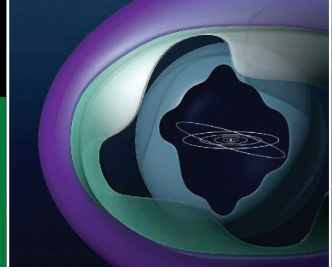
Early epidemiology of AIDS
1642



Voyagers' clear view
1647

LETTERS | BOOKS | POLICY FORUM | EDUCATION FORUM | PERSPECTIVES

LETTERS

edited by Jennifer Sills

Retraction

SCIENCE IS FULLY RETRACTING THE REPORT "DETECTION OF AN INFECTIOUS retrovirus, XMRV, in blood cells of patients with chronic fatigue syndrome" (*1*). Multiple laboratories, including those of the original authors (*2*), have failed to reliably detect xenotropic murine leukemia virus–related virus (XMRV) or other murine leukemia virus (MLV)–related viruses in chronic fatigue syndrome (CFS) patients. In addition, there is evidence of poor quality control in a number of specific experiments in the Report. Figure 1, table S1, and fig. S2 have been retracted by the authors (*3*). In response to concerns expressed about Fig. 2C [summarized in (*4*)], the authors acknowledged to *Science* that they omitted important information from the legend of this figure panel. Specifically, they failed to indicate that the CFS patient–derived peripheral blood mononuclear cells (PBMCs) shown in Fig. 2C had been treated with azacytidine as well as phytohemagglutinin and interleukin-2. This was in contrast to the CFS samples shown in Figs. 2A and 2B, which had not been treated with azacytidine.

Given all of these issues, *Science* has lost confidence in the Report and the validity of its conclusions. We note that the majority of the authors have agreed in principle to retract the Report but they have been unable to agree on the wording of their statement. It is *Science*'s opinion that a retraction signed by all the authors is unlikely to be forthcoming. We are therefore editorially retracting the Report. We regret the time and resources that the scientific community has devoted to unsuccessful attempts to replicate these results.

BRUCE ALBERTS

Editor-in-Chief

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Cultivating a Demand for Clean Cookstoves

IN THEIR POLICY FORUM "A MAJOR ENVIRONmental cause of death" (14 October, p. 180), W. J. Martin II and colleagues highlight the need to stimulate market demand for clean cookstoves because "a stove purchased by the consumer is inherently more valued than one that is received without charge." This widely held view has been challenged, however, by evidence from recent randomized controlled trials studying other preventative health products. These careful experiments have found that, for example, the proportion of households receiving free bednets (*1*) or water treatment (*2*) used their products just as much as those who paid for them. In the case of bednets, increasing the price from free to just 10% of the actual cost decreased demand by 60%, markedly reducing the potential public health benefit. Another study (*3*) found that households given free bednets were more likely to buy one later than were their nonrecipient neighbors, indicating increased willingness to pay after a heavy initial subsidy has demonstrated real-world effectiveness.

These studies bring into question the assertion that demand must be created in a traditional market-based framework. Willingness to pay, which the authors imply must be cultivated, must be distinguished from ability to pay. This is especially true when a product is targeted at the poor, has long-run health benefits that buyers cannot always internalize, and has positive social externalities [such as the role of clean cookstoves in reducing the climate-relevant pollutants methane, CO_2, and black carbon (*4*)].

Market challenges are product and context specific. Lackluster results from decades of stove programs show that market issues remain a key barrier (*5*). New research efforts with improved cookstoves should take advantage of the strengths of randomized controlled trials not only to document health outcomes, as the authors wisely point out, but also to shed light on regionally appropriate finance and dissemination mechanisms.

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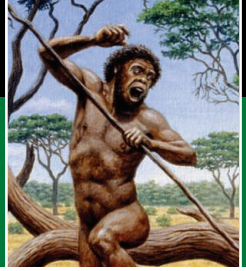

Cooperative behavior

1648

Eukaryotic evolution

1655

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Response

ROBINSON AND BAUMGARTNER REFERENCE recent studies showing that when individuals living in poverty receive new products such as bednets or water purifiers at no cost, their use patterns are similar to those who have purchased the same products (*1*, *2*). Robinson and Baumgartner suggest that the same may be true for cookstoves. We agree that, especially for the poorest of the poor who are not currently paying for cooking fuels or fully engaged in a market economy, this may well be true. We eagerly await similar studies to confirm or deny this hypothesis for cooking solutions that offer improvement in indoor air quality, with the understanding that the effectiveness of the approaches will be specific to regional and cultural contexts.

However, cookstoves and fuels are different from bednets and water purifiers in a variety of ways. Cookstoves, unlike bednets and water purifiers, are an essential household technology that virtually all potential consumers already possess in some form. In addition, the associations between cookstoves and illness may not be as readily apparent as those between mosquitoes and malaria or impure water and diarrheal diseases. The health impacts from indoor smoke may be too far in the future to influence choice. On the other hand, more efficient stoves can offer an immediate benefit to users by reducing fuel costs, a savings to households that bednets and water purifiers cannot make as readily.

We agree that randomized controlled trials (RCTs) provide an excellent opportunity to answer questions about the relative effectiveness of different finance and dissemination approaches. RCTs, in combination with other research approaches, will be critical to understanding the interrelated social, behavioral, and economic determinants of successful implementation programs.

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Letters to the Editor

Letters (~300 words) discuss material published in *Science* in the past 3 months or matters of general interest. Letters are not acknowledged upon receipt. Whether published in full or in part, Letters are subject to editing for clarity and space. Letters submitted, published, or posted elsewhere, in print or online, will be disqualified. To submit a Letter, go to www.submit2science.org.

Turkey's Rich Natural Heritage Under Assault

WE READ WITH SAD AGREEMENT THE EDITORIAL "Turkey and science academies" (30 September, p. 1801), in which B. Alberts discusses the restructuring of Turkey's Academy of Sciences (TÜBA) in order to give the government direct control over it. In addition to destroying TÜBA's identity as an independent science academy, this remarkable decision was made without explanation or any public debate. As ecologists and conservation biologists working in Turkey, we have witnessed a similar level of increasing arbitrariness in environmental policy, where economic development has trumped all other concerns (*1*–*4*).

Turkey hosts more than 3000 endemic plant species, has high diversity of other taxa, and is almost entirely covered by three of the world's 34 biodiversity hotspots (*1*). Yet, Turkey's environmental laws and conservation efforts are eroding, not improving (*1*–*4*). This has precipitated a conservation crisis that has accelerated over the past decade (*1*). This crisis has been exacerbated by legislative developments that may leave Turkey with a nature conservation legal framework that is weakened and severely out of line with globally accepted principles (*1*–*8*). This situation is further worsened by increasing bureaucratic complexity, fragmentation, overlap, and conflict among government departments responsible for nature conservation, combined with limited communication, cooperation, and coordination among them (*2*).

Protected Area jurisprudence, long the cornerstone of effective resource conservation, has declined especially rapidly over the past two years as a result of legal decisions that have enabled:

(i) Mining in wildlife refuges (June 2010) (*5*).

(ii) Exclusion of riparian and coastal areas from wetland conservation zoning, which removed a major environmental control mechanism to dam construction and tourism development (August 2010) (*6*).

(iii) Construction of dams and other energy projects in Protected Areas (December 2010) (*7*), with the ultimate goal of doubling Turkey's dams and hydroelectric power plants to 4000 by 2023 (*1*, *7*).

(iv) Redefining of terms such as "balance between use and conservation," common good," and "sustainable use" in the misleadingly named *Nature and Biodiversity Conservation Law*, while minimizing civil society involvement in its drafting (March 2011) (*2*, *7*, *8*), in order to enable development in Protected Areas.

(v) Zoning 473,419 hectares of 2/B lands deforested before 1981 to convert them to other uses and/or sell them to developers, instead of protecting and restoring these areas, which often include biodiverse and important habitats such as *maquis*, *phrygana*, and successional forests (July 2011) (*1*, *9*).

(vi) Termination of the independent and local Natural and Cultural Assets Conservation Committees, formerly the sole determinants of officially protected "Natural Sites." Instead, this decision-making process has been centralized under the new Ministry of Environment and Urbanization, and the civil society has been excluded (*2*, *7*). Recent legislation (August 2011) (*1*, *2*) puts the 1261 strictly protected Natural Sites created since 1923 under review. We anticipate that many of these Protected Areas, some of which now impede dam construction and other development projects, will not survive what will likely be a biased review process (*3*, *7*, *8*).

