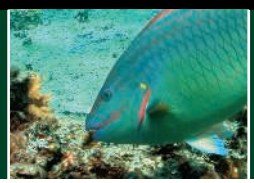

LETTERS

edited by Etta Kavanagh

Editorial Expression of Concern

THE REPORT ENTITLED "PATIENT-SPECIFIC EMBRYONIC STEM CELLS DERIVED FROM HUMAN SCNT blastocysts" by W. S. Hwang *et al.* (*1*) reported the establishment of 11 human embryonic stem cell lines by somatic cell nuclear transfer of skin cells from patients with disease or injury into donated oocytes. Hwang and G. Schatten, the corresponding authors of the paper, have notified *Science* of their intention to retract the paper. Hwang has sent us some language that he intends to use in the retraction. We have requested more information from the authors as well as agreement from all the co-authors to retract the paper.

On 23 December 2005, the Seoul National University Investigation Committee provided an interim report on their investigation of Woo Suk Hwang's research. The report (*2*) stated that "the experimental data submitted to *Science* in support of 11 stem cell lines (DNA fingerprinting, microscopic photos, confirmation of teratomas, etc.) were all derived from 2 cell lines" and that "the Committee finds that the experimental data published in the 2005 *Science* paper were based on a deliberate manipulation, in other words a fabrication of research results." The report also states that "The Investigation Committee has submitted samples of cell lines 2 and 3 for DNA testing in order to determine their authenticity."

An earlier paper by Hwang and colleagues (*3*) attracted much attention as the first demonstration of the derivation of a pluripotent embryonic stem cell line from a cloned human blastocyst. Given the concerns raised about the 2005 paper, we are undertaking a careful review of the 2004 paper as well and expect to consult with outside advisers as needed. The SNU Investigation Committee announced that it has begun an investigation of this paper and of other work from the Hwang lab.

Science is publishing this expression of concern to alert our readers that serious concerns have been raised about the validity of the findings in these two papers. We are working with the authors and SNU to proceed with the retraction of the 2005 paper (*1*). We will provide more information on the 2004 paper as it becomes available.

DONALD KENNEDY

Editor-in-Chief

References

1. W. S. Hwang *et al.*, *Science* **308**, 1777 (2005).
2. Interim Report on Professor Hwang Woo-Suk, Investigation Committee, Seoul National University, released 23 Dec. 2005.
3. W. S. Hwang *et al.*, *Science* **303**, 1669 (2004).

Revamping NIH Study Sections

ANTONIO SCARPA, DIRECTOR OF NIH'S CENTER for Scientific Review, has stated his intention to enhance efficiency and recruit excellent reviewers for NIH peer review. As an NIH grant holder for 30-odd years and former study section member, I propose the following.

Every NIH grant holder above the rank of assistant professor should be required to serve on an NIH study section once a year. It would be a responsibility, like jury duty; those too busy to serve would be presumed incapable of effectively administering a grant. Actual service time would likely be considerably less. A normal study section load of 10 to 12 grants would thus require service only every other year.

Advantages would be the following:

1) Experienced senior scientists would be brought back into the system. Inexperienced assistant professors would be removed, to their own great benefit. The quality of scientific review would immediately improve.

2) The onerous workload of a full-time study section member would be eliminated.

3) Peer review would become less political. Each study section tends to develop its own subculture, but this is not necessarily a good thing. A study section's task is to identify for NIH those projects of greatest scientific merit. A fresh look at a revised proposal by a new panel of peers will maintain focus on its fundamental significance and avoid overemphasis on subculture-sensitive details.

One frequently voiced objection is that such required service will be performed grudgingly and therefore badly. But most of us will adhere to accepted professional standards, even when performing an onerous task. Further, the study section acts as its own peer reviewer; nobody wants to present an incompetent critique before peers.

Such "full participation" would correct some of the distortions that threaten to overwhelm this basically admirable process.

JOHN LENARD

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Clarifications on miRNA and Cancer

THE NEWS FOCUS ARTICLE "A NEW CANCER player takes the stage" (4 Nov. 2005, p. 766) by J. Couzin on miRNAs and cancer has a quote from me that has been taken out of context and conveys exactly the opposite meaning of my unedited comments.

To clarify, some of the miRNAs induced during cell differentiation may down-regulate cell division programs. Because miRNAs down-regulate target mRNA genes through complementary sites in their 3′ UTRs, oncogene targets with mutations in miRNA-complementary sites might escape miRNA regulation to generate dominant activating oncogene mutations. Such gain-of-function mutations are seen in plant genes that regulate cell division at the meristem.

Other miRNAs are overexpressed or amplified in animal tumors, suggesting that these miRNAs negatively regulate tumor suppressor or proapoptotic genes.

