

### **Stem Cell Therapy: limited success up to now, but what can we expect for the future?**

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

The field of stem cell therapy is dynamic and rapidly expanding, holding many promises for the future. Imagine a diabetic patient that never needs to inject insulin anymore because the insulin-producing  $\beta$ -cells of the pancreas have been stimulated to regenerate themselves. Imagine the regeneration of healthy heart cells in a patient that suffered from a heart attack. Imagine a 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 and 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 transplantations of blood-forming cells called hematopoietic stem cells are routinely used for the treatment of blood disorders, including sickle cell anemia and certain types of leukemia. With the exception of some selected therapies such as for cardiovascular diseases, stem cell therapies in other clinical fields are mostly still experimental and are subject to many therapeutic areas before being able to be placed the market.

“The field of stem cell therapy is currently booming and we observe a clear future trend” notices David Bariau, Cologne Business Unit Director and Partner at ALCIMED. According to him, “however, it is not an easy business at this point in time”. Recent technological advances include the generation of pluripotent stem cells from adult human cells, a technology for which Shinya Yamanaka received the Nobel Prize in 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 field of stem cell therapy. “We observed that iPSCs are gaining importance in various therapeutic areas” explains Dr. Elisabeth Lamers-Schmidt, Project Manager at ALCIMED. “However, this technology is still at the research stage and just on the cusp of approaching clinical development”, she witnesses.

Nevertheless, the lack of clinical validation does not limit the rapid expansion of stem cell clinics selling off-license therapies which promise to cure a multitude of diseases including autism, joint problems, multiple sclerosis and heart failure. Scientific and impactful names, as well as a strong presence on the internet 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 “the presence of stem cells to enlarge women’s breast size”, should always be looked at with a critical eye. No matter how positive the personal patient testimonials for these stem cell 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 proven to work under



certain conditions and extensive clinical trials are needed 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, are expected to dominate  $\beta$ -cell replacement therapy 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.