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TRACKING TRENDS & PERFORMANCE IN BASIC RESEARCH

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2010 : March 2010 - New Hot Papers : Andras Nagy on Stem Cell Research

new hot papers - 2010

March 2010



Andras Nagy talks with *ScienceWatch.com* and answers a few questions about this month's New Hot Paper in the field of Multidisciplinary.



Article Title: piggyBac transposition reprograms fibroblasts to induced pluripotent **stem cells**

Authors: Woltjen, K;Michael, IP;Mohseni, P;Desai, R;Mileikovsky, M; Hamalainen, R;Cowling, R;Wang, W;Liu, PT;Gertsenstein, M;Kaji, K; Sung, HK;**Nagy, A**

Journal: NATURE, Volume: 458, Issue: 7239, Page: 766-U106, Year: APR 9 2009

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(addresses have been truncated.)

SW: Why do you think your paper is highly cited?

The era of induced pluripotent stem (iPS) cell has empowered the stem cell research field on a scale never before seen. A vast number of laboratories all over the globe are now feverishly working toward the future application of these cells to treat a range of devastating conditions. Our paper has contributed to moving iPS cells closer to clinical application.

SW: Does it describe a new discovery, methodology, or synthesis of knowledge?

The technique to produce iPS cells was first discovered in **Shinya Yamanaka's** laboratory in Japan. However, his method was not suitable for actual human therapies, as it used viruses to deliver the reprogramming factors needed to make iPS cells. Our discovery overcame this hurdle by using removable transposons as a delivery method.

SW: Would you summarize the significance of your paper in layman's terms?

Our paper builds on the findings made in Dr. Yamanaka's laboratory that skin cells can be turned into stem cells (induced Pluripotent Stem or iPS cells). IPS cells can then, in turn, be directed to differentiate into any cell type found in the human body. The hope is that, in the future, these cells can be used to treat diseases where cell damage has

"...today, diabetes affects 230 million people around the world. The cost is 300 billion USD each year.

occurred by transplantation of the patient's own iPS-derived cells.

These numbers are expected to increase by 50% over the next 20 years. "

SW: How did you become involved in this research, and were there any problems along the way?

My laboratory has a long history in the field of developmental biology, genetics, and stem cell research. We were the first and, until now, the only laboratory to establish new lines of human embryonic stem cells in Canada. It is not surprising that we quickly turned our interest toward iPS cells when these were discovered.

SW: Where do you see your research leading in the future?

My laboratory is a basic science lab. Our current findings published in this paper will aid us tremendously as we are trying to understand the biological processes behind somatic cell reprogramming. These insights will be crucial for developing efficient and safe cell-based therapies in the future.

Do you foresee any social or political implications for your research?

The potential social and political implications of our research may be enormous. There is still a long way to go until we arrive at the bedside of patients, but we now have solid ground to stand on in order to find real cures for a number of devastating conditions that are currently not possible to alleviate.

For example, today, diabetes affects 230 million people around the world. The cost is 300 billion USD each year. These numbers are expected to increase by 50% over the next 20 years.

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KEYWORDS: MAMMALIAN-CELLS; MOUSE; EXPRESSION; GENERATION; INDUCTION; MICE; INSERTIONS; VECTORS; GENE.



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