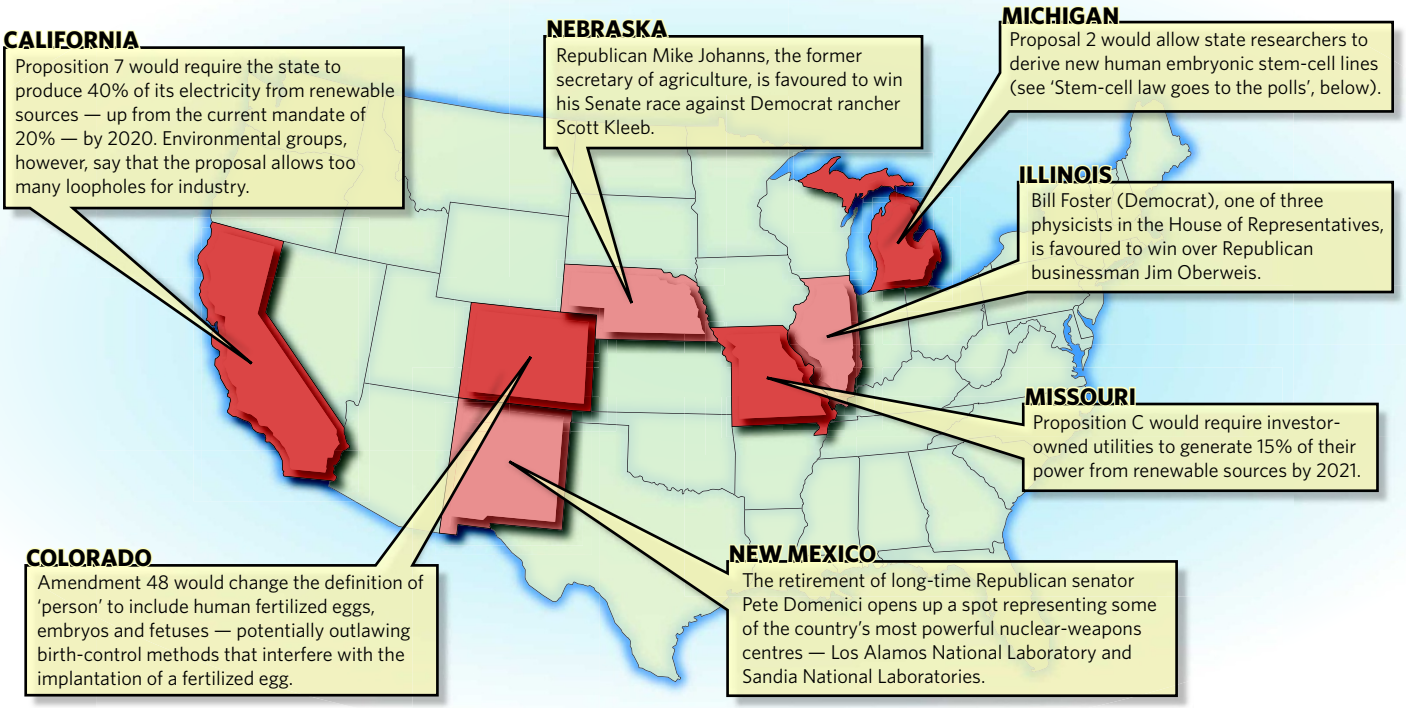
# NEWS

## THE ELECTION LANDSCAPE

Along with the US presidency, also up for grabs at the 4 November US elections are 470 congressional seats, 11 governor seats and a series of ballot initiatives. Here's a look at some of the races important to science.




# Stem-cell law goes to the polls

Last year Sean Morrison, a stem-cell scientist at the University of Michigan in Ann Arbor, received an e-mail from a woman wanting to donate extra embryos from her *in vitro* fertilization procedure towards his research into Parkinson's disease. He had to say no. According to Michigan law, the woman could donate the embryos to another state or throw them away — but not give them to a local researcher to derive new stem-cell lines.

