LETTERS

Retraction

THE REPORT "DEFECTIVE TRANSCRIPTION-coupled repair of oxidative base damage in Cockayne syndrome patients from XP group G" (*1*) is retracted. An ad hoc investigatory committee at the University of North Carolina at Chapel Hill has found that the last author (S.A.L.) of the paper "fabricated and falsified research findings" from an immunological assay for transcription-coupled repair. Three papers that were the subject of the investigation have been retracted. Although this paper was not implicated by the investigation, examination of the original data for Figs. 1 and 3 by P.K.C. indicates that the results of these experiments are not valid as reported in *Science*. Although some findings in the paper, notably those of Fig. 2, have been verified, the overall integrity of the paper cannot be supported by the presented results. We are therefore retracting the paper. The first three authors of the paper were not cognizant of any irregularities and were not involved in any wrongdoing. The fourth author (S.A.L.) declined to sign this retraction.

PRISCILLA K. COOPER,[1] THIERRY NOUSPIKEL,[2] STUART G. CLARKSON[3]

[1]Life Sciences Division, Lawrence Berkeley National Laboratory, Building 934, Berkeley, CA 94720, USA. [2]Department of Biological Sciences, Stanford University, Stanford, CA 94305, USA. [3]Department of Genetics and Microbiology, University Medical Center, 9 Avenue de Champel, 1211 Geneva 4, Switzerland.

Reference

1. P. K. Cooper, T. Nouspikel, S. G. Clarkson, S. A. Leadon, *Science* **275**, 990 (1997).

Reassessing U.S. Coral Reefs

ALTHOUGH WE AGREE WITH J. M. PANDOLFI *et al.*'s ("Are U.S. coral reefs on the slippery slope to slime?", Policy Forum, 18 Mar., p. 1725) vision of reversing coral reef declines where they exist (*1*), they have stretched the facts beyond reason in making their case. Certainly not all U.S. coral reefs are on a slippery slope to decline (*2*).

The claim that Hawaiian reefs are seriously degraded is misleading. Actually, a large majority of Hawaiian reefs are surprisingly healthy. Results have shown that over the last 30 years, open coastal reefs in Hawaii show essentially no effect of pollution (*3*). In addition, the $9-million "Mamala Bay Study" completed several years ago showed no impacts to reefs on the southern shore of Oahu, Hawaii's most populated island (*4*). Even though most of the Main Hawaiian Island reefs are overfished (*5*), the vast majority of these have not been replaced by algal communities (algal phase shifts) as purported by these authors (*6*).

In addition, many of the authors' comments on the Northwestern Hawaiian Islands (NWHI) are simply wrong. Green turtles have increased about 500% in recent decades, and monk seals are starting to invade the high Hawaiian Islands (*7*). Also, marine debris, although abundant and unsightly, has little overall impact on the corals themselves. Lead and PCB contaminants may exist in a few locales [at Midway Atoll (the Harbor and some debris left over from World War II)], but their impact on the reefs is negligible. With the exception of some selected fisheries, the reefs in the NWHI remain relatively pristine (*8*).

Yes, we can do a far better job of protecting our reefs, but let's focus our energy where it is needed most, on those reefs that are actually in trouble (*9*).

RICHARD W. GRIGG* AND STEVEN J. DOLLAR

Department of Oceanography, University of Hawai`i at Manoa, Marine Sciences Building, 1000 Pope Road, Honolulu, HI 96822, USA.

*To whom correspondence should be addressed. Email: rgrigg@soest.hawaii.edu

References

1. R. W. Grigg, S. J. Dollar, in *Coral Reefs*, vol. 25, *Ecosystems of the World*, Z. Dubinsky, Ed. (Elsevier, Amsterdam, 1990), pp. 439–452.
2. S. L. Miller, M. P. Crosby, in *NOAA's State of the Coast Report* (National Oceanic and Atmospheric Administration, Silver Spring, MD, 1999), pp. 1–34.
3. S. J. Dollar, R. W. Grigg, *Pac. Sci.* **58** (no. 2), 281 (2004).
4. Environment Hawai'i, Mamala Bay Study Commission Issues Draft Report on Coastal Pollution, www.environment-hawaii.org/1295cov.htm (1995).
5. A. M. Friedlander, E. E. DeMartini, *Mar. Ecol. Prog. Ser.* **230**, 253 (2002).
6. R. W. Grigg, in *Status of Coral Reefs of the Pacific*, R. W. Grigg, C. Birkeland, Eds. (University of Hawaii Sea Grant College Program, Honolulu, HI, 1997), pp. 61–72.
7. J. D. Baker, T. C. Johanos, *Biol. Conserv.* **116**, 103 (2004).
8. J. Maragos, D. Gulko, in *Coral Reef Ecosystems of the Northwestern Hawaiian Islands* (U.S. Fish and Wildlife Service and Hawai'i Department of Land and Natural Resources, Honolulu, HI, 2002), pp. 38–42.
9. R. W. Grigg, *Coral Reefs* **11**, 183 (1992).

