



when there was a heatwave or storm," he says.

Ward Hagemeijer, the bird-flu programme manager at Wetlands International in Wageningen, the Netherlands, also complains of the general lack of resources. He has been on recent missions to sample H5N1 in affected

countries, but says he has been unable to get his African samples sequenced because certified labs have been too busy analysing samples from European outbreaks.

#### Leading light

Another fundamental problem is the lack of strong international leadership: there is no global body able to take overall responsibility for emerging diseases, particularly those that jump to humans from animals. The World Health Organization would be an obvious choice, but although it has a strong remit for public health, it is not responsible for monitoring outbreaks in animals — that duty belongs to the FAO and to the Paris-based World Organisation for Animal Health (OIE).

Neither of those organizations traditionally monitors outbreaks from a public-health point of view, however — the FAO is concerned with food safety and the OIE is responsible for trade issues. "Veterinary services throughout the world, particularly in developing countries, are very weak on this. They are not set up to watch for emerging disease events," says Roeder.

As well as a lack of expertise, the FAO and OIE do not have the funds for disease surveillance. "We need much more day-to-day interaction with locals on the ground, but we

haven't had the resources," Roeder admits.

The situation is slowly improving, however. The FAO and OIE had set a target of \$102.5 million for fighting flu in Asia, and by the end of 2005, countries had donated just \$25 million. But, in January, donors at a Beijing conference pledged \$1 billion in grants, and \$900 million in loans to support the FAO/OIE Global Strategy for the Progressive Control of Highly Pathogenic Influenza.

Many hope that resources pumped into avian flu will benefit the surveillance of emerging diseases generally by strengthening

ing infrastructure. But the money available so far is only a start. And the rate at which new diseases appear — currently around one a year — is increasing. Mark Woolhouse, an epidemiologist at the University of Edinburgh, UK, has

analysed all recognized human pathogens and he suggests that this rise is mainly due to changes in land use and the way that people live. Of the 117 emergent human diseases that he has studied, more than half jumped from animals.

"The world has to get to grips with the fact that what is happening now is going to happen repeatedly," says Roeder. "We have to develop a global structure to tackle emerging diseases. ■ Declan Butler

**"Epidemiology has been chronically underfunded... we are still in the nineteenth century."**

## Physicists told to confront those big questions

Time travel, multiple universes and extraterrestrial intelligence might seem more the purview of *Star Trek* scriptwriters than of serious researchers. But the scientists behind a new institute have announced their intention to change that perception.

On 27 February, the Foundational Questions Institute (FQI) made its inaugural call for proposals from scientists interested in asking the really big, and really odd, questions about the Universe — questions such as: why does time flow in a single direction, or, can intelligence survive in our Universe in the very long term?

"These are the very questions that a lot of scientists got into physics and cosmology to tackle," says Anthony Aguirre, a cosmologist at the University of California, Santa Cruz, and the FQI's

associate scientific director. "But they don't tackle them, because they either don't have time or don't have monetary support."

The institute's directors hope it will remedy this. The FQI was set up last October with a grant from the John Templeton Foundation, which

promotes research at the boundary of religion and science. With US\$8 million in seed money from the foundation, the FQI will fund dozens of researchers' part-time work on these questions, Aguirre says. All proposals will be peer reviewed, he adds.



**Boldly go:** a new institute will fund work at the frontiers of science.

"I'm very happy to see that a project has started to address these needs," says Lee Smolin of the Perimeter Institute for Theoretical Physics in Waterloo, Ontario, who is also on the FQI's scientific advisory board. Smolin says he believes the project will help shake up the current culture, "which emphasizes technical brilliance over ambition and originality".

But not everyone welcomes the institute's unusual remit. There is no shortage of crazy ideas in theoretical physics, says Paul Steinhardt, a cosmologist at Princeton University, New Jersey. "Metaphysics is running rampant through string theory and cosmology," he says. "I would like to see things go a little bit in the other direction."

Geoff Brumfiel  
 ▶ [www.fqxi.org](http://www.fqxi.org)



#### SCIENCE IN THE MOVIES

Check out the news site after this weekend's Oscars for a celebration of science in film.

[www.nature.com/news](http://www.nature.com/news)

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