the mechanisms by which a stem cell differentiates into an adult cell, but also seem to promote the whole field of stem cell therapy. “We have observed iPSCs gaining importance in various therapeutic areas” explains Dr. Elisabeth Lamers-Schmidt, Senior Consultant at ALCIMED, “however, this technology is still at the research stage and just on the cusp of approaching clinical development”.

Nevertheless, this lack of clinical validation does not limit the rapid expansion of stem cell clinics selling off-license therapies which promise the cure for a multitude of diseases including autism, joint problems, multiple sclerosis and heart failure. Flashy, scientific-sounding names and web presences are used to attract patients, in fact, when browsing the web one almost starts to question what stem cells *cannot* do. The large claims made by many experimental stem cell treatments and stem cell containing products ranging from skin creams to bras which claim to cause “*stem cells to home to women’s breasts to enlargen their size*” should always be regarded with a doubtful eye. No matter how positive the personal patient testimonials for these products and clinics may seem, they should not replace years of clinical development proving the safety and efficacy of new treatment options. As of today, stem cells have only been proven to work under certain conditions and extensive clinical trials are necessary before a treatment can gain market approval.

Many hurdles still have to be taken until we can truly hope to benefit from stem cell therapies, yet this does not diminish their huge potential: a survey of key opinion leaders in the field of diabetes showed that stem cell-based solutions, especially iPSCs, were expected to dominate the  $\beta$ -cell replacement market within the next 20 years.

#### About Alcimed

ALCIMED ([www.alcimed.com](http://www.alcimed.com)) is an innovation & new business consulting firm, specialized in life sciences (healthcare, biotech, agri-food), chemicals, materials, energy; as well as aeronautics, space & defense. ALCIMED relies on a team of 180 highly-skilled individuals to help its clients with exploring and developing their uncharted territories, covering four key areas: New Technologies, Market Innovation, High-Growth Geographies, and Strategic Foresight. ALCIMED is headquartered in Paris and has offices in Lyon & Toulouse in France, in Germany, Belgium, Switzerland, the UK, the USA and in Singapore.