LIKE J. M. PANDOLFI *ET AL.*, WE BELIEVE THAT coral reefs in the United States and elsewhere are facing serious threats and that it is in society's interest to protect them ("Are U.S. coral reefs on the slippery slope to slime?", by J. M. Pandolfi *et al.*, Policy Forum, 18 Mar., p. 1725). However, we were struck by the admonition that "scientists should stop arguing about the relative importance of different causes of coral reef decline." Although we agree that arguing is unproductive, it is surely the case that effective conservation requires an understanding of the relative importance of different causes of decline. A reef threatened by fishing requires different protective measures than a reef threatened by eutrophication, and there is clear value in understanding the nature of the threat. "Don't just stand there, do something" is not a prescription for conservation success.

A brown spotted eel hides in the coral reef of Kealakekua Bay on the Kona coast of the island of Hawaii.

CREDIT: JAY SYVERSON/CORBIS

AMIT HUPPERT

Department of Zoology, Tel-Aviv University, Tel Aviv 69978, Israel.

THE POLICY FORUM "ARE U.S. CORAL REEFS on the slippery slope to slime?" by J. M. Pandolfi *et al.* inaccurately characterizes the management approach of Florida Keys National Marine Sanctuary (FKNMS) and contains factual errors.

The Policy Forum states that managers must address multiple threats and employ an ecosystem management approach if we are to halt coral reef decline. For over 10 years, the FKNMS has employed just such an approach through a management plan that addresses local and regional threats ranging from poor water quality to direct damage from vessel groundings and anchors.

Part of the plan involves marine zoning that sets aside 6% of the FKNMS as no-take and is showing successes for spiny lobster,

snapper, and grouper. Contrary to the authors' assertions, these zones are strategically located. The 18 Sanctuary Preservation Areas protect more than 65% of the shallow spur and groove formations or bank reef formations. The two Ecological Reserves protect a variety of habitats, chosen to include spawning sites, current patterns, and other desirable ecological characteristics.

Water quality protection is an essential component of FKNMS management, and improvements to wastewater and stormwater treatment are progressing steadily. The authors ignore these advancements, which include deep well injection of highly treated wastewater in Key West, a Keys-wide no-discharge zone, and continuing replacement of substandard on-site systems.

We agree that we must review the full suite of issues in developing research and management plans. In fact, lessons learned within the Florida Keys National Marine Sanctuary are now serving as a larger model for ecosystem-based approaches within the National Oceanic and Atmospheric Administration.

BILLY D. CAUSEY[1] AND KATHERINE ANDREWS[2]*

[1]Superintendent, Florida Keys National Marine Sanctuary, National Oceanic and Atmospheric Administration, Post Office Box 500368, Marathon, FL 33050, USA. [2]Florida Department of Environmental Protection, Majory Stoneman Douglas Building, 3900 Commonwealth Boulevard, Tallahassee, FL 32399–3000, USA.

*Co-Trustee, Florida Keys National Marine Sanctuary

THE POLICY FORUM "ARE U.S. CORAL REEFS on the slippery slope to slime?" by J. M. Pandolfi *et al.* (18 Mar., p. 1725) stresses that the decline of coral reefs worldwide is due to multiple stresses that must be simultaneously reduced and that poor water quality is a contributing factor. There are mistakes and serious omissions that may lead readers to believe that very little is being done to correct water quality problems in the Florida Keys.

As required by the Florida Keys National Marine Sanctuary and Protection Act, a Water Quality Protection Program was developed that includes a comprehensive action plan. Since 1997, 26 of 49 high-priority activities have been fully implemented, including establishment of a long-term monitoring program on water quality, seagrass, and corals. Sanitary Wastewater and Storm Water Master Plans have been completed for Monroe County, and wastewater facility plans have been completed for Marathon and other municipalities.

State Law 99-395 requires all wastewater facilities in the Keys, including on-site systems, to upgrade treatment by 2010. Much progress has been made to achieve that requirement. The City of Key West has upgraded its sewage treatment plant to advanced wastewater treatment (AWT) standards and has replaced old, leaky collection pipes. A new neighborhood AWT plant is operating in the City of Marathon and treats wastes from approximately 500 homes previously "served" by cesspools or septic tanks. (Approximately 4000 cesspools have been identified in the Keys, not 16,000, as stated by Pandolfi *et al.*) Four other municipalities have such facilities planned or under construction. Also, in 2002, all state waters in the Florida Keys were declared a no-discharge zone for boat-generated sewage.

The Florida Keys Water Quality Improvement Act authorized Congress to appropriate $100 million for the wastewater and storm water improvements in Monroe County, and last year the state provided approximately $12 million. Obviously, much more needs to be done, but stressing the real progress made thus far is critical to keeping the money flowing.

WILLIAM L. KRUCZYNSKI

Program Scientist, Florida Keys National Marine Sanctuary, Water Quality Protection Program, U.S. Environmental Protection Agency, Post Office Box 500368, Marathon, FL 33050, USA.

IN THEIR POLICY FORUM "ARE U.S. CORAL reefs on the slippery slope to slime?" (18 Mar., p. 1725), J. M. Pandolfi *et al.* conclude that all threats to coral reefs must be addressed simultaneously to reverse coral decline. This is not a new recommendation (*1*), nor is it particularly useful to managers who need more from scientists than a call to address everything, everywhere. The authors offer a remedy (*2–5*) by suggesting that corals become resilient when food webs are restored and eutrophication controlled. In fact, studies of marine protected areas offer conflicting results as to how corals respond to protection (*6*).

Florida's reefs are incorrectly characterized by the authors as so polluted and overfished that they cannot recover under current levels of protection. In reality, there is no compelling evidence that coral decline or recovery was caused or hindered by pollution and overfishing (*7*). The ongoing, catastrophic decline of corals in Florida has been the product of pandemic coral diseases, winter cold fronts, hurricanes, and coral bleaching (*7*).

The idea that we can somehow manage for resilience holds false promise against the ongoing threat of regional and global-scale stressors (*8*). There are sufficient ecologic and economic reasons to manage fisheries better (*9*), and likewise there are significant public-health and economic reasons to reduce pollution. Unfortunately, global-scale coral stressors, such as disease and global warming, still threaten our reefs (*10*).

Today's ecology matters just as much as history does, and Pandolfi *et al.*'s recommendation "that scientists should stop arguing about the relative importance of different causes of coral reef decline" is misguided. Debate over the mechanisms of coral decline and recovery is both healthy and critical to the success of management. We strongly agree with the authors that "slowing or reversing global warming trends is essential for the long-term health of all tropical coral reefs." Disagreement among coral reef scientists, however, is not what is holding governments back from taking steps to address global environmental problems.

WILLIAM F. PRECHT,[1]* STEVEN L. MILLER,[2] RICHARD B. ARONSON,[3] JOHN F. BRUNO,[4] LES KAUFMAN[5]

[1]Ecological Sciences Program, PBS&J, 2001 NW 107th Avenue, Miami, FL 33172, USA. [2]Center for Marine Science, University of North Carolina Wilmington, 5600 Marvin Moss Lane, Wilmington, NC 28409, USA. [3]Dauphin Island Sea Lab, 101 Bienville Boulevard, Dauphin Island, AL 36528, USA. [4]Department of Marine Sciences, University of North Carolina at Chapel Hill, CB #3300, 12-2 Venable Hall, Chapel Hill, NC 27599–3300, USA. [5]Department of Biology, Boston University, 5 Cummington Street, Boston, MA 02215, USA.

*To whom correspondence should be addressed. E-mail: Bprecht@pbsj.com

References

1. R. W. Grigg, S. J. Dollar, in *Coral Reefs*, vol. 25, *Ecosystems of the World*, Z. Dubinsky, Ed. (Elsevier, Amsterdam, 1990), pp. 439–452.
2. J. B. C. Jackson *et al.*, *Science* **293**, 629 (2001).
3. J. B. C. Jackson, E. Sala, *Sci. Mar.* **65** (no. 2), 273 (2001).
4. J. M. Pandolfi *et al.*, *Science* **301**, 955 (2003).
5. D. R. Bellwood *et al.*, *Nature* **429**, 827 (2004).
6. T. McClanahan *et al.*, *Conserv. Ecol.* **6** (no. 2), 18 (2002) (available at www.consecol.org/vol6/iss2/art18).
7. W. F. Precht, S. L. Miller, in *Geological Approaches to Coral Reef Ecology*, R. B. Aronson, Ed. (Springer Verlag, New York, in press).
8. G. P. Jones *et al.*, *Proc. Natl. Acad. Sci. U.S.A.* **101**, 8253 (2004).
9. E. K. Pikitch *et al.*, *Science* **305**, 346 (2004).
10. R. W. Buddemeier *et al.*, *Coral Reefs & Global Climate Change* (Pew Center on Global Climate Change, Arlington, VA, 2004).

Response

THE DECLINE OF U.S. CORAL REEFS IS A GROW- ing crisis that scientists have failed to communicate effectively to the public. For over 40 years, research has implicated four major human causes of coral reef decline—fishing, land-based pollution, coastal development, and global climate change—and has identified their debilitating effects, such as coral disease and coral bleaching (*1–4*). The relative importance of these different factors naturally varies from place to place, and we agree that this is sometimes not obvious and may be important to resolve. The precautionary principle clearly dictates that we should not wait for conclusive evidence as to which of the four human disturbances has the biggest impact before action is taken. We will not obtain that evi-

dence for many years or even decades. Nevertheless, we can immediately reduce fishing, land-based pollution, and coastal development; coping with climate change will require global action at the highest levels of government (*5*, *6*).

Historical analysis provides a compelling picture of the problem of shifting baselines (*7*, *8*) that lulls us into a false sense of security. Shifting baselines are especially problematic for places like the Northwest Hawaiian Islands and the Great Barrier Reef, where many reefs are in comparatively good shape but significant threats remain [(*9*); figure in our Policy Forum]. History also provides a clear roadmap for setting objective goals and criteria to assess the success of management options. The Florida Keys National Marine Sanctuary management plan contains comprehensive strategies for addressing fishing, land-based pollution, and coastal development (*10*). However, we need to remember that the goal is not the drafting of a plan, but rather the reversal of coral reef decline. Nearly 8 years after initiation of the plan, only 6% of the Florida Keys Sanctuary is fully protected from fishing and other extractive activities in marine reserves. This meager level of protection compares poorly with the 33% protection afforded to the entire Great Barrier Reef, which is in vastly better ecological condition [(*11*); our figure]. Moreover, with the notable exception of the Tortugas Ecological Reserve, reserves in the Keys are far too small to be effective.

Water quality controls are contentious, politically sensitive, and expensive, and the science concerning potential impacts of sewage-based nutrients on coral reefs is often equivocal. In the Keys, nutrient issues have been confounded by potential offshore nutrient sources due to upwelling (*12*). But upwelling, like hurricanes and cold fronts that are invoked as causes of degradation, are natural processes that reefs have survived for millions of years. What is different today is the ever-increasing and universal impact of people (*13*), as exemplified most recently by global climate change. A significant percentage of the more than 20,000 on-site wastewater systems in the Keys were permitted in the 1980s or earlier when there was little concern for water quality (*14*). Adequate funding to deal with this issue has not been appropriated, and the retrofit of these systems to alternative methods is proceeding inexcusably slowly.

No one likes to hear bad news, but it is a fact that the condition of most U.S. coral reefs is rapidly deteriorating and that nowhere remains pristine. We need to wake up fast to the true magnitude of the challenges we are facing to save our reefs by quickly following the Australian example of vastly increased protection and by implementing more comprehensive management. At the imminent risk of losing our reefs forever, how can we do otherwise?

JEREMY B. C. JACKSON,[1,2]* JOHN C. OGDEN,[3] JOHN M. PANDOLFI,[4] NANCY BARON,[6] ROGER H. BRADBURY,[7] HECTOR M. GUZMAN,[2] TERENCE P. HUGHES,[8] CARRIE V. KAPPEL,[9] FIORENZA MICHELI,[9] HUGH P. POSSINGHAM,[5] ENRIC SALA[1]

[1]Center for Marine Biodiversity and Conservation, Scripps Institution of Oceanography, La Jolla, CA, 92093, USA. [2]Smithsonian Tropical Research Institute, Box 2072, Balboa, Republic of Panama. [3]Florida Institute of Oceanography, St. Petersburg, FL 33701, USA. [4]Centre for Marine Studies and Department of Earth Sciences, [5]Department of Mathematics and School of Life Sciences, University of Queensland, St. Lucia, QLD 4072, Australia. [6]National Center for Ecological Analysis and Synthesis, Santa Barbara, CA 93101, USA. [7]Australian National University, Canberra, ACT 0200, Australia. [8]Centre for Coral Reef Biodiversity, School of Marine Biology, James Cook University, Townsville, QLD 4811, Australia. [9]Hopkins Marine Station, Stanford University, Stanford, CA 93950–3094, USA.

References

1. D. Bryant *et al.*, *Reefs at Risk. A Map-Based Indicator of Threats to the World's Coral Reefs* (World Resources Institute, Washington, DC, 1998).
2. C. R. Wilkinson, *Status of Coral Reefs of the World: 2004* (Global Coral Reef Monitoring Network and Australian Institute of Marine Science, Townsville, Australia, in press) (vol. 1 is available at www.gcrmn.org/status2004.asp).
3. T. A. Gardner *et al.*, *Science* **301**, 958 (2003).
4. D. R. Bellwood, T. P. Hughes, C. Folke, M. Nyström, *Nature* **429**, 827 (2004).
5. N. Knowlton, *Proc. Natl. Acad. