



Stem-cell 'heroes' celebrate a series of breakthroughs

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For years, dark clouds of controversy have obscured the horizons of stem-cell research. But at last month's annual meeting of the International Society for Stem Cell Research, scientists were buzzing with optimism.

"The tide is turning," said Len Zon, the society's outgoing president, at the meeting's opening session in San Francisco. "The field

Zon and the 2,100 other attendees have

Congress has voted to ease restrictions on federal funding for stem-cell research, and the Senate may take up the issue this month. The creation of state stem-cell research initia- reverse the tide." tives - including the \$3-billion

California Institute for Regenerative Medicine (CIRM) - has radically altered the research landscape in the United States.

And the recent report from South Korean researcher Woo Suk Hwang of Seoul National University of the first embryonic stem-cell lines tailored to individual patients (see Nature 435, 393; 2005) has pushed the field closer to clinical reality. Stem-cell scientists are champing at the bit to visit Hwang's lab and study his techniques. "There are a lot of people in line to go," says delegate Renee Reijo-Pera of the University of California, San Francisco.

There was plenty at the meeting itself to keep researchers buoyant. Kevin Eggan of the Harvard Stem Cell Institute in Boston reported that his lab has fused a human embryonic stem cell

with an adult skin cell and that the stem cell 'reprogrammed' the skin cell's nucleus, causing it to act like an embryonic stem cell. He still has to work out how to remove the stem-cell DNA from the fused cell. But if he can, the technique could be a way to produce new stem-cell lines matched to the DNA of a patient, without having to use a donor egg or create an embryo the two sources of most of the ethical concerns surrounding embryonic stem-cell research.

Meanwhile, pioneering stem-cell biologist plenty to celebrate. One chamber of the US James Thomson of the University of Wisconsin-

Madison reported progress in making stem-cell lines free of contamination by contact with material from other animals. This is crucial for making lines suitable for use as treatments in people. All cell lines currently available under US federal funding restrictions

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are contaminated in this way, so Thomson says that he hopes the research will help push the United States to change its rules.

Some investigators cautioned patience. Lorraine Young of the University of Nottingham, UK, unveiled the first complete profile of epigenetic modifications in human stem cells, and warned that cultured cell lines can change rapidly over time. This needs to be better understood before pressing ahead with clinical research, she said.

But CIRM chairman Robert Klein felt there was no time to lose. "You are my heroes," he told the meeting. "We must work quickly, or the forces against us may reverse the tide."



Clear thinking: Robert Klein, chairman of the California Institute for Regenerative Medicine, puts his challenges ahead.



MATURE 07/07/2005 Section: News Page: 9











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