CORRESPONDENCE

No tech gaps in *E. coli* outbreak

As president of the German Society for Hygiene and Microbiology, I object to Rainer Fislage's claim that the recent *Escherichia coli* outbreak exposed a technological gap in Germany's medical-microbiology infrastructure (*Nature* **475,** 174; 2011).

Many university and government institutes contributed to a huge, rapid nationwide effort to identify the infectious agent, using a combination of field epidemiology, molecular typing and high-throughput genomics. For example, the Institute for Hygiene at the University of Münster is part of a national network of microbiology reference centres and consulting laboratories appointed by the Robert Koch Institute in Berlin. Institute director Helge Karch and his team used molecular tools to identify the outbreak strain and determined its multilocus sequence type within 48 hours of receiving the first stool samples.

Five days later, they posted a polymerase chain reaction assay on their website (www.ehec.org) that enabled the scientific community and public-health laboratories to differentiate the outbreak clone from other enterohaemorrhagic *E. coli*. Four days after that, they submitted the first draft genome sequence of an outbreak isolate to the US National Center for Biotechnology Information (see go.nature.com/tjdrth and A. Mellmann *et al. PLoS ONE* **6,** e22751; 2011). They have also published three in-depth analyses of the latest outbreak strain. Scientists at the Göttingen Genomics Laboratory also swiftly generated and analysed another draft sequence (E. Brzuszkiewicz *et al. Arch. Microbiol.* http://dx.doi.org/10.1007/s00203-011-0725-6; 2011).

There are lessons to be learned from the *E. coli* O104:H4 outbreak, and adjustments to be made to improve preparedness. But technology gaps were not a relevant problem in its handling.

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Insurers could help address climate risks

Working with South Africa's largest short-term insurer, Santam, we investigated how communities should manage the increased risks associated with climate change. The global insurance industry has focused on refining the quantification, differentiation and pricing of the risk exposure of insured assets. Our findings call into question a sole reliance on this strategy (J. Nel *et al.* CSIR/NRE/ECOS/2011/0063/B; CSIR, 2011).

More than 80% of weather-related insurance claims in South Africa's southern Cape region were incurred in the past five years. Worse, climate models indicate that fire, flood and sea-storm risks in the area are set to increase significantly in the next 40 years. We found that a 1-in-75-year flood risk, as determined by rainfall data, could change to 1 in 45 years as a result of observed changes in land use. Risk is a dynamic and emergent property of nonlinear relationships between different risk drivers. In such fast-changing complex systems, static spatial differentiation of risk becomes less relevant.

The insurance industry should determine which assets share risk drivers and then encourage communities to manage these. Insurance can positively shape societal behaviour — some previously reactive medical insurers have become proactive promoters of healthy living.

We also find that human-induced changes to the landscape can have an equal or greater effect on risk exposure than climate change. By actively managing and restoring the ecological buffering capacity of these landscapes, communities can significantly reduce current and future risks associated with climate change.

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Admin burden is part of the job

Adam James voices a common frustration of senior scientists regarding their administrative burden (*Nature* **475,** 257; 2011). This viewpoint presumes a narrow definition of scientific practice and a rigid dichotomy between administrative and research tasks. Scientists should view administration as part of the research process, rather than eschewing it.

Scientific administration is a means of articulating science beyond the lab and is best performed by senior scientists with a wide-ranging knowledge of science and its contexts. It demands a sound knowledge of the science being practised, and improves as research networks expand. It helps to implement science at the level of the individual experiment as well as the discipline.

An enormous administrative effort went into institutionalizing molecular biology (N. C. Mullins *Minerva* **10,** 51–82; 1972). And as long ago as 1839, Charles Darwin had to organize the logistics of his lengthy voyage on HMS *Beagle* and categorize his samples.

Science confers considerable pressures on its practitioners. Entrants to the profession would do well to recognize that managing these pressures entails balancing research and administration, not separating them.

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China's grain relies on foreign fertilizer

China does need foreign help to feed itself (*Nature* **474,** 7; 2011) when it comes to other factors related to grain production, such as fertilizers.

The country consumes roughly one-third of the world's commercial fertilizers, and this is set to rise by 2–3% annually as its population increases to almost 1.5 billion.

China has been self-sufficient in nitrogen and phosphorus fertilizers since 1997 and 2006, respectively, but still imports about half of its potassium fertilizer. Its clean phosphate rock resource (almost 700 million tonnes) could run out in 30–40 years as demand continues to rise.

Without importing commercial fertilizers, energy and technology to produce grain more efficiently, China will be unable to meet its future grain needs.

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