

Using induced pluripotent stem cells, scientists can better study human disease

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Rudolf Jaenisch of the Whitehead Institute for Biomedical Research and Massachusetts Institute of Technology will speak at EB 2013 on the topic of stem cells, pluripotency and nuclear reprogramming. His work has led to major advances in our understanding of embryonic stem cells and "induced pluripotent stem" (IPS) cells, which appear identical to embryonic stem cells but can be created from adult cells without using an egg. Dr. Jaenisch will discuss the mechanism of in vitro reprogramming and the inefficiency of gene targeting on Sunday, April 21 at 2:30 pm at the meeting of the American Association of Anatomists at Experimental Biology.

The stem cell field is no stranger to controversy and has become widely discussed for the cells' ability to generate any cell type. They offer a new way to study human development. "The greatest interest in using stem cells is for disease research," said Jaenisch. "In the late 1990s when Dolly was cloned, it was called therapeutic cloning. It is considered controversial for using [human eggs](#) and is technically difficult. With IPS cells, we now have a way to study the pathogenesis of disease in [petri dishes](#), without human eggs."

According to Jaenisch, where Dolly was a theoretical solution, we now have new technology that makes it possible to move into application. IPS cells will allow scientists to study complex human diseases in Petri dishes, a step toward analyzing the conditions and developing therapies.

Another potential benefit from IPS cells is to use them for

transplantation into a patient to cure disease possibly. "We can likely find a way to reduce the risk of organ/[tissue rejection](#). We can also correct mutations in IPS cells," he added, which gives researchers one less complicating factor.

Jaenisch received his doctorate in medicine from the University of Munich in 1967. Before coming to Whitehead, he was head of the Department of Tumor Virology at the Heinrich Pette Institute at the University of Hamburg. He has coauthored more than 375 research papers and has received numerous prizes and recognitions, including an appointment to the National Academy of Sciences in 2003. He received the 2011 National Medal of Science.

Provided by Federation of American Societies for Experimental Biology

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