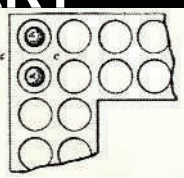

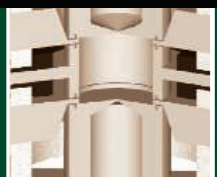

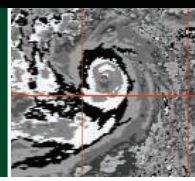

LETTERS

edited by Etta Kavanagh

Adult Stem Cell Treatments for Diseases?

OPPONENTS OF RESEARCH WITH EMBRYONIC STEM (ES) CELLS OFTEN CLAIM THAT ADULT STEM cells provide treatments for 65 human illnesses. The apparent origin of those claims is a list created by David A. Prentice, an employee of the Family Research Council who advises U.S. Senator Sam Brownback (R–KS) and other opponents of ES cell research (*1*).

Prentice has said, "Adult stem cells have now helped patients with at least 65 different human diseases. It's real help for real patients" (*2*). On 4 May, Senator Brownback stated, "I ask unanimous consent to have printed in the Record the listing of 69 different human illnesses being treated by adult and cord blood stem cells" (*3*).

In fact, adult stem cell treatments fully tested in all required phases of clinical trials and approved by the U.S. Food and Drug Administration are available to treat only nine of the conditions on the Prentice list, not 65 [or 72 (*4*)]. In particular, allogeneic stem cell therapy has proven useful in treating hematological malignancies and in ameliorating the side effects of chemotherapy and radiation. Contrary to what Prentice implies, however, most of his cited treatments remain unproven and await clinical validation. Other claims, such as those for Parkinson's or spinal cord injury, are simply untenable.

"By promoting the falsehood that adult stem cell treatments are already in general use for 65 diseases and injuries, Prentice and those who repeat **his claims mislead laypeople and cruelly deceive patients"**

—Smith *et al.*

The references Prentice cites as the basis for his list include various case reports, a meeting abstract, a newspaper article, and anecdotal testimony before a Congressional committee. A review of those references reveals that Prentice not only misrepresents existing adult stem cell treatments, but also frequently distorts the nature and content of the references he cites (*5*).

For example, to support the inclusion of Parkinson's disease on his list, Prentice cites congressional testimony by a patient (*6*) and a physician (*7*), a meeting abstract by the same physician (*8*), and two publications that have nothing to do with stem cell therapy for Parkinson's (*9*, *10*). In fact, there is currently no FDA-approved adult stem cell treatment—and no cure of any kind—for Parkinson's disease.

For spinal cord injury, Prentice cites personal opinions expressed in Congressional testimony by one physician and two patients (*11*). There is currently no FDA-approved adult stem cell treatment or cure for spinal cord injury.

The reference Prentice cites for testicular cancer on his list does not report patient response to adult stem cell therapy (*12*); it simply evaluates different methods of adult stem cell isolation.

The reference Prentice cites on non-Hodgkin's lymphoma does not assess the treatment value of adult stem cell transplantation (*13*); rather, it describes culture conditions for the laboratory growth of stem cells from lymphoma patients.

Prentice's listing of Sandhoff disease, a rare disease that affects the central nervous system, is based on a layperson's statement in a newspaper article (*14*). There is currently no cure of any kind for Sandhoff disease.

By promoting the falsehood that adult stem cell treatments are already in general use for 65 diseases and injuries, Prentice and those who repeat his claims mislead laypeople and cruelly deceive patients (*15*).

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4. According the latest version of the list, accessed 12 July 2006.
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Name Dropping on Decapods

THE EXCITEMENT AND PUBLICITY SURROUNDING the discovery of a new and unusual decapod crustacean from Pacific hydrothermal vents ("A crustacean Yeti," Random Samples, 17 Mar., p. 1531) is well deserved. However, the new family proposed to accommodate the species is hardly "the first new family of decapods… in a century."

The most recent compilation of all currently recognized extant decapod families (*1*) lists 36 families of decapods—nearly a quarter of all recognized decapod families—that have been erected or newly recognized since 1906. Although some of the family names recognize assemblages that were previously known but only recently treated as families, many are based on novel finds. Included among these are at least two families based on species that are, like the new "Yeti crab," endemic to or restricted to hydrothermal vents and cold hydrocarbon seeps: the brachyuran crab family Bythograeidae (*2*) and the caridean shrimp family Alvinocarididae (*3*), based on the genus *Alvinocaris*, a name that honors the DSV Alvin, a submarine that was first launched in 1964.

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Questions About Mass Spectrometry Data

I AM WRITING TO EXPRESS MY PERSONAL CONcerns about Hao Xin's article "University clears Chinese biophysicist of misconduct" (News of the Week, 28 Apr., p. 511).

On 19 April, Hao sent me an interview request regarding an alleged misconduct case against Xiao-Qing Qiu of Sichuan University. According to Hao, Qiu had told her that the mass spectrometric analysis (MS) I did for his project verified his hypothesis that there was a "thiolactone ring" present in the protein pheromonicin. Hao asked me to explain to her in lay terms what I did and what the significance of this ring was. Hao's e-mail brought to my attention Qiu's paper, "An engineered multidomain bactericidal peptide as a model for targeted antibiotics against specific bacteria" (*1*). Reading the paper, I found that data from liquid chromatography–mass spectrometry (LC-MS) analysis were used to confirm the presence of the thiolactone ring in pheromonicin (p. 1481). I told Hao that I performed an MS analysis for Qiu at his request in 2003, but the results of the analysis I performed do not support the findings of the above-referenced article.

Qiu's stated interest with regard to the sample he provided to me in 2003 was, as above, in confirming the presence of the thiolactone ring in pheromonicin. On the basis of my memory and saved documents, his samples did not contain peptides at the predicted peptide masses within the mass measurement accuracy of the instrument or any masses matching the tryptic peptides of pheromonicin. I informed Qiu of this finding in early July of 2003. I do not know how Qiu obtained the MS data for his paper. However, I explained explicitly to Hao that the MS data presented in the paper have high mass measurement errors and should not have been used in the paper even if they were observed in mass spectra. The ultimate proof, of course, will be the reproducible production of the functional polypeptide based on Qiu's protocol.

HAITENG DENG

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Extinction Risk and Conservation Priorities

THREATENED SPECIES LISTS BASED ON EXTINCtion risk are becoming increasingly influential for setting conservation priorities at regional, national, and local levels. Risk assessment, however, is a scientific endeavor, whereas priority setting is a societal process, and they should not be confounded (*1*). When establishing conservation priorities, it is important to consider financial, cultural, logistical, biological, ethical, and social factors in addition to extinction risk, to maximize the effectiveness of conservation actions.

The IUCN Red List Categories and Criteria (*2*) for assessing extinction risk are used through much of the world as an objective and systematic tool to develop regional, national, and local lists of threatened species (i.e., "Red Lists") [e.g., (*3*, *4*)]. Although it is widely recognized that a range of factors must be considered when establishing conservation priorities (*5*–*9*), a tendency still exists to assume that Red List categories represent a hierarchical list of priorities for conservation action and thus to establish conservation priorities based primarily, or even solely, on extinction risk. A survey of 47 national governments from around the world found that 82% of the countries that have or plan to prepare a national threatened species list are using these lists and/or the IUCN criteria in conservation planning and priority setting (*10*). Four of those countries automatically accord protected status to nationally threatened species. The actual number of countries that automatically and directly prioritize the most threatened species, without considering other factors, is undoubtedly greater.

Although extinction risk is a logical and essential component of any biodiversity conservation priority-setting system, it should not be the only one. While extinction risk assessment should be as objective as possible, priority setting must combine objective and subjective judgments, e.g. cultural preferences, cost of action, and likelihood of success (*4*, *8*, *9*). This process should not, however, be an excuse for lack of transparency. Effective priority-setting mechanisms should be explicit and include a rationale to justify the approaches taken.

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Confidentiality in Genome Research

THE POLICY FORUM ARTICLE "NO LONGER DEidentified" by A. L. McGuire and R. A. Gibbs (21 Apr., p. 370) discusses the importance of protecting privacy in genomic research and informing subjects of the privacy risks associated with public data-sharing in the consent process. In particular, the authors propose adopting a stratified consent process presenting three levels of confidentiality based on the number of single-nucleotide polymorphisms (SNPs) to be released.

It is necessary and crucial for all subjects to be fully informed about how their DNA data may be distributed, and to decide with whom they want their data shared. However, basing the decision to release data solely on the number of SNPs and their origin in single versus multiple gene loci is inadequate. The level of privacy risks posed by SNPs is also affected by many other factors, including linkage disequilibrium (LD) patterns among SNPs and frequencies of SNPs in the population.

Modest numbers of SNPs, especially those

Letters to the Editor

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statistically independent ones, are as identifiable as social security numbers (*1*). Twenty statistically independent SNPs from single gene loci could pose more of a privacy threat than 75 SNPs with high LD from multiple gene loci. Even releasing eight SNPs can be risky for individuals with rare alleles, particularly if they are associated with a known phenotype. Therefore, it would be misleading to use arbitrary numbers of SNPs as a confidentiality indicator in the consent process. Nevertheless, we agree with the authors that sharing SNP data requires sufficient safeguards. Further risk assessment and strategy discussion will be needed.

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CFCs and the Size of the Ozone Hole

THE NETWATCH ITEM "OZONE TRACKER" (9 June, p. 1447) furthers the common misconception that the size of the Antarctic ozone hole is a function of ozone-destroying chlorofluorocarbons (CFCs). The column amount of ozone within the hole (its depth) may be controlled, in part, by inorganic chlorine derived from the breakup of CFCs, but the area occupied by the hole is not. Indeed, in the face of steadily rising amounts of atmospheric CFCs, the area has shrunk several times since 1979. It is cold wind-driven climatic conditions that create the polar vortex. This vortex isolates the atmosphere in the area of the hole, and polar stratospheric clouds forming within it may foster the deepening of the hole with destruction of the trapped ozone, but the total area covered by the vortex has nothing to do with CFCs.

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CORRECTIONS AND CLARIFICATIONS

Letters: "Response" by Q. Lan *et al.* (19 May, p. 998). Because of an editing error, the reference list was numbered incorrectly. They are listed correctly here:

1. S. N. Yin *et al.*, *Br. J. Ind. Med.* **44**, 124 (1987).
2. N. Rothman *et al.*, *Cancer Res.* **57**, 2839 (1997).
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6. S. Kim *et al.*, *Carcinogenesis*, 8 Dec. 2005; Epub ahead of print.

The reference numbers within the text are correct.