Michigan's scientific reputation could change on 4 November. Voters will not only choose the next US president (see *Nature* **455,** 442–453; 2008) but also say yes or no to a state ballot measure on stem-cell research, known as Proposal 2 — one of several initiatives across the country (see map). If passed, the proposal would amend a 1978 state law banning research on live human embryos, which currently prevents Michigan researchers from deriving new human embryonic stem-cell lines, and which they see as limiting their research.

The initiative would also mean that, instead of having to discard embryos left over from fertility treatment, women could legally donate them directly to state stem-cell research centres. The state's ban on using somatic-cell nuclear transfer to produce a human embryo would still hold, and buying and selling human embryos would also become illegal.

C. OSORIO/AP

**Bill Clinton (left) and Al Taubman back Michigan's Proposal 2.**

Supporters of the initiative had first tried to work within the state legislature to change what they see as overly restrictive laws. But the bills never got out of committee, says Chris De Witt, spokesman for CureMichigan, the group that sponsors Proposal 2. Proponents tried to get a similar initiative on a ballot in 2006, but failed to collect the necessary number of signatures. It's not clear whether the political tides have turned in the initiative's favour this year; a recent poll by a local newspaper and television stations showed a roughly equal split between those who would vote for the measure and those who would not. It has, however, attracted high-profile supporters such as Michigan governor Jennifer Granholm, billionaire Al Taubman and former president Bill Clinton.

Opponents cite the destruction of human embryos as a reason to vote against the measure. Some groups are specifically worried about part D of the state ballot proposal, which declares it would "prohibit state and local laws that prevent, restrict or discourage stem-cell research, future therapies and cures". That, in essence, would allow future stem-cell research in



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the state to go unregulated, argues state senator Tom George (Republican), who co-chairs the opposition group, Michigan Citizens Against Unrestricted Science and Experimentation.

That's simply not true, counters De Witt. He notes that state institutions that conduct human embryonic stem-cell research have internal ethics review boards to monitor the studies, and that researchers must also follow federal regulations regarding investigations into humans and human tissue. The same constraints would hold, he says, if researchers were allowed to derive their own lines.

The initiative has "major significance" because presidential candidates John McCain and Barack Obama have both hinted that, if elected, they would loosen federal restrictions on embryonic stem-cell research, says Stephen Rapundalo, executive director of MichBio in Ann Arbor, a non-profit organization trying to drive growth of the life-sciences industry in the state. Currently, federal research money can be used for work only on cell lines derived before 9 August 2001, the date the federal restrictions came into effect. The University of Michigan uses 11 of these federally approved lines, which were grown using mouse cells and which, they say, are less than ideal for human clinical research.

**"We are already at a disadvantage in recruiting faculty who specialize in human embryonic stem-cell research."**

If federal law changes after the election but state law does not, Rapundalo says, stem-cell scientists in the state will be at a distinct disadvantage. Many fear that leading researchers will leave Michigan for other states that support the work, such as California and New York. Sue O'Shea, director of the Michigan Center for Human Embryonic Stem Cell Research in Ann Arbor, says she has seen many of her best students leave — especially those who want to work on embryonic rather than adult stem cells.

Morrison agrees. "We have already been at a disadvantage in recruiting faculty members who specialize in the area of human embryonic stem-cell research," he says. "If the proposal does not pass, this will not improve."

