

Chemical weapons  
among arthropods

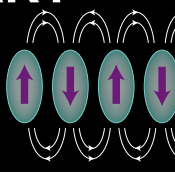
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## LETTERS

edited by Etta Kavanagh

### HIV Research and Access to Treatment

THE POLICY FORUM "PROMOTE CHEMOPROPHYLAXIS RESEARCH, DON'T PREVENT IT" (R. M. GRANT *ET AL.*, 30 Sept. 2005, p. 2170) provides a strong rationale for continuing, and even increasing, field research on the applicability of using antiviral drugs to prevent HIV infection in high-risk individuals and subpopulations, particularly in the developing world. It also cogently elaborates best practices for conducting such research ethically. The authors, however, finesse too

"Lack of a guarantee for ultimate access...**would undermine the very basis of doing research** in that community or population."

—Warren

smoothly three major issues that have been and will continue to be cause for controversy: liability, adjunct therapy, and access.

Although in some cases, expectations may be unreasonable, there is growing acceptance that compensation for physical harm, antiretroviral treatment for HIV infection during the course of

the trial, and a binding commitment for access to the product under investigation if proven safe and effective are legitimate and achievable in clinical research no matter where it is conducted.

Treatment or compensation for physical harm should be a universal standard for medical research. HIV treatment worldwide is coming to be seen as an accepted goal, so those relatively few participants who become infected while in studies can justifiably insist on availability from the study until national programs replace it. Lack of a guarantee for ultimate access, for whatever reason, would undermine the very basis of doing research in that community or population. Increasingly, the international debate is not about the ethics of whether these protections and benefits are appropriate and should be provided, but the logistics of how they can be delivered over many years.

Although there may be no strict international ethical consensus about how to provide for individuals or communities that participate in such research, trial volunteers clearly have the right to negotiate for whatever support they consider necessary and to refuse to participate if it is not provided by sponsors, manufacturers, research institutions, and governments that wish to conduct or support such research.

To argue that research began before such understandings and systems were in place, that "goodwill efforts" would be sufficient, or that prices have come down does not excuse anyone from doing the difficult work of resolving each situation to the satisfaction of all directly concerned. "Good faith" and "a balance" between means and ends should not let anyone conducting or supporting research off that hook.

MITCHELL WARREN

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#### Response

WARREN HIGHLIGHTS DIFFICULT AND IMPORTANT issues that apply to all medical research. We agree there are no easy solutions. Clear progress will require ongoing collaboration between communities, investigators, sponsors, and governments. As we all struggle to make best prac-

tices even better, we think that research that meets all current standards should proceed, provided that local ethical review boards and fully informed participants agree.

We are taking steps to ensure that PrEP will be accessible to vulnerable populations if it is found to be safe and effective for them. All

African countries, and many in Asia and Latin America, are included in Gilead's global access program, which offers tenofovir at the cost of manufacturing, which recently decreased to U.S. \$0.57 per day (1). A range of agreements have been made to make PrEP available to study participants after the trial, if PrEP is found to be useful. Appropriate long-term implementation of research findings is being promoted through ongoing communication between investigators, communities, research sponsors, health care sponsors, and governments. If found to be highly effective in current trials, PrEP is expected to be affordable, with cost-effectiveness that is comparable to current prevention programs (2).

Some people around the world are dying of AIDS because combination antiretroviral treatment is not yet available to them. As members of the global community affected by HIV/AIDS, PrEP researchers and sponsors have made donations to the Global Fund, taught medical courses, assisted with funding applications, provided equipment, helped design and construct clinics, and provided laboratory and clinical services. Antiretroviral therapy has become available through public programs in all regions where PrEP research is conducted. PrEP research protocols also provide primary care

"[A] lifelong guarantee of treatment **could exhaust limited research resources and does nothing** for those who elect not to participate in research."

—Grant *et al.*

and laboratory testing for persons found to be infected during the study, because we have the resources, and we need to learn whether PrEP attenuates the course of HIV infection, if some are not completely protected (3, 4).