Many dominant oncogenes have been revealed by cell transformation assays over the past 30 years. If miRNA negative regulation of oncogenes is a key element in cancer etiology, I am surprised that 3′ UTR mutations in oncogenes were not detected in such transfection experi-

ments. In addition, I would have expected the miRNA genes that target tumor suppressor genes to have been recovered in such transformation experiments. These RNA genes may not have been recognized as encoding miRNAs and the oncogene 3′UTRs may not have been recognized as miRNA targets, but I would have expected the oncogene canon of today to have included more regulatory RNAs and mention the importance of 3′UTRs as sites of oncogene regulation.

I expressed to Couzin my belief that "I just find it hard to believe that the cancer people were that lame" to have missed such mutations in 3′ UTRs by only sequencing open reading frames of oncogenes, or to have missed regulatory RNA genes because they dropped the study of oncogenes without open reading frames. The quote in this context has precisely the opposite meaning to its use in the article. The more likely reason why so little evidence for miRNAs emerged from previous oncogene genetics is that the fibroblast cell transformation techniques used to detect dominant oncogenes systematically failed to detect miRNA-based regulatory defects, for example, because the 3T3 fibroblasts may be deficient in components essential for miRNA-based regulation, because the miRNA-based gene activations are not strong enough to bypass other cell cycle controls, or because miRNAs are modulatory to oncogenes but are not central to tumor initiation or progression.

GARY RUVKUN

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Coastal Vegetation and the Asian Tsunami

THE BARRIER FUNCTION OF COASTAL VEGETATION during the recent tsunami disaster has been highlighted by the results of F. Danielsen *et al.* ("The Asian tsunami: a protective role for coastal vegetation," Brevia, 28 Oct., p. 643). Their conclusions confirm assumptions made earlier by Pearce (*1*), Williams (*2*), and many others. Although the authors used a limited analytical approach on a single Indian lagoon, there are some caveats they did not address.

First, the authors assessed pre-tsunami vegetation cover using remotely sensed data and categorized vegetation as dense, open, and no trees. However, as highlighted by Dahdouh-Guebas *et al.* (*3*), "cryptic ecological degradation" in the field may be masked on remotely sensed imagery, and mangroves that appear healthy by species composition and density on remote sensing imagery may in fact be subject to strong qualitative degradation. The concept of cryptic ecological degradation in mangrove forests is even more important in light of these forests having provided less protection during the recent tsunami than 24 other Sri Lankan lagoons, as evident from cluster analyses (*4*). Considering the ability to extract such important qualitative information at a resolution of species and even individuals (*5*), the very high resolution IKONOS and QuickBird satellite imagery, to which the authors had access, has not been used to its full potential.

Second, the authors do not identify variation in house construction or variation in mangrove settings as possible factors influencing damage to the villages. The image of the mosque as the only building left standing in Banda Aceh after the tsunami hit (*6*) suggests that the architecture of buildings or the materials that are used for their construction may have been a determining factor in withstanding the tsunami wave. Their fig. 1 suggests that there are at least two different types of mangrove settings: fringing forests and riverine forests (*7*). This may have influenced the impact of the tsunami as well.

Finally, only three of the villages analyzed are located behind a potential barrier. Most of the villages were very close to the ocean (see Danielsen *et al.*'s fig. 1), in which tsunami destruction, somehow attenuated by beachfront *Casuarina* plantations, is evident. A comparison between villages located at a (similar) distance from the coastline but protected to various extents by different types of barriers or no barriers at all is not made. Such a comparison could have accounted for the variation in distance to the coast.

FARID DAHDOUH-GUEBAS AND NICO KOEDAM

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References

1. F. Pearce, *New Sci.* **150**, 7 (1996).
2. N. Williams, *Curr. Biol.* **15**, R73 (2005).
3. F. Dahdouh-Guebas *et al.*, *Curr. Biol.* **15**, 579 (2005).
4. F. Dahdouh-Guebas *et al.*, *Curr. Biol.* **15**, R443 (2005).
5. F. Dahdouh-Guebas *et al.*, *Syst. Biodiversity* **2**, 113 (2005).
6. W. N. Adger *et al.*, *Science* **309**, 1036 (2005).
7. J. W. Day, C. A. S. Hall, W. M. Kemp, A. Yáñez-Arancibia, *Estuarine Ecology* (Wiley, New York, 1989).

Response

WE AGREE WITH DAHDOUH-GUEBAS AND KOEDAM on the need for better understanding of the tsunami mangrove shield. However, we believe the relatively homogenous coastal characteristics of our study site minimized intrasite differences in the energy of the incoming tsunami and allowed the benefits of a tsunami tree shield to be studied.

The few (*1*) field-based and quantitative studies of the shielding function of mangroves against wind-induced waves (*2*, *3*) cannot be generalized to tsunamis. The hydraulic resistance of mangroves to tidal flow (*4*, *5*) differs substantially from their resistance to wind-induced waves (*3*), suggesting that the protective capacity of mangroves varies according to the time scale of the waves (*6*). Tsunami waves have a period of 1 to 2 hours (*7*), compared with wind-induced waves (<20 s) and tidal flow (diurnal and semidiurnal). As tsunami waves behave differently from other waves (*8*), their hydraulic properties cannot be estimated by interpolation.

