# LETTERS

*Edited by* **Jennifer Sills**

## Editorial retraction

After an investigation, the Central Ethical Review Board in Sweden has recommended the retraction of the Report "Environmentally relevant concentrations of microplastic particles influence larval fish ecology," by Oona M. Lönnstedt and Peter Eklöv, published in *Science* on 3 June 2016 (*1*). *Science* ran an Editorial Expression of Concern regarding the Report on 1 December 2016 (*2*). The Review Board's report, dated 21 April 2017, cited the following reasons for their recommendation: (i) lack of ethical approval for the experiments; (ii) absence of original data for the experiments reported in the paper; (iii) widespread lack of clarity concerning how the experiments were conducted. Although the authors have told *Science* that they disagree with elements of the Board's report, and although Uppsala University has not yet concluded its own investigation, the weight of evidence is that the paper should now be retracted. In light of the Board's recommendation and a 28 April 2017 request from the authors to retract the paper, *Science* is retracting the paper in full.

**Jeremy Berg,** Editor-in-Chief

### REFERENCES


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10.1126/science.aan5763

## Brazil's public universities in crisis

In the face of Brazil's deep economic recession, federal, state, and municipal governments are implementing austerity policies. In December 2016, the federal government approved freezing public investments on science, technology, innovation, education, and health care for the next 20 years (*1*).

One casualty of these austerity measures is the public university system. For example, in 2016, the state government provided the Rio de Janeiro State University (UERJ) with only 75% of the funding stipulated in the State Constitution (*2*). Because of the shortfall, basic maintenance services have been disrupted and UERJ employees, including professors and researchers, are receiving their salaries with up to 3-month delays and sometimes not in full (*3*). Research projects are under threat of being discontinued due to lack of funds. As a result, UERJ's scientists and scholars are considering leaving Brazil (*4*).


Brazil's public universities suffer from funding shortages. After financial problems forced Rio de Janeiro State University to postpone lessons multiple times, the dean announces to students that classes will begin soon.

UERJ may soon be forced to privatize for financial reasons. Privatization could compromise the university's independence and quality of research. Of 195 Brazilian universities, 9 of the 10 best are public, including 10th-ranked UERJ (*5*). Another ranking showed that of the 50 best Brazilian universities, in terms of research quality, 94% of them are public (*6*). Losing this public option would also further strain the already difficult access to public college education in Brazil. It is crucial to ensure that the UERJ continues to be a public, free, independent, and autonomous university of excellence.

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## Genomic databases: A WHO affair

The use of the genome for diagnostic purposes is a routine practice for disorders that stem from a single gene. Yet only 3927 protein-coding genes—0.3% of the human genome—have been linked to such disorders (*1*). Even within this fraction of the genome, the majority of the rare variants that are candidates for pathogenicity are not understood well enough to guide medical decisions.

One compelling argument for pathogenicity requires demonstrating that the frequency of a variant in affected individuals is statistically higher than its frequency in unaffected individuals (*2*). Determining the difference involves analyzing the genome sequences, along with phenotypic characterization, of hundreds of thousands of people. Large databases are necessary to make this information accessible. The resulting genetic information can inform important medical decisions such as mastectomies, continuous surveillance, testing of family members, family planning choices, and the termination of pregnancies.

The pioneer database of genes, variants, and phenotypes was the Online Mendelian Inheritance in Man (OMIM) (*1*, *3*). The subsequent wealth of data gave rise to several other such public and private databases, including the Human Gene Mutation Database, Locus-specific databases, ClinVar, ExAC/GnomAD, and Human Longevity Institute. The databases have different funders, operate independently of one another, and use different standards. Users must navigate from database to database, which makes the interpretation of the variants time-consuming



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and inefficient. Moreover, a considerable amount of existing data is not yet in public databases, increasing the risk of inaccurate medical conclusions despite existing relevant information.

Genome analyses and related medical guidance could be streamlined by the unification of all databases into a one-stop, user-friendly, high-quality, human-curated database that it is updated daily and publically accessible. The Human Genome Organization (*4*), Human Variome Project (*5*), and Global Alliance for Genomics and Health (*6*), have all advocated for a genomic data sharing solution.

I suggest that the World Health Organization (WHO) is well situated to maintain a unified database of genomic and phenotypic variability. The international stature of WHO provides the legitimacy for its involvement in the project. The funding for such a long-term project should come from the member states and could include funds that currently support existing databases. The governance of a WHO database could be directly linked to WHO's Secretary General to ensure that the project is made a priority. I hope that WHO will lead the way to streamline genomic data storage and accessibility, thereby contributing to the health of all human populations.

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10.1126/science.aan4717

## TECHNICAL COMMENT ABSTRACTS

### Comment on "Dissolved organic sulfur in the ocean: Biogeochemistry of a petagram inventory"

**Thorsten Dittmar, Aron Stubbins, Takamitsu Ito, Daniel C. Jones**

Ksionzek *et al*. (Reports, 28 October 2016, p. 456) provided important data describing the distribution of dissolved organic sulfur (DOS) in the Atlantic Ocean. Here, we show that mixing between water masses is sufficient to explain the observed distribution of DOS, concluding that the turnover time of refractory DOS that Ksionzek *et al*. present cannot be deduced from their data.

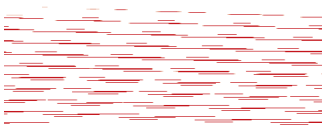
Full text: dx.doi.org/10.1126/science.aam6039

### Response to Comment on "Dissolved organic sulfur in the ocean: Biogeochemistry of a petagram inventory"

**Boris P. Koch, Kerstin B. Ksionzek, Oliver J. Lechtenfeld, S. Leigh McCallister, Philippe Schmitt-Kopplin, Jana K. Geuer, Walter Geibert**

Dittmar *et al*. propose that mixing alone can explain our observed decrease in marine dissolved organic sulfur with age. However, their simple model lacks an explanation for the origin of sulfur-depleted organic matter in the deep ocean and cannot adequately reproduce our observed stoichiometric changes. Using radiocarbon age also implicitly models the preferential cycling of sulfur that they are disputing.

Full text: dx.doi.org/10.1126/science.aam6328



Editor's Summary

**Brazil's public universities in crisis**

Carla C. Siqueira, Carlos Frederico and Duarte Rocha (May 25, 2017)

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