

# Biological importance of stemcells

## Abstract

This document is a short article of reflection on the biological importance of stem cells and the current state of therapeutic practices around these magnificent cells, physiologically speaking gifted. The article briefly describes the three main types of tissues for obtaining stem cells, together with the comments made by the author and other reference research on the topic.

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## Developing

Stem cells are becoming increasingly important from a biological point of view, especially in the hematopoietic aspect. These cells originate from embryonic development and have the ability to be totipotent, that is, they can originate or form any type of tissue in animals, including humans.<sup>1</sup> In this sense, the need has been raised in the scientific community to capture cells from early human embryos, to cultivate in the laboratory with specific means that promote their growth and development, for therapeutic purposes in rare and/or autoimmune diseases, such as: leukemias, liver failure, among others. In other words, in those diseases that affect key organs of human physiology, which we could not survive without.

We also find tissue stem cells, which specialize in forming cells from the same family. Example: liver stem cells only form hepatocytes and not other types of cells. Likewise, induced pluripotent stem cells (iPSCs) have been discovered, which have raised the possibility and hope that the cells could be made from the patient's own skin (or other tissues) to treat his or her diseases, avoiding the risk of rejection of the tissue or organ transplanted by the donor, this being the achilles heel in most surgical procedures, due to the immune response of the transplanted patient. However, the generation of iPSC cell banks could function as a kind of blood bank, where a suitable donor can be found for patients who require it.<sup>2</sup>

I consider that research directed at the immune system of patients requiring organ transplantation should be considered. Although we know that rejection is part of that small percentage of risk that every patient knows before undergoing these medical practices. But if we

can minimize these rejections as much as possible, we would be closer to achieving the implantation of cells and / or tissues from embryonic type pluripotent cells. Despite them, in many cases effective clinical applications have been achieved for the treatment of leukemias, Italy is a benchmark country in bone marrow transplantation to efficiently combat this progressively degenerative pathology.

However, there is still a long way to go to carry out these therapeutic practices, since they are still being tested with mice to verify viability in humans. In particular, for the regeneration of bone marrow, liver, pancreatic tissue and neuronal cells for the treatment of Parkinson's disease.<sup>3</sup>

Advances in human stem cell applications will continue to be promising. As mentioned, there are already concrete positive results in some pathologies, then efforts should be made so that socioeconomically disadvantaged countries have timely access to such treatments to continue saving lives.

## References

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