The issue of whether trial sponsors should guarantee lifetime antiretroviral therapy led to contentious debates in vaccine research (5). The present outcome of this debate is that trials rely on publicly funded programs in the host countries to provide antiretroviral treatment to infected trial participants. This outcome reflects both financial and ethical considerations: a lifelong guarantee of treatment could exhaust limited research resources and does nothing for those who elect not to participate in research. PrEP trials have similar ethical, financial, and logistical con-

straints (6). Despite these constraints, PrEP trials in resource-poor settings have set aside funds for treatment of side effects, if they occur.

The sponsors of PrEP trials are public and nonprofit institutions that have nothing to gain from marketing of the drug and have little influence over global policies. The drug developer is donating the drug and matching placebo for the trials but is not providing any funding, partly because they have no current plans to market the drug for prevention (7). The sponsors and investigators offer well-designed studies, with all available safeguards, which claim to find new ways to stop the spread of HIV to trial participants and their communities. We also offer our goodwill to the struggles for social justice. While goodwill alone is never sufficient, it is a necessary foundation on which we all build.

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## Continuing Progress in Neuroinformatics

MOST PEOPLE WOULD RECOGNIZE THAT THE Decade of the Brain (1990–2000, established by Presidential Proclamation 6158, 17 July 1990) successfully enriched research on neural function and provided a fruitful beginning to greater support and progress (1). This effort highlighted the scientific excitement surrounding research on the brain and its significance for public health. One of the most prominent programs to come from this initiative has been the National Institute of Mental Health–based Human Brain Project (HBP) (2), a program to promote and fund activities seeking to collect, archive, model, and openly share primary

neuroscience data from the molecular to systems levels (see [www.nimh.nih.gov/neuroinformatics/index.cfm](http://www.nimh.nih.gov/neuroinformatics/index.cfm)).

Supporting as many as 42 individual projects and hundreds of investigators, the HBP has been the mechanism through which the field of neuroscience has enjoyed the production of valuable resources. It has made possible rich three-dimensional brain imaging atlases, cellular recording databases from implanted electrodes, the dissemination of complete functional neuroimaging data sets (3), and the development of sophisticated analysis and visualization tools, and it has spawned the genesis of neuroinformatics as an active area of research (4). As part of the Roadmap initiative, the NIH now considers it time to identify new ways in which this field can best be integrated with initiatives from other institutes and funding agencies if we are to advance research and development of informatics tools and resources for neuroscience. In light of this decision, it was announced that the program had expired (NIH NOT-NH-05-104) and the last applications for funding under the HBP were collected 22 September 2005. And yet, a new, specifically defined component for neuroinformatics and databasing appears to be missing from these recently announced federal programs.

Neuroinformatics, like bioinformatics, is now an accepted and legitimate area of research (5) and should not be ignored or given short shrift under new federal research directives. Several of us are current and former HBP grantees, and we are alarmed that the NIH has chosen to poorly support neuroinformatics under the NIH Roadmap and Neuroscience Blueprint initiatives. As

**"We are alarmed that the NIH has chosen to poorly support neuroinformatics under the NIH Roadmap and Neuroscience Blueprint initiatives."**

—Gazzaniga *et al.*

those who have used databases for research for some time, we also realize their power for maximizing the return on investment (public funds for research). With belt tightening clearly under way, we should be redoubling our efforts to make the most of what we already have. Congress and the public should demand nothing less.

We hope that the spirit of the original HBP and associated efforts originating during the Decade of the Brain toward the management and mining of increasingly vast arrays of brain data being collected can be resurrected and reenergized. The Roadmap and Blueprint programs appear to be the best means for this to happen. Unless a real and decisive action plan is implemented soon, many existing efforts may shut down. It would be disappointing, indeed, to see current efforts falter and to be

forced to wait another decade for federal funding agencies to appreciate the work left to be done toward building a comprehensive database of the human brain and its disorders.

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## Loss of Grants Hurts the Vulnerable

THE DECISION TO WITHDRAW THE GLOBAL FUND grants to treat AIDS, tuberculosis, and malaria from Myanmar (formerly Burma), one of the world's poorest countries ("Global Fund pulls Myanmar grants," J. Cohen, *News of the Week*, 26 Aug. 2005, p. 1312), has attracted attention from activists, scientists, and Burmese expatriates. It seems that the United Nations and the Global Fund have fallen into a mindset of 20th century "sanction-oriented policies," despite the hard lessons learned from previous sanctions on countries such as Cuba, Iraq, and North Korea. What should perhaps be obvious, after the years of futile pressure applied on these countries, is that sanctions ultimately punish only the most vulnerable segments of the totalitarian society instead of those who are in power and truly accountable.

Surprisingly, the UN and the Global Fund ignored the warnings of Jeffrey Sachs and others who have argued that sanctions in Myanmar are likely to be counterproductive (1). Epidemiologists agree that the consequences of letting these infectious diseases take their course in Burma could be dire. Responsible officials in the UN and the Global Fund should therefore understand that the decision to abandon 600,000 Burmese HIV/AIDS sufferers plus tuberculosis and malaria patients would likely unleash epidemics of unprecedented proportions. Because of the steep increase in the number of the new cases, Southeast

Asia requires outside AIDS programs more than any other region. Withdrawal of these grants under current circumstances should not be an option.

**KAROL SESTAK**

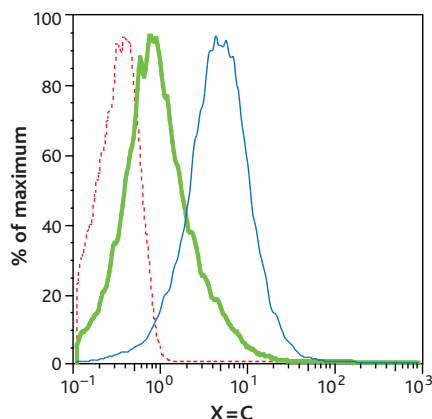
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### CORRECTIONS AND CLARIFICATIONS

**REPORTS:** "Ubiquitination on nonlysine residues by a



viral E3 ubiquitin ligase" by K. Cadwell and L. Coscoy (1 July 2005, p. 127). In Fig. 3B, the top left panel was inadvertently duplicated and printed a second time as the top right panel. The correct version of the top right panel of Fig. 3B appears here. The conclusions of the paper are not affected by this error.

**REPORTS:** "Hf-W chronometry of lunar metals and the age and early differentiation of the Moon" by T. Kleine *et al.* (9 Dec. 2005, p. 1671). The URL for the Supporting Online Material was incorrect. The Supporting Online Material can be found at [www.sciencemag.org/cgi/content/full/1118842/DC1](http://www.sciencemag.org/cgi/content/full/1118842/DC1). In addition, this report was published online 24 November 2005 on *Science Express*. Please include this information when citing this paper.

**REPORTS:** "The chemistry of deformation: how solutes soften pure metals" by D. R. Trinkle and C. Woodward (9 Dec. 2005, p. 1665). In the last sentence of the first full paragraph on p. 1667, there was an error in the equation for the solute barrier energy scale. It should be  $25 \sqrt{c} |E_{\text{int}}|$ .

### TECHNICAL COMMENT ABSTRACTS

#### Comment on "Iron Isotope Constraints on the Archean and Paleoproterozoic Ocean Redox State"

**Kosei E. Yamaguchi and Hiroshi Ohmoto**

Rouxel *et al.* (Reports, 18 February 2005, p. 1088) argued that changes in the iron isotopic composition of sedimentary sulfides reflect changes in the oxidation state of the atmosphere-ocean system between 2.3 and 1.8 million years ago. We show that misinterpretations of the origins of

these minerals undermine their conclusions.

Full text at

[www.sciencemag.org/cgi/content/full/311/5758/177a](http://www.sciencemag.org/cgi/content/full/311/5758/177a)

#### Response to Comment on "Iron Isotope Constraints on the Archean and Paleoproterozoic Ocean Redox State"

**Olivier J. Rouxel, Andrey Bekker, Katrina J. Edwards**

We reported a secular trend in iron isotope values of Precambrian sedimentary pyrite and related it to the changing redox state of Precambrian oceans. We restate that the iron cycle before 1.8 billion years ago was different from that now and reflected the rise of atmospheric oxygen and the subsequent moderate atmospheric oxygen level in the Paleoproterozoic.

Full text at

[www.sciencemag.org/cgi/content/full/311/5758/177b](http://www.sciencemag.org/cgi/content/full/311/5758/177b)

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