Nevertheless, unlike California's $3-billion stem-cell agency, which was created through a ballot initiative, the Michigan initiative has no money attached to it. "So even if it does pass, it won't necessarily allow us to develop any new embryonic stem-cell lines," O'Shea says. "It will just make life easier knowing we can do it." ■

**Ashley Yeager**

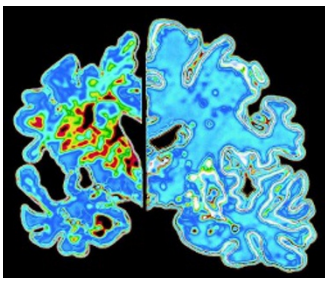
**See Editorial, page 1149.**

# Alzheimer's tests under fire

**Genetic testing for Alzheimer's disease tells a cautionary tale about the legal, medical and ethical complications of personal genomics, as the story of a Pennsylvania company shows.**

Smart Genetics, based in Philadelphia, has stopped offering its controversial 'Alzheimer's Mirror' genetic test just eight months after introducing it. The test checked for variants in a gene, called *APOE*, that bestow as much as a 15-fold increased risk of developing Alzheimer's. Soon after launching the test, though, Smart Genetics chief executive Julian Awad found himself in a controversy over whether it violated intellectual-property agreements covering *APOE* testing.

Smart Genetics' tests were performed by Athena Diagnostics, based in Worcester, Massachusetts. Athena had, in turn, licensed the patents from Duke University in Durham, North Carolina, where researcher Allen Roses discovered the *APOE* link to Alzheimer's in the early 1990s. Roses and Duke argue that Athena's licence covers *APOE* testing only in people who already have symptoms of dementia.



A. PASIEKA/SPL

Can genes reliably predict risk for an Alzheimer's brain (left)?

"The test was never intended to be used for wholesale screening of non-cognitively impaired individuals," adds Alan Herosian, director of corporate alliances for Duke University. He says he has contacted Athena many times in recent months to press this point.

Michael Henry, Athena's vice-president of business development, wouldn't comment on whether the company agreed with this interpretation of its licence. But Smart Genetics is no longer taking new orders for Alzheimer's Mirror. Its website says the test is currently unavailable because of "high demand". The company's phone lines have been disconnected, and a Philadelphia newspaper, the *Philadelphia Business Journal*, reported earlier this month that the company has closed.

Smart Genetics co-founder Richard Watson would not comment on the newspaper article, and Awad did not respond to e-mails or phone messages. But one member of the company's scientific advisory board, Andrew Faucett of Emory University School of Medicine in Atlanta, Georgia, notes that the firm faced another roadblock: Smart Genetics was charging hundreds of dollars for one test, whereas other gene-scanning firms offer Alzheimer's risk assessments along with other tests. "The financial model was hard to support," he says.

The tests offered by other firms bring issues of their own. For instance, Navigenics of Redwood Shores, California, provides Alzheimer's risk assessments by testing variants of a gene called *APOC1*, which sits next to *APOE* on chromosome 19. Navigenics uses *APOC1* variants to predict *APOE* status on the basis of published reports that certain variants of the two genes are often inherited together. But *APOC1* is not a perfect proxy for *APOE* variants. Navigenics chief operating officer Sean George says the company is switching to testing *APOE* variants directly.

Roses thinks genetic testing for the risk of Alzheimer's will only get more complex. He claims to have unpublished data suggesting that variants in another gene can be used with *APOE* variants to predict, to within 5–10 years, the age at which a person will develop Alzheimer's disease.

But he also hopes that ethical aspects of risk assessments will change if clinical trials identify drugs to treat the disease. Currently, knowing one's risk of developing the disease may simply cause needless worry, as there is no prevention or treatment. But Roses notes that the firm for which he worked previously, GlaxoSmithKline based near London, has reported preliminary data that its drug rosiglitazone benefits patients with Alzheimer's if they don't carry a high-risk *APOE* variant (A. D. Roses *Alzheimer's Dementia* 4, 164–166; 2008). The company is scheduled to finish clinical trials next year to test whether the findings hold up in larger numbers of patients with Alzheimer's.

If they do, Roses notes, it will mean *APOE* tests might be more useful, as they could help identify patients who will benefit most from treatment: "That's where we are approaching very, very rapidly," he says. ■

**Erika Check Hayden**



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