

A global initiative on sharing avian flu data

SIR — The global spread of the H5N1 avian influenza virus has already extensively damaged economies worldwide and food safety in developing countries. The spread of infection to new ecosystems results in adaptation of the virus to new hosts, including humans, which amplifies the potential for a flu pandemic. Because it is recognized that avian influenza viruses may be the progenitors of the next human pandemic virus, their genetic evolution should be tracked in detail and promptly investigated.

The full support of the international scientific community is therefore urgently needed to understand better the spread and evolution of the virus, and the determinants of its transmissibility and pathogenicity in humans. This in turn demands that scientists with different fields of expertise have full access to comprehensive genetic-sequence, clinical and epidemiological data from both animal and human virus isolates.

Several countries and international agencies have recently taken steps to improve sharing of influenza data^{1–4}, following the initiative of leading veterinary virologists in the field of avian influenza. The current level of collection and sharing of data is inadequate, however, given the magnitude of the threat. We propose to expand and complement existing efforts with the creation of a global consortium — the Global Initiative on Sharing Avian Influenza Data (GISAID; <http://gisaid.org>) — that would foster international sharing of avian influenza isolates and data.

Scientists participating in the GISAID consortium would agree to share their sequence data, to analyse the findings jointly and to publish the results collaboratively. Data would be deposited in the three publicly available databases participating in the International Sequence Database Collaboration (EMBL, DDBJ and GenBank) as soon as possible after analysis and validation, with a maximum delay of six months. The six-month deadline for data release is expected to become shorter as the consortium gains experience and works out its operating procedures.

GISAID's policies for rapid and complete data release are modelled on those established for community resource projects. These policies have successfully been employed previously, for example by the International HapMap Project (www.hapmap.org) — a project to map, and make freely available, data on DNA sequence variations in the human genome.

The GISAID consortium will comprise scientists from around the world working in the fields of animal and human virology, epidemiology and bioinformatics, as well as experts in intellectual-property issues. An

international panel of distinguished scientists will be formed to govern the charter and to advise the consortium.

As an international collaborative effort, GISAID offers many benefits to the world as a whole, as well as to individual scientists and to groups participating in the consortium. It would encourage valuable collaboration among researchers in industrialized countries and in the developing countries that are hit hardest by avian influenza. It would also attract international attention to the need for increased funding and technical assistance to help affected countries build comprehensive and sustained disease-surveillance programmes.

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||A full list of signatories to this letter as of 23 August 2006 is available as supplementary information at <http://www.nature.com/nature/journal/v442/n7106/extra/442981a-s1.pdf>.

1. *Nature* **441**, 1028 (2006).
2. OFFLU Keeps its Pace on Global Sharing Virus Samples Press Release (OIE/FAO Network of Expertise on Avian Influenza, 21 July 2006); available at <http://www.offlu.net/portals/0/pdf/Press.pdf>
3. Rukmantara, T. A. Bird Flu Data Now Open to All The Jakarta Post (4 August 2006); available at <http://www.thejakartapost.com/yesterdaydetail.asp?fileid=20060804.H07>
4. CDC and APHL Make Influenza Virus Sequence Data Publicly Accessible Press Release (Centers for Disease Control and Prevention, Atlanta, Georgia, 22 August 2006); available at <http://www.cdc.gov/bd/oc/media/pressrel/060822.htm>

Published online 24 August 2006.

Offsets could mitigate damage to biodiversity

SIR — The authors of the Commentary "Diversity without representation" (*Nature* **442**, 245–246; 2006) highlight the world's ineffectual response to the crisis of biodiversity loss. I agree that an international body similar to the Intergovernmental Panel on Climate Change would be useful. But I believe that what is most important is for individuals, corporations and governments to take responsibility for the impact of their activities on biodiversity, using the 'avoid, mitigate and compensate' hierarchy from the Convention on Biological Diversity's voluntary guidelines for impact assessment, to ensure that their actions do not result in net biodiversity loss.

The main obstacle to such action has been the lack of standards to measure impacts and to identify appropriate compensation. Recently, however, considerable progress has been made on biodiversity offsets, a process by which impacts are measured, then conservation investments made to ensure that the net impacts to biodiversity are neutral or even positive.

The most advanced analytical work involves wetlands in the United States, where any impact must be offset by restored wetlands that are equivalent in function to that lost. But leading companies are taking steps to offset their impacts in other ecosystems. For example, Peru's forests of *Polylepis* — home to several endangered bird species — have been reduced in size by 97% since the time of the Incas, especially in recent decades by grazing and fuelwood collecting. Now the company Minera Antamina has undertaken to protect and reforest an area hundreds of times larger than the area of *Polylepis* affected by its mine (see <http://biodiversityneutral.org>).

Although regulations requiring offsets are essential to halt the loss of habitat, existing frameworks are sufficient for individuals and corporations to take voluntary responsibility for the loss of biodiversity caused by their activities. And should an intergovernmental panel on biodiversity be established, offsets would provide an immediate focus for research and policy-making.

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Funders should allow for cost of publication

SIR — Open access to the literature allows scientists in the developing world to read original research papers for free, which contributes to scientific advancement. Nonetheless, in these same countries, funds are not sufficient to pay the publishing charges made by some publications, including 'open access' journals. For this reason, many journals waive fees for scientists from developing countries who submit to them.

Although these waivers benefit the scientists who submit, part of the solution should also come from developing countries themselves. The support from funders must include provision for submission fees, so that government agencies that support research projects take responsibility for their investment. I echo the Salvador Declaration on Open Access for Developing Countries (www.icml9.org/meetings/openaccess/public/documents/declaration.htm) and I urge governments of these countries to consider the cost of publication as part of the cost of the research.

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