for the treatment in the next few months.

Whereas many governments require new treatments to undergo rigorous clinical trials with hundreds of patients before the therapies can be sold, Japan has a programme to fast track the development of regenerative medicines: therapies need only show hints of efficacy, on the condition that the researchers collect follow-up data.

Honmou says that after 6 months, 12 of the 13 patients improved by at least one level on the internationally recognized American Spinal Injury Association impairment scale, which ranks people's ability to contract muscles and sense touch on various parts of the body.

The team thinks that the stem cells might repair spinal-cord damage by reducing inflammation and protecting existing neurons. The scientists also say that some of the infused stem cells develop into neurons that can replace damaged ones. Honmou says that he and others have demonstrated these mechanisms in animal studies[1].

The claim that MSCs can become neurons, in particular, concerns some of the independent scientists interviewed. Studies in the early to mid-2000s found that MSCs could take on certain features of neurons, such as expressing some of the same proteins[2,3], but the idea that they can function as neurons has been widely discarded.

So it is very unlikely that the MSCs converted to neurons in the trial, says Bruce Dobkin, a neurologist at the University of California, Los Angeles. Other studies in animals and people have found that MSCs infused intravenously tend to get stuck in the lungs. That makes it difficult to see how they can be effective in the spinal cord, says Pamela Robey, a stem-cell researcher at the US National Institutes of Health in Bethesda, Maryland.

***"I do not think it is morally justified to charge patients for an unproven therapy that has risks."***

Jeffery Kocsis, a neurologist at Yale University in New Haven, Connecticut, and a longtime collaborator of Honmou and others on the team, calls the results "potentially interesting", but says that "continued work will be necessary to fully substantiate efficacy".

The lack of double-blinding also raises concerns. This is a gold-standard method for assessing a treatment's efficacy, because neither physicians nor patients know who is receiving the experimental treatment. As a result, it reduces bias that could prevent scientists from discovering whether a treatment works, notes Guest. But in this case, the results could be explained by natural healing and physical rehabilitation in the months after an injury, says Dobkin. "This trial, as designed, cannot reveal efficacy," he says.

Fukushima says that the consistent improvement and high rate of success in their trial participants — even among those who were judged to have no hope of recovery — is "unprecedented". This could not have been achieved by natural healing with rehabilitation, he says.

Once the treatment is sold to patients, it will be even harder for the team to gather evidence that it is effective, says Arnold Kriegstein, a stem-cell researcher at the University of California, San Francisco. Paying for treatments can increase the likelihood that the patient will experience a placebo effect, and makes it impossible to perform a blinded trial, because people cannot be charged for a placebo procedure. Kriegstein also worries that the product could remain on the market without ever providing evidence that it works. "I do not think it is morally justified to charge patients for an unproven therapy that has risks," he says. ■ SEE EDITORIAL P.535

1. Inoue, M. *et al. Glia* **44**, 111–118 (2003).
2. Kim, S. *et al. Brain Res.* **1123**, 27–33 (2006).
3. Akiyama, Y. *et al. Glia* **39**, 229–236 (2002).

POLITICS

# One US shutdown ends — but another looms

*Government scientists are back at work after politicians approve three-week funding deal.*

LAUREN MORELLO, AMY MAXMEN, ALEXANDRA WITZE, EMILIANO RODRÍGUEZ MEGA & JEFF TOLLEFSON

The US government reopened on 25 January after a historic 35-day shutdown that paralysed the National Science Foundation (NSF), NASA and other key science agencies. But any joy researchers felt was tempered by the knowledge that the government could shut down again on 16 February, when the current, temporary funding expires.

And even without another shutdown, it could take weeks or months for their agencies to return to normal operations.

"I'm a little nervous that we could be seeing this again in three weeks, but right now I am too happy to worry about it," says a fish biologist at the US Fish and Wildlife Service, who asked for anonymity to prevent retaliation by her agency. "We've been worrying for five weeks so it's just nice to take a break."

ALEX EDELMAN/GETTY

**Congress has approved three weeks of funding.**

The shutdown dragged on for two weeks longer than any other in US history, and its effects on science have been profound. It has interrupted studies of everything from California's coastal fisheries to clinical trials of experimental drugs, and key federal data sets have been pulled offline. Employees of many science agencies were forced to stay at home without pay for more than a month, and academic researchers have been deprived of key research funding.

Many government researchers returned to work on Monday 28 January — greeted, in some cases, by dead office plants, expired e-mail passwords or candy canes leftover from late December. Their agencies were scrambling to reschedule grant deadlines and review panels cancelled by the shutdown. NASA's associate administrator for science, Thomas Zurbuchen, said on Twitter on 24 January that the agency will delay consideration of new applications to one of its main research ▶

grant programmes by at least 60 days after the shutdown's end.

Meanwhile, roughly 90 grant-review panels scheduled to meet at the NSF this month have been cancelled, including all those set to take place on 28 January, the first day that many of its employees returned from enforced leave. The NSF also expected to postpone panels scheduled for 29 and 30 January, or to conduct them virtually.

Anne Jefferson, a hydrologist at Kent State University in Ohio, predicts a "frantic scramble to get those really urgent and important things done" as government agencies come back online. She'll be revising the syllabus for a hydrology course she's teaching, to reflect the restoration of federal weather data sets that went offline during the shutdown.

But recovery from the closure is complicated by the knowledge that the government could be shuttered again on 16 February, if politicians cannot resolve an ongoing disagreement about President Donald Trump's demands to construct a wall along the US border with Mexico. Planetary scientists have indefinitely postponed a conference on lunar resources that was to have taken place in Columbia, Maryland, from 20 to 22 February, for instance.

"Despite the recent announcement of a temporary funding measure to open the government there is no guarantee that this will become permanent," co-convenor Clive Neal, a lunar scientist at the University of Notre Dame in Indiana, wrote to a lunar-science mailing list on 25 January. "Once we know the government is up and running permanently, I will communicate more about revised dates."

The shutdown has also dented many researchers' morale, prompting scientists at all career stages to rethink working for the federal government.

"I have had a wonderful career at the USDA, and believe in its mission," says a senior scientist at the US Department of Agriculture. "There used to be a feeling of stability, and now the stability is gone, in addition to eroding budgets and increasing bureaucratic demands. I know some people will hit the tipping point."

One senior scientist at the Environmental Protection Agency had mixed feelings about returning to work, given the uncertainty about future funding and what he sees as the Trump administration's general hostility to science. "The shutdown overlays anxiety about what we can work on, what we can't, how our work is valued, or more likely not," he says.

And not everyone will be made whole. Although politicians passed a law that guarantees federal employees back pay to cover the shutdown period, most government contractors will not be paid for that time. This category includes most of the workers in the NSF's information-technology department, who last year were converted from employee to contractor status.

"We need Congress to fund the entire government for the remainder of this fiscal year," says Jefferson, who receives funding from the NSF. "Only with dependable, continued investment in federal science, natural-resource management and environmental protection can American science move forward." ■

POLITICS

# Kosovo academics brace for proposed ethnic land swaps

*Hopeful signs of cross-ethnic cooperation in research and education might now be at risk.*

BY ALTIN RAXHIMI

A proposed land swap between Serbia and Kosovo, which is designed to help end a decades-long ethnic conflict, could threaten rare attempts at multi-ethnic research collaboration and education. The exchange aims to settle ownership of the remaining areas disputed by the two hostile neighbours, but it could also result in academic institutions finding themselves in a different, essentially enemy, country.

Two institutes in particular, located in the ethnically divided city of Mitrovica, have brought together researchers and students from both sides, and they now face uncertainty.

"There is very little cooperation between the two research and education systems, but even that could now be endangered by the land swaps," says Dukagjin Pupovci, a mathematician who heads the Kosovo Education Center, an educational-policy think-tank in Priština, Kosovo's capital.

Kosovo sits between Serbia and Albania and is home to people ethnically identified with both regions. A bloody war in the late 1990s paved the way for Kosovo to declare independence from Serbia in 2008 — an act Serbia never officially recognized. That has left Kosovo's goal of joining the United Nations, as well as Serbia's ongoing aspirations to join the European Union, in limbo — and political tensions and violent clashes have continued.

Last year, in a bid to end hostilities, the leaders of Serbia and Kosovo proposed a land swap in which Preševo Valley in southern Serbia, where the population is mostly ethnic Albanian, would join Kosovo — and North Kosovo, home to Mitrovica, would join Serbia