Analysis of QuickBird (0.6-m pansharpened pre-tsunami) and IKONOS (4-m multispectral post-tsunami) images and ground surveys by scientists with 13 years of experience in the study area demonstrated quantitatively

Tsunami-stricken areas near the coastal outskirts of Banda Aceh, Indonesia, on 27 December 2004.

CREDIT: AP PHOTO/XINHUA, ENWAER

(see our table S1) (*9*) the benefit of the tsunami tree shield. Assessing the impact of mangrove condition in modifying relative protection would require analysis of matched pairs of pre- and post-tsunami 0.6-m QuickBird or 1-m IKONOS images, which were not available. Field surveys indicated, however, that forest condition was relatively uniform.

Variations in house construction and physiognomy of the mangroves are potential caveats. Across the study area, there were no significant differences in house construction, but variations in the physiognomy of mangroves require further study.

Unprotected villages in the northern portion of the study site were compared with villages partly protected by *Casuarina* in the south, but no villages with and without mangroves were equidistant from the coast. Despite this analytical weakness, our results and data from Sri Lanka (*10*) suggest that by maintaining or planting coastal forests, humans enhance protection of coastal areas against tsunamis. Observations of tropical cyclone impact (*11*) further suggest the need for a coordinated strategy (*12*) to maintain or restore coastal wetlands, forests, or sand dunes—especially along vulnerable tropical and subtropical coastlines. Such a strategy would not only provide protection against tsunamis but also mitigate the impacts of storms and sea level rise (*13*).

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References and Notes

1. Search with ERL WebSPIRS 5.0 of BIOSIS Previews since 1969, Georef since 1974, Georefs serial since 1974, and Zoological Records since 1978 (10 Nov. 2005).
2. M. Magi, Y. Mazda, Y. Ikeda, T. Kurokawa, *Mangrove Sci.* **1**, 35 (1996).
3. Y. Mazda, M. Magi, M. Kogo, P. N. Hong, *Mangroves Salt Marshes* **1**, 127 (1997), fig. 6a.
4. Y. Mazda *et al.*, *Mangroves Salt Marshes* **1**, 193 (1997), fig. 7.
5. Y. Mazda, D. Kobashi, S. Okada, *Wetlands Ecol. Manage.* **13**, 647 (2005).
6. Y. Mazda, F. Danielsen, F. Parish, H. Imamura, paper presented at the symposium "Indian Ocean Tsunami and Mangrove Forests," Agricultural University, Tokyo, Japan, 5 Nov. 2005.
7. W. H. Munk, *Origin and Generation of Waves* (Long Beach, CA, 1951), pp. 1–4.
8. H. Yeh, P. Liu, M. Briggs, C. Synolakis, *Nature* **372**, 353 (1994).
9. See Supporting Online Material at www.sciencemag.org/cgi/content/full/310/5748/643/DC1.
10. F. Dahdouh-Guebas *et al.*, *Curr. Biol.* **15**, R443 (2005).
11. R. Badola, S. A. Hussain, *Environ. Conserv.* **32**, 85 (2005).
12. Ramsar Convention on Wetlands, Resolution IX.9 of the 9th Conference of the Contracting Parties, Uganda, 8 to 15 Nov. 2005 (www.ramsar.org/res/key_res_ix_09_e.htm).
13. R. Sidle, Ed., *Environmental Change and Geomorphic Hazards in Forests* (CABI, Wallingford, 2002), pp. 203–226.

Letters to the Editor

Letters (~300 words) discuss material published in *Science* in the previous 6 months or issues of general interest. They can be submitted through the Web (www.submit2science.org) or by regular mail (1200 New York Ave., NW, Washington, DC 20005, USA). Letters are not acknowledged upon receipt, nor are authors generally consulted before publication. Whether published in full or in part, letters are subject to editing for clarity and space.

TECHNICAL COMMENT ABSTRACTS

Comment on "A Hydrogen-Rich Early Earth Atmosphere"

David C. Catling

Tian *et al.* (Reports, 13 May 2005, p. 1014) proposed a hydrogen-rich early atmosphere with slow hydrogen escape from a cold thermosphere. However, their model neglects the ultraviolet absorption of all gases other than H_2. The model also neglects Earth's magnetic field, which affects the temperature and density of ions and promotes nonthermal escape of neutral hydrogen.

Full text at www.sciencemag.org/cgi/content/full/311/5757/38a

Response to Comment on "A Hydrogen-Rich Early Earth Atmosphere"

Feng Tian, Owen B. Toon, Alexander A. Pavlov

Catling speculates that the exobase of early Earth was hot and that the ancient nonthermal escape rate was more than 1000 times the present rate. However, low oxygen and high carbon dioxide on early Earth yields a cold exobase, and nonthermal escape rates are limited and cannot balance the volcanic outgassing of hydrogen.

Full text at www.sciencemag.org/cgi/content/full/311/5757/38b

Editorial Expression of Concern

Donald Kennedy

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