



Japan's Shinya Yamanaka and Britain's John B. Gurdon have been awarded the 2012 Nobel Prize in Medicine on Monday, October 8, for their research in the field of stem cells, as announced by the Karolinska Institute in Stockholm. The two scientists were rewarded for discovering how mature cells can be "reprogrammed" to "become pluripotent cells," capable of transforming into any type of tissue, which has "revolutionized" the scientific understanding of how "pluripotent cells and organisms." Their findings have revolutionized our understanding of how cells and organisms develop," the Nobel Assembly said in the statement announcing the award". By reprogramming these human cells, scientists have created new opportunities to study diseases and develop diagnostic and therapy methods," the note issued stresses. Karolinska Institute spokesmen explained that Gurdon discovered in 1962 that "cell specialization is reversible," while Yamanaka described, 40 years later, how "intact mature cells" could be "reprogrammed to become stem cells". This revolutionary discovery has completely changed our vision of cell development and specialization. We now understand that mature cells don't have to be confined forever to their specialized state," the institute added.

### **Inspiring the sheep Dolly.**

Gurdon, from the University of Cambridge in the United Kingdom, laid the foundations for cloning in frog experiments in 1962. His research was key to the cloning of the Dolly sheep and, later, mammals of other species. However, it should be remembered that the attempt to clone the Dolly sheep was met with the cruel death of the animal by premature aging. Subsequently, in November 2007, its creator, Professor Ian Wilmut, recognized the failure of his experiments, the futility of further research with embryos and the fraud of the so-called therapeutic cloning." Cloning and embryonic cells "are not efficient or profitable" ensured then, by firmly betting on the results obtained by Professor Yamanaka with reprogrammed adult stem cells. For his part, Yamanaka himself asked shortly after, in January 2008, to regulate his finding as misuse could create human life in the laboratory.

As for Yamanaka, from Kyoto University, he obtained the Nobel Prize in Medicine for having cemented the foundations of current stem cell research by demonstrating in 2006 how so-called pluripotent stem cells can be obtained from

adult cells. Pluripotent cells have the potential to differentiate in any other cell in the body without causing rejection of uncontrolled reproduction of the cells, so it is hoped that they can be used shortly to regenerate organs and tissues unlike embryonic cells, which cause rejection and can lead to tumors. The Nobel's will be handed down, according to tradition, in two parallel ceremonies, in Oslo for peace and in Stockholm, the remaining on December 10<sup>th</sup>, coinciding with the anniversary of the death of Alfred Nobel.