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Creating human life from skin cells may seem unreal, yet induced pluripotent stem cells (iPSCs) are a technology currently being explored that could make it possible. It is a promising project, but it raises several ethical questions.

First of all, what are iPSCs? Stem cells have the ability to proliferate and differentiate indefinitely, an ability which is interesting in both the medical and biology fields. Previous research on these cells was carried out on embryos, but the use of a cell that could become a human being was criticised. Researchers then looked for an alternative to avoid ethical problems [1]. A Japanese doctor and researcher, Shinya Yamanaka [2], found a way to reprogram mature cells into stem cells by reactivating different genes (injecting transcription factors into them), which led to him being awarded the Nobel Prize in Medicine in 2012. These reprogrammed cells are known as iPSCs.

This new technology offers many possibilities, illustrating the speed of scientific progress in the medical field. So far, animal experiments and human trials have produced some good results. For example, a diabetic man was able to live without insulin injections thanks to this technology [3].

A first possibility would be that, with full control of the technology, scientists would be able to create organs from iPSCs. The ultimate goal would be to print them using 3D bioprinters [4]. In theory, this would provide an infinite number of organs.

However, if this ultimate goal were to be achieved, real problems could arise. Some people might think that if any malfunctioning organ could be replaced, people would no longer need to take care of their bodies. For example, we could drink ourselves into a stupor, destroy our liver and then have the possibility to take a few skin cells and have a new one.

This would also make it easier for prospective parents to have biological children, especially for homosexual couples and single-parent families, which is another interesting possibility. Technically, it would be possible for a person to turn his or her stem cells into gametes and thus create a lifetime of children from a single individual. Similarly, a child of a homosexual couple could be the genetic product of both parents. Nevertheless, if creating embryos from skin cells is possible, collecting cells from anyone else is also possible even without one's knowledge. This could lead to some abuses. Therefore a DNA control will have to be put in place in order to verify the donor's identity.

An ethical problem here is that iPSCs based embryos could be modified, leading to a kind of "baby shopping" : like, among other things, choosing the baby's sex, the colour of its eyes and hair, its size. In addition, given the current influence of trends in society, it is likely that babies of one generation will all look the same. As trends are cyclical, each generation would meet the criteria of the moment. This means that beauty standards will no longer be standards, but a norm. There will also be consequences for future generations due to the lack of genetic diversity.

Finally, there is the cost of making organ repair available to the population. Unfortunately, not everyone may be able to afford the technology. Therefore, it will create another inequality

between the rich and the popular classes. Then it may be necessary to regulate and set a price. But there will always be a risk that some countries will circumvent the laws, and the rich may be able to take advantage of this. But does a rich person deserve to be healthier than someone with less money?

As demonstrated in the essay, this technology offers several possibilities. However, caution is needed as there are many ethical issues associated with iPSCs. It is not just about a few scientists manipulating cells, it concerns us all. While reprogramming skin cells into other types of cells or even gametes may seem unusual, it is certainly just the beginning of many advances. Although there are still many potential challenges with this new technology as mentioned before, it is important to keep an open mind about the progress of science while keeping ethical boundaries.

References :

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