Stem Cell Breakthrough Hailed by Catholic Think Tank

Method Considered Better Than Cloning, Scientifically and Morally

THORNWOOD, New York, NOV. 20, 2007 (Zenit.org).- One cannot exaggerate the moral and scientific importance of a breakthrough that allows for research on stem-cell related cures to go forward without destroying human embryos, says the director of a Catholic think tank.

Father Thomas Berg, executive director of the Westchester Institute, and member of the ethics committee of New York's Empire State Stem Cell Board, said this about two newly-released scientific papers published today that report how scientists generated pluripotent stem cells from human skin cells. The method thus avoids the ethical concerns rais ed by embryo-destructive research.

Both studies used "direct reprogramming" of adult human cells to generate stem cells known as induced pluripotent state cells (iPSCs). These iPSCs have the properties of human embryonic stem cells. Scientists hope cells like these will eventually be able to treat diseases like diabetes and Parkinson's.

And the cells were "patient-matched," meaning they genetically match the donor. If these types of cells are to be eventually transplanted into the donors, there should be less chance of the body rejecting them.

Father Berg explained: "This tremendous advance puts respect for embryonic human life and potentially life-saving biomedical research on the same plane.

"Ever since the debate of embryo-destructive stem cell research began in earnest, we've known that the best answer to the ethical impasse would be one that allows the search for stem-cell related cures to go foreword without harming or destroying embryonic human life in the process. We now have that solution."

Superior advances

Markus Grompe, professor of molecular and medical genetics at Oregon Health and Science University, said: "Not only are iPSCs as good as embryonic stem cells, they are actually superior in one critical aspect: They are patient-specific and hence will not be rejected by the immune system of the person from which they derived.

"The ability to generate ESCs [embryonic stem cells] matched to a particular person was the main reason for efforts to clone human embryos."

Maureen Condic, associate professor of neurobiology and anatomy at the University of Utah, told ZENIT the breakthrough means the cells can be used for medical research into human genetic diseases, starting now. "Unlike human cloning, which has thus far not been accomplished and remains only a theoretical possibility, iPSCs have been generated by two independent laboratories, making patient-specific pluripotent stem cells a reality today.

"Moreover, unlike cloning, no eggs are needed for the iPS [induced pluripotent state] procedure and no human embryos are produced or destroyed, thus resolving major ethical and practical difficulties associated with the cloning procedure.

"Thus, on both ethical and practical grounds, direct programming is superior to cloning as a means of obtaining patient-specific pluripotent stem cells."

Real potential

Condic continued: "IPSCs can be used immediately for human drug testing in the laboratory and for important medical research into human genetic diseases by studying iPS lines derived from patients with such conditions. These kinds of applications will certainly be under way in the very near future, if they are not already in the works."

"There are legitimate concerns regarding the safety of iPSC s for use in human patients," Condic continued, "due to the use of viral vectors that integrate into the DNA of the reprogrammed cell and the nature of the genes used to accomplish reprogramming. However, current techniques exist that should enable the production of iPSCs without the use of such vectors. It would not be unreasonable to expect this to be accomplished within one year."

"Importantly, because direct reprogramming is so scientifically fascinating, so technically simple and so completely unrestricted for federal funding, many laboratories are likely to take up this approach immediately, greatly accelerating the refinement of this technique and enormously enhancing our understanding of the basic biology of stem cells," Condic added.

Changed landscape

Father Berg explained: "This reprogramming-advance changes the entire landscape of stem cell research from one of controversy and unfulfilled promises for treat ment, to a morally

uncompromised field that may very well accelerate the development of patient-matched therapies.

"We should all be deeply grateful to these scientists who -- whether they happened to agree or not -- nonetheless took seriously the ethical objections many people have to embryo-destructive research."

"They have now shown us a way forward that we can all live with," Father Berg concluded. "That's a huge win-win, especially for those who can now hopefully benefit from therapies garnered through a technology which is exceedingly more efficient than cloning."