

SPECIAL REPORT

Back in the race

An almost unthinkable defeat for President Bush in Congress has put embryonic stem-cell research firmly back on the US agenda. But with South Korea setting a pace the United States will still struggle to match, the field's future is fraught. *Nature* reports on the key political battles surrounding this issue.

Advocates of stem-cell research in the United States have just secured a victory that few believed was possible. On 24 May, the House of Representatives passed a bill that would allow federal funding for research on newly derived human embryonic stem-cell lines. If signed into law, it would reverse the policy set by President George W. Bush on 9 August 2001 that prohibits federally funded research on embryonic cell lines derived after that date.

Sponsors of the Stem Cell Research Enhancement Act convinced 50 members of Bush's Republican party to vote against him, in favour of the bill. A few months ago that seemed unthinkable, but a combination of medical and economic arguments has helped to bring about a change of heart.

Many representatives say that they were swayed by constituents or relatives with diseases that could potentially be cured by stem-cell research. Others gave credence to arguments

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UNAVAILABLE
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REASONS

Unmoved: George Bush has said he will veto fresh stem-cell legislation.

that, by not funding the research, the United States is losing ground to other countries, such as South Korea. Just days before the vote, Woo Suk Hwang at Seoul National University announced a major breakthrough in stem-cell research — the use of cloned embryos to produce stem cells that genetically matched patients' tissues (see *Nature* 435, 393; 2005).

Some representatives also expressed concerns that states such as California and New Jersey, which are contributing their own money to fund stem-cell research, may gain prestige and economic advantage at the expense of other states. Indeed, the vote is expected to bolster California's stem-cell initiative, which has become bogged down lately in political battles of its own (see 'California stem-cell institute fights legal challenges', below).

And the argument that many embryos left over from *in vitro* fertilization are discarded every year also seems to have been convincing. Under the new measure, scientists would be able to derive stem-cell lines from these leftover embryos, if the couple involved consented.

"The surplus embryos are going to be discarded as medical waste, and the notion that these may have the potential to cure dreaded diseases just resonates with people," says Pat White, director of federal relations at

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California stem-cell institute fights legal challenges

Stem-cell research may have won a victory in the US Congress, but California's nascent \$3-billion programme is embroiled in a political battle of its own.

A coalition of state legislators wants to increase public control over how the California Institute for Regenerative Medicine (CIRM) will spend its money.

But last week, CIRM leaders hit out, saying that the proposals would make it "extremely difficult if not impossible" for the agency to function.

The CIRM, created by a statewide vote last November, is California's answer to the Bush administration's rules limiting the number of stem-cell lines that can be used for federally funded research. By selling state bonds, it

will provide about \$300 million a year over the next decade to drive stem-cell research that is not eligible for federal money.

The CIRM's leaders are eager to get the money flowing. "California is already behind," says Zach Hall, the institute's interim president. "We need to catch up and move ahead."

But there are concerns about the level of transparency and accountability in the CIRM's allocation of grants. Democrat Deborah Ortiz, a long-time advocate of stem-cell research and state senator from Sacramento, has introduced a bill to address this (see *Nature* 434, 427; 2005). She and her coalition argue that without tight controls, critics of stem-cell research could attack the programme in future. Her original

bill, introduced in March, would have made public the peer-review process for grants, introduced stringent conflict-of-interest rules, and required repayment of all state costs, including grants, from the royalties of any drugs or products arising from CIRM-funded projects.

The CIRM's leaders say that this goes too far, and on 23 May the institute's board voted unanimously to reject the bill. "The law would stop us in our tracks," says Hall.

Later in the week, the board released a letter signed by the presidents of the state's main universities that argued the bill would discourage industry from working with the CIRM.

Ortiz has since removed some of the more contested provisions. But as the bill hit the California Senate

floor this week, it still required peer reviewers to release summaries on grant decisions. And the issue of paying back costs is also unresolved.

The Senate is expected to pass the bill, which would then go to the state assembly. If it passes there before 30 June, Californians will vote on the law either in November or in June 2006.

The CIRM is also facing a lawsuit filed against the state by a group that fights taxes. California cannot sell bonds to fund the institute's research until this suit is resolved. That means no one knows when the first grants will be available, although the CIRM hopes to give out \$15.3 million in training grants this autumn. These will be funded by donations until the bonds can be sold.
Rex Dalton, San Diego

the Association of American Universities.

Advocates are now looking ahead to the fight in the Senate. The day after the stem-cell bill passed the House, six Republican and Democrat senators claimed that they have enough votes to get the bill through. If the bill is passed there, it still needs to be signed into law by President Bush. He has said twice that he will veto it, although that would be an unprecedented step — he hasn't yet used his right to veto a bill.

But even if he changes his mind, or Congress manages to override a veto, the bill would leave the United States in a conservative position compared with countries such as Britain and South Korea. These nations allow stem-cells to

be derived from cloned human embryos, a technique often called 'therapeutic cloning'.

"It's really a very small step forward, particularly in contrast to what's going on in other countries and even other states," says John Gearhart of the Johns Hopkins School of Medicine in Baltimore, Maryland, who was part of a team lobbying members of Congress to pass the bill on the day of the vote.

But advocates are savouring the victory as a sign that public opinion is slowly shifting towards such research (see page 537). "The sense I get is that there is stronger and stronger support for this work," says Gearhart. ■

Erika Check, Washington DC

From Nobel ambitions to hunger strikes...

SOUTH KOREA

Woo Suk Hwang of Seoul National University, whose team last month reported that it had created 11 human embryonic stem-cell lines genetically matched to individual patients, has become a national hero. Politicians are pledging their support to help Hwang win a Nobel prize. And the government seems keen to capitalize on his research. Hwang's research budget from the science ministry jumped from 6.5 billion won (US\$6.5 million) last year to 26.5 billion won this year and is expected to rise further.

In an interview with *The Korea Times*, Ky Young Park, presidential adviser for science and technology, and a former co-author of Hwang's, says Korea is "mulling over a global consortium to study the next-stage technologies of differentiating stem cells into specific cells or organs". Hwang himself reportedly has plans to create a stem-cell 'dream team', gathering top names from labs in the United States, Britain and elsewhere to collaborate on turning the technology into cures.

ITALY

Thirty scientists have gone on hunger strike in protest at what they say is a distortion of scientific facts in a feverish referendum campaign. Research using human embryonic stem cells is completely banned in Italy, but the country faces a public referendum this month on whether to allow 'therapeutic cloning'.

Media coverage of stem-cell science is confusing the public, in particular by reporting that adult stem cells have the same medical potential as embryonic stem cells, the scientists say. They also complain that lobbies opposing human embryonic stem-cell research get disproportionate airtime. "Citizens have the right to decide according to their own ethics — but they have to be correctly informed about the science," says hunger striker Gilberto Corbellini, a medical historian and bioethicist at La Sapienza University in Rome.

GERMANY

Human embryonic stem-cell research is restricted to the use of cell lines created before 2002, but the topic has suddenly become an unexpected election issue. In response to Hwang's announcement last month, Chancellor Gerhard Schröder said that his government would be prepared to reconsider the law. But two days later his Social Democrat party lost a decisive regional election, and he called a surprise general election for September.

Parties are now lining up on either side of the ethical divide. Schröder's research minister Edelgard Bulmahn has come out clearly in favour of a parliamentary debate to reconsider the current restrictions. The major opposition CDU party is against change. But the CDU's likely coalition partner in any future government, the FDP, has spoken strongly in favour of therapeutic cloning.

FRANCE

France's bioethics law forbids therapeutic cloning, but revisions drafted by Roger-Gérard Schwartzberg, the research minister in the former socialist government, allow research on any human embryonic stem-cell line for a five-year period. He now wants to go further. On 24 May, he introduced a draft law that would allow therapeutic cloning, saying that the Hwang paper "marks a decisive step towards regenerative medicine".

AUSTRALIA

The country currently allows embryos left over from *in vitro* fertilization to be used as a source of stem cells, but bans both reproductive and therapeutic cloning. The law is under review, and advocates of stem-cell work are hoping the momentum created by the Korean discovery could tip the balance towards allowing therapeutic cloning.

Alison Abbott, Munich
David Cyranoski, Tokyo