



**NEUTRINO RIPPLES SPOTTED IN SPACE**  
Universal lumpiness is imprinted in mysterious particles.  
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**Positive discrimination: BiDil, a drug to prevent heart failure, will be targeted at black patients.**

costly research and might narrow their target markets? Experts agree that they might not. But some point out that further studies could in some cases expand the potential market, and pinpoint the markers predisposing some people to dangerous side-effects.

"If I were a drug company executive, in

addition to finding out about what works, I might be able to find out what causes problems, and save myself some liability," says Arthur Caplan, director of the Center for Bioethics at the University of Pennsylvania in Philadelphia. ■

**Meredith Wadman**

mental changes are expected to affect hurricane intensity and rainfall," he concludes.

One simulation that Trenberth reviewed suggests that warming tropical oceans will stretch the upper limit of cyclones' potential strength.

"Most storms may actually not reach the limit," says Tom Knutson, a co-author of the simulation based at the US National Oceanic and Atmospheric Administration in Princeton, New Jersey. "But in principle, Trenberth's conclusions are consistent with our studies."

Trenberth also argues that higher sea surface temperatures in the Atlantic Ocean and increased water vapour in the lower atmosphere — caused by global warming — are to blame for the past decade's intense storms.

His conclusions will not please some in the meteorology community. In an upcoming paper in the *Bulletin of the American Meteorological Society*, Landsea, Emanuel and colleagues argue that there is no proven link between greenhouse-gas emissions and hurri-

cane behaviour. They point out that even if there were a trend that had been missed in weather records, the change would have to be quite small relative to the year-to-year variability that already exists.

Trenberth counters that sceptics are ignoring the evidence. "I am trying to get people to think about things in a different fashion," he says. "The point is that all meteorological events around the world are influenced in some way by global warming."

In any case, everyone is hoping that there will be fewer severe storms this summer than last — when four strong hurricanes struck Florida, and Japan was hit by a record ten typhoons. They also hope that the storm that came ashore unexpectedly in Brazil on 28 March 2004 will not be a harbinger of things to come: Catarina, as it was christened, was the first ever recorded hurricane to develop in the southern Atlantic Ocean. ■

**Quirin Schiermeier**

## China's chicken farmers under fire for antiviral abuse

### TOKYO

The much-feared H5N1 strain of bird flu has become resistant to one of the most effective antiviral drugs against it — and it seems that Chinese farmers' use of the compound in chickens is to blame.

This week the accusation was formally made — and formally denied. But at some point after 1997 the H5N1 strain became resistant to the amantadine family of antiviral drugs, and Chinese officials have now pledged to investigate the claim.

On 18 June, *The Washington Post* reported that Chinese farmers, encouraged by government officials, had been routinely using amantadine drugs in chickens. The United Nations Food and Agriculture Organization (FAO) and the World Health Organization (WHO) then questioned the Chinese government, which denied the reports, although officials did not comment on whether farmers were using the drugs.

The FAO's avian-flu surveillance network coordinator in China, Fusheng Guo, told *Nature* that the drugs have been widely used to combat the H9 family of viruses in chickens. Guo, who was a private consultant for Chinese farmers throughout the 1990s, says that he warned farmers not to use amantadine, because residues in the meat could make human viruses resistant. But, at the time, he did not worry about it in relation to H5N1. "Now I believe it's a serious problem," he says.

According to Guo, the agriculture ministry was probably not aware of the use. "The men selling it knew it was illegal," he adds.

China's health ministry told the WHO on 21 June that the problem is "worth following up in the closest way possible", according to Roy Wadia, the WHO spokesman in Beijing. Surveillance and testing will now be required to find out how widespread the use has been and how common resistance to amantadine has become.

The first H5N1 strain that infected humans, in Hong Kong in 1997, was sensitive to the amantadines. But resistance to them, discovered in 2003, has left another — more expensive — family of antivirals, including oseltamivir (sold as Tamiflu) and zanamivir (Relenza), as the only line of defence against the virus. This leaves the poor countries of southeast Asia without a low-cost option. ■

**David Cyranoski**