


**MAKING LUNGS IN THE LAB**

Microchip and implanted tissue mimic organ.

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funding remains an obstacle. For the current fiscal year, the project received only ¥30 million (US\$335,000) of its requested ¥1.7 billion. But on 15 June, amid excitement at the successful re-entry of the Hayabusa recovery capsule, Japan's science and technology minister promised to increase the budget. Yano hopes for a 2014 launch, which would require the estimated ¥25-billion budget to be allocated by next April. On that schedule, samples from 1999 JU3 could be in scientists' hands by 2020.

Interest in asteroid missions has also been on the rise in the United States. In June, US President Barack Obama called for a manned trip to an asteroid. And late last year, the OSIRIS-REx project, also a sample-return mission targeting a carbon-rich asteroid, was selected as a finalist in NASA's New Frontiers Program, which would provide US\$650 million. Deputy principal investigator Lauretta hopes for a 2016 launch, a rendezvous with asteroid 1999 RQ36 in November 2019, and samples returned by September 2023.

Lauretta says the OSIRIS-REx team has studied the Hayabusa mission "in excruciating detail" and will extend operations at the asteroid to some 15 months compared with Hayabusa's 6 weeks. Hayabusa's troubles, he says, taught a clear lesson: "Take the time to thoroughly study the asteroid and safely design the sampling manoeuvre." ■

David Cyranoski

impossible to raise standards and increase universities' autonomy, two goals of the reform bill. A net of complex rules, some of which are in a constant and paralysing state of flux, stymies the universities. Academic recruitment and promotion — a mostly centralized procedure — had in any case almost ground to a halt for five years before a trickle of new posts were opened this year, because controversial selection rules were being revised. Powerless to hire, universities will not be able to take advantage of the reforms.

The reform bill is scheduled to be approved before August, but that date is likely to slip. In the meantime, academics are lobbying for compromises. Declava says, for example, that the government must ensure that researcher-grade scientists can compete with new tenure-trackers for promotion to associate professors.

If these changes don't happen, and the *ricercatori* carry out their threat to strike, universities may find themselves unable to open for teaching in September. The number of courses in Italian universities rose from 116,000 in 2001-02 to 172,000 in 2007-08, and without the army of *ricercatori* there will not be enough professors able to take over, says Declava. ■

Alison Abbott

# Stem-cell furore erupts

Long-rumbling hostilities between stem-cell researchers in Germany exploded into a blazing public row last week, after *Nature* published a critical reanalysis of data from a high-profile 2008 article.

The researchers behind the original work<sup>1</sup>, led by Thomas Skutella of the University of Tübingen, reported using cells from adult human testes to create pluripotent stem cells with similar properties to embryonic stem cells.

Unlike other adult cells, these reproductive or 'germline' stem cells

can be reprogrammed for pluripotency without the need to introduce additional genes, a step that often relies on a virus. That could make them safer for future use in medicine.

The paper made headlines because such pluripotent stem cells might be used instead of ethically sensitive human embryonic tissue. Soon after its publication, however, some stem-cell scientists said that the evidence for pluripotency was unconvincing. They also complained that Skutella would not distribute cells to other labs for verification, even though *Nature* requires its authors to share all published research resources.

Hans Schöler, a director at the Max Planck Institute for Molecular Biomedicine in Münster and an author of last week's critical comment<sup>2</sup>, says that he proclaimed Skutella's achievement as a breakthrough when he first saw the data at a meeting, but became doubtful after seeing the published paper. "If this paper is wrong, then a lot of scientists are wasting time, energy and money in trying to follow up on it," he says. Others fear that the episode is undermining the credibility of the field.

In response, Skutella last week asked the DFG, Germany's main research-funding agency, to conduct an investigation both of his paper in *Nature* and of what he claims is a witch-hunt against him. Schöler, who also works with germline stem cells, says that he would welcome such a move.

Pluripotent cells should form teratomas — encapsulated tumours comprising different cell types — when injected under the skin of mice, and also exhibit a particular profile of gene expression.

"The teratoma pictures in the *Nature* paper were not terribly convincing but that didn't concern me too much at first," says Schöler. "It was the failure to provide cells that started to concern me." After more than a year of requests for access, he decided to reanalyse data in the paper in *Nature* showing which genes in the disputed cells were being expressed.

Together with bioinformaticians, he compared the genes' expression profile with those of other cells in public databases and found that it overlapped with a type

of connective-tissue cell called fibroblasts but not with pluripotent stem cells. Schöler suggests that fibroblasts may have contaminated Skutella's samples. But Skutella and his colleagues deny<sup>3</sup> mistaking fibroblasts for pluripotent cells. Skutella says that comparison of gene-expression data is meaningless "if the cells being compared were not processed identically".

Takashi Shinohara at Kyoto University in Japan,

whose team in 2004 generated the first pluripotent germline stem cells from mice, shares Schöler's concerns about the expression data. He says that fibroblasts and pluripotent cells have different gene-expression profiles even if the cells are not processed in similar ways, and adds that it would be helpful to see Skutella's cells.

In a corrigendum to his original paper in August 2009, Skutella and his co-authors said that they wanted to share the cells but that the original agreement signed by tissue donors precluded distribution to third parties. Having gained broader consent from some donors, Skutella now promises to distribute the cells once they have been quality-checked. But stem-cell researcher Rudolf Jaenisch at the Whitehead Institute for Biomedical Research in Cambridge, Massachusetts, is not impressed: "It's a big problem not providing the cells for what is nearly two years — whatever the excuses, this is bad."

Ulrike Beisiegel, ombudsman for the DFG, says her office will decide "soon" whether to take up the investigations. ■

Alison Abbott

1. Conrad, S. *et al. Nature* **456**, 344-349 (2008)
2. Ko, K. *et al. Nature* doi:10.1038/nature09089 (2010).
3. Conrad, S. *et al. Nature* doi:10.1038/nature09090 (2010).



Thomas Skutella.