

# THIS WEEK

## EDITORIALS

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## Science takes the stand

*Two legal rulings by the US Supreme Court last week will have significant implications for research into health-care outcomes and for how neuroscience is used in sentencing juveniles.*

Many people were watching the US Supreme Court in Washington DC last week. The justices inside did not disappoint those who expected drama. Although the landmark (if rather complex) victory for President Barack Obama on health care took most headlines, a decision by the court a few days earlier also has significant implications. Neither judgment, it would seem at first glance, directly affects science and research. But both decisions deserve attention.

First, health care. With the court's decision to largely uphold the health-reform law, the nation moved much closer to providing health care for all — a provision that, beginning with nineteenth-century German health-care reformer Otto von Bismarck, almost all other wealthy nations have come to acknowledge as a right, not a privilege.

The decision also secures the future of several science-related provisions, assuming that congressional Republicans don't overturn the law legislatively. These include the launch of a non-profit, non-governmental Patient-Centered Outcomes Research Institute, based in Washington DC. Its remit is to compare the risks, benefits and effectiveness of different treatments and of various approaches to health-care delivery and management — a hugely important enterprise if US spending on health is to be brought under control.

The second decision could fundamentally change the criminal justice system for thousands of young people, but has altogether different implications for researchers. In deciding on two cases of crimes committed by people under 18 years old — *Miller v. Alabama* and *Jackson v. Hobbs* — the court voted 5–4 to prevent mandatory life sentences being given without the possibility of parole for juveniles convicted of murder. The decision rests on the fact that such sentences violate provisions in the Eighth Amendment to the Constitution that prohibit cruel and unusual punishment.

The opinion of the court notes that the decision was based not just on “common sense” about young people's immaturity but “on science and social science as well”. Although the research may simply be backing up conclusions that the court would have reached anyway, the language of the opinion suggests that the justices seriously considered scientific evidence as a factor.

Specifically, the judgment cites behavioural research and brain-imaging studies that show fundamental differences between the brains of adults and juveniles, the latter of which can be underdeveloped in areas that help to control impulses and avoid risk, among other behaviours. The court took the view that these factors could mitigate culpability, and suggest a higher chance of reform as young people mature. *Nature* reported on the difficulties of applying science in such cases in April (see *Nature* **484**, 304–306; 2012).

This is not the first time that scientific evidence has been used to bolster arguments for leniency towards young people: in a 2005 decision on *Roper v. Simmons*, the court took the death penalty off the table for young offenders, citing similar research. Now, the court says that it believes the behavioural and imaging evidence has got stronger.

The way the court fashioned its recent decision puts increasing pressure on researchers who study adolescent development to convert their research findings into a format that can be exploited to assess offenders. It does not prohibit life-without-parole sentences for young offenders

**“An immature science could be increasingly drawn into the decision-making process.”**

drawn into the decision-making process. The psychological surveys and functional magnetic resonance imaging of brain structures cited in these cases are most relevant to population-level differences between juveniles and adults. Yet at the individual level, there is wide variation in how mature, culpable and capable of reform a particular offender is. There are no valid ways to predict where one person sits on these scales, yet the court's decision seems to endorse this approach.

Translating research from group findings to individuals is a challenge for many areas of society in which science helps to drive decisions: from medicine to environmental protection and in legal matters. Scientists in affected fields should consider this a call to arms. ■

ers outright (as it had for the death penalty in *Roper v. Simmons*), but merely prevents states from making the punishment mandatory. This is laudable from a common-sense perspective because it means that punishments can be tailored to the specific crime and offender. But the ruling might mean that an immature science could be increasingly

## Good advice

*The UK government's latest appointment offers hope for British science.*

Since its election two years ago, the UK government has sent out mixed signals on science and technology. Budgets for the grant-giving research councils have been maintained, but other areas of research spending have been cut. Meanwhile, the potential of science and innovation to help pull the economy out of recession features in government rhetoric from time to time, but not as frequently or emphatically as researchers had hoped. In this context, the announcement last week that Mark Walport, director of the Wellcome Trust, will next April assume the role of chief scientific adviser to the UK government, is being welcomed with an enthusiasm that goes far beyond the platitudes that usually greet such appointments.

Walport currently has one of the most powerful — not to mention best remunerated — positions in the world of science, responsible for the disbursement of more than £600 million (US\$940 million) annually at one of the world's largest research philanthropies. His readiness