The 2010 Yale Environmental Performance Index (*10*) ranked Turkey 140th out of 163 countries in biodiversity and habitat conservation. Even the meager 1.2% of Turkish lands that are "strictly" protected [IUCN categories I and II (*11*)] have come under threat (*1*). Analogous to the midnight overhauling of TÜBA without consultation or debate, it has

become routine to pass legislation rapidly and secretively, and to circumvent or corrupt the Environmental Impact Assessment process, in order to remove any debate or legal obstacles to dams, roads, and other developments. Increasingly, such projects are planned in formerly Protected Areas to the detriment of local peoples as well as biodiversity (*4*, *7*). July 2011 division of the Ministry of Environment and Forestry into the Ministry of Environment and Urbanization and the Ministry of Forestry and Water Affairs (led by the former heads of public housing and water affairs agencies, respectively) has institutionalized the emphasis placed on urban development and dam construction at the expense of the environment (*12*) and of the rights of the affected people (*4*, *7*). Combined with the rise in Turkey's greenhouse gas emissions from 170 to 370 million tons between 1990 and 2009, this growing destruction of natural areas will further increase Turkey's contribution to global climate change (*13*). These issues have rarely been discussed in international forums, although this is changing (*1*, *4*, *7*, *12*). Nevertheless, the international scientific community remains largely unaware of both Turkey's unique biodiversity and its impending peril. As the international scientific community reacts to the arbitrary government takeover of Turkey's scientific institutions, we hope that it will realize that the government is disregarding not only the country's scientists, but also Turkey's rich natural heritage and the people who depend on it.

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CORRECTIONS AND CLARIFICATIONS

Perspectives: "Priming cancer cells for death" by J. C. Reed (25 November, p. 1075). On page 1076, column 2, paragraph 2, line 4, "The" should have been "Most." The corrected sentence reads, "Most malignancies tested by Ni Chonghaile *et al*. were nonadherent cancer cells tested in suspension."

Perspectives: "Antioxidant strategies to tolerate antibiotics" by P. Belenky and J. J. Collins (18 November, p. 915). On page 915, column 2, paragraph 2, the fourth and fifth sentences should read: "By studying mutant bacteria deficient in the stringent response, Nguyen *et al*. found that the stringent response induces tolerance to a wide range of antibiotics (including ofloxacin, meropenem, colistin, and gentamicin) by increasing antioxidant enzyme production and blocking the production of pro-oxidant molecules, thus reducing toxic OH•." These mutant bacteria also were more susceptible to ofloxacin in mouse infection models.

Editors' Choice: "Building bigger brains" by L. M. Zahn (4 November, p. 571). In the accompanying illustration, acquired from a stock photo site, the brain was oriented backwards.

News Focus: "A very big bang" by R. Stone (4 November, p. 586). The bottom photo of Hans-Ulrich Schmincke in the sidebar on page 586 should have been credited to Katinka Schuett. The credit has been corrected in the HTML version online.

News Focus: "Sharp insights and a sharp tongue" by K. Kupferschmidt (4 November, p. 589). The credit for the photograph on page 590 should have noted that the copyright is owned by Jay Friedheim. The credit has been corrected in the HTML version online.

Reports: "Detection of the water reservoir in a forming planetary system" by M. R. Hogerheijde *et al*. (21 October, p. 338). On page 339, the mass of the detected water vapor is incorrectly stated to be 7.3 x 10^{24} g. The correct value is 7.3 x 10^{21} g. The HTML version online has been corrected.

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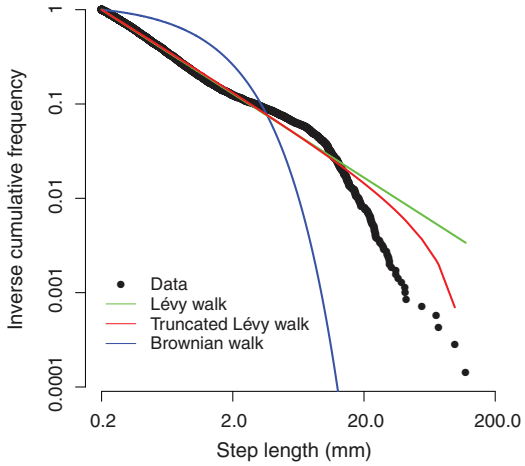
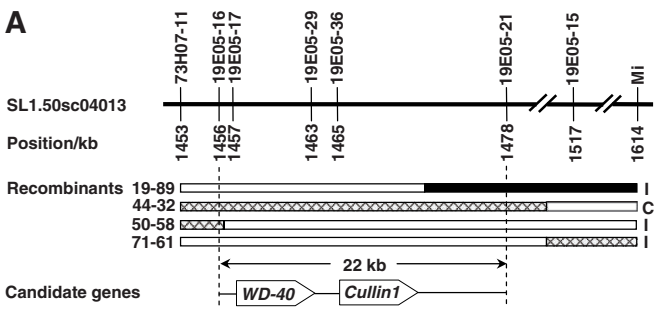
Reports: "Lévy walks evolve through interaction between movement and environmental complexity" by M. de Jager *et al*. (24 June, p. 1551). The statistical analysis of the mussel movement contained errors, which were pointed out by V. Jansen. First, the data that was used contained duplicates of a number of individuals, while other individuals had accidentally been omitted. Second, the parameter of the exponential distribution (which describes the Brownian walk strategy) was mistakenly estimated without considering the lower boundary of the data. Third, the AIC was estimated incorrectly, by using a least-squares rather than a maximum-likelihood calculation. Additionally, the weighed AIC was calculated incorrectly. These mistakes have been corrected using the methods of Edwards *et al*. [A. M. Edwards *et al*., *Nature* **449**, 1044 (2007)]; the results of the new analysis are plotted in a new Fig. 1B shown here (left). In Fig. 1B of the original Report, a Rayleigh distribution was accidentally plotted instead of an exponential distribution to describe the Brownian walk. In the statistical analysis, however, an exponential distribution was used to describe a Brownian walk. Furthermore, the movement patterns of mussels in different density treatments were reanalyzed after the comments of F. van Langevelde. The former results were found to be erroneous due to an error in the script; the scaling exponent of the movement strategy does not stay constant when mussel density increases. Although some corrections were made to the data and movement analysis, the overall conclusion of the paper that mussels adopt a Lévy walk, especially when alone, remains unchanged. We thank V. Jansen and F. van Langevelde for bringing these issues to our attention.



Perspectives: "Functional extinctions of bird pollinators cause plant declines" by C. H. Sekercioglu (25 February, p. 1019). In the equation in the caption, the first "100" should have been "log". The correct equation is: Specialization index = log [100/(number of habitats used × number of food types eaten)]. The error has been corrected in the HTML and PDF versions online.

Reports: "A pollen factor linking inter- and intraspecific pollen rejection in tomato" by W. Li and R. T. Chetelat (24 December 2010, p. 1827). Figure 1A did not display the correct patterns within the four horizontal bars representing genotypes of recombinants. The bars should have appeared as follows (open bars, homozygous for *S. lycopersicum* allele; hatched, heterozygous; solid, homozygous *S. pennellii*). The corrected figure is shown here (right). The figure has also been corrected in the HTML version online.



TECHNICAL COMMENT ABSTRACTS

Comment on "Nocturnality in Dinosaurs Inferred from Scleral Ring and Orbit Morphology"

Margaret I. Hall, E. Christopher Kirk, Jason M. Kamilar, Matthew T. Carrano

Schmitz and Motani (Reports, 6 May 2011, p. 705) claimed to definitively reconstruct activity patterns of Mesozoic archosaurs using the anatomy of the orbit and scleral ring. However, we find serious flaws in the data, methods, and interpretations of this study. Accordingly, it is not yet possible to reconstruct the activity patterns of most fossil archosaurs with a high degree of confidence.

Full text at www.sciencemag.org/cgi/content/full/334/6063/1641-b

Response to Comment on "Nocturnality in Dinosaurs Inferred from Scleral Ring and Orbit Morphology"

Lars Schmitz and Ryosuke Motani

Hall *et al*. claim that it is not yet possible to infer the diel activity patterns of fossil archosaurs with high confidence. We demonstrate here that this assertion is founded on unscreened data, untenable assumptions, and inappropriate methods. Our approach follows ecomorphological and phylogenetic principles in a probabilistic framework, resulting in statistically well-supported reconstructions of diel activity patterns in Mesozoic archosaurs.

Full text at www.sciencemag.org/cgi/content/full/334/6063/1641-c

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