fiscal prudence, not mismanagement.

Fellow panel member and Stanford neurobiologist Eric Shooter says NeuroSciences' ability to overcome geographical obstacles and integrate competitive scientists into a single unit is a monumental achievement: "We can't do it [in the United States]. There are too many egos involved." Shooter and Lund both questioned whether the selection committee had sufficient expertise to judge neuroscience research. Says Shooter: "My thesis is that something has gone terribly wrong," for the outcome is "beyond my comprehension."

Although unwilling to discuss the NeuroSciences application in detail, Ogilvie says the selection committee based its recommendation on the quality of the science and stands squarely behind "the clarity of its decisions." He adds that his committee was "entirely competent" to assess projects across a wide range of disciplines. Natural Sciences and Engineering Research Council President Thomas Brzustowski, who heads the body that oversees the NCE program, says the two panels looked at the network from different perspectives. "The experts embedded themselves in the science," while the selection committee measured its performance against five criteria: scientific excellence; training; networking and partnerships; knowledge exchange and technology exploitation; and management.

Aguayo and NeuroSciences Chair David Johnston, former principal of McGill University, say the network will attempt to survive by finding alternative sources of funding, primarily in industry. Asked whether the harsh selection committee report will prove a barrier to generating external revenues, NeuroSciences manager Lewis Slotin notes: "We have to test it. We think there's a cloud. We're not sure how thick it is."

–Wayne Kondro

Wayne Kondro is a science writer in Ottawa.

BIOETHICS

First Dolly, Now Headless Tadpoles

The hammer blow delivered to the popular imagination in February when scientists at the Roslin Institute in Edinburgh revealed that they had "cloned" an adult sheep by transferring one of its cell nuclei to an egg continues to reverberate, its echoes tracing public feelings about biological novelties. The latest aftershock came on Sunday, 19 October, when the *Sunday Times*, Britain's best-selling broadsheet Sunday paper, ran a front-page headline about headless frogs. The scientist who created these hapless creatures (actually, tadpoles) while studying developmental genes had speculated about their practical use. Sometime in the future, he said, organs grown through nuclear transfer, followed by strict control of developmental pathways, might provide compatible transplant material for people who otherwise could not get organs.


THE SUNDAY TIMES

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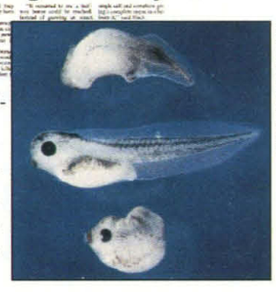
ALLERGY ALERT

Headless frog opens way for human organ factory

by Steve Connor and Deborah Cadbury


UNIVERSITY OF BATH

No brainer. A *Sunday Times* story on headless tadpoles *(right)* kicked off a furor over organ factories.

This set off a spirited discussion of the ethics of creating brainless humans for medical purposes. In the brief but intense media splash, ethicists were quoted saying that the whole idea was deplorable. It treated lives as means and not ends, they said—a view shared by some embryologists. On the other side, Lewis Wolpert, a developmental biologist who chairs the Royal Society's Committee on the Public Understanding of Science (COPUS), reiterated his view that there are no interesting moral problems at all raised by cloning organs. If the donor is never sentient to begin with, he asked, what could be the harm?

To some, the furor reeked of hype and sensationalism. Perhaps. But it was also an instance of exactly what august bodies like COPUS are always calling for: public debate. The scientist in question was the widely respected developmental biologist Jonathan Slack, a professor at the University of Bath. His current research, in the frog *Xenopus laevis*, builds on what has been learned in other animals about the ability of homeobox genes to control development along the long axis of the animal. As he says, "There's absolutely nothing special about our work compared with work in many other laboratories."

Slack mentioned it and its possible long-term applications to a BBC documentary crew preparing a film about Dolly and the age of cloning. Clones as sources of spare parts are one of the constant motifs of post-Dolly debate; anencephalic clones have been a staple of science fiction since Robert Heinlein's *Time Enough for Love* almost a quarter-century ago.

Writers on the *Sunday Times* saw a preview video of the BBC documentary, which aired the following Thursday, and recognized the idea's interest. "A reporter ... called me up, and then on Sunday I was surprised to see the story at the top of the front page under a sensational headline about headless frogs, although it was mostly a long story about Dolly," Slack says. "Since Sunday afternoon I've been overwhelmed with calls from the media around the world." Slack's university quickly put out an informative press release (www.bath.ac.uk/Slack/).

Did the *Sunday Times* blow the story out of proportion? No, says Tom Wilkie, a veteran science journalist who now heads the biomedical ethics section at the Wellcome Trust in London, and who has been quite willing to criticize his former colleagues when he thinks they deserve it: "Rightly or wrongly, the wider public has been sensitized to these issues in the aftermath of Dolly; in highlighting the research, the press is responding to a sensitivity that its readers already have." The unease many scientists feel over such reporting, he says, reflects a lack of comprehension of how the media work to serve the readers' interests: "The responsibility of newspaper editors is not to the producers [of knowledge] but to the consumers."

Whether the technologies that have stirred public fears will ever become a reality is hard to say. PPL Therapeutics, the company that has licensed the technique from Roslin to produce transgenic animals, plans to engineer and clone pigs as donors for xenotransplants. Cloning to produce human organs alone—but not people—might, as Slack suggests, be an alternative, but there is as yet no real understanding of how it might be done. At the same time, noncloning technologies might do just as well. Marilyn Monk of the Institute of Child Health in London points out that if embryos were grown for a short while in vitro so that these cells might be removed and frozen, they could be turned into organs at a later date using developmental controls like those Slack envisages. But again, no one knows how to do it.

As for Slack's tadpoles, British animal welfare rules required that they be destroyed within a week of their creation. Their moment in the media was equally ephemeral, as was the din over the prospect of headless organ donors.

–Oliver Morton,
with reporting by Nigel Williams

Oliver Morton is a writer in Greenwich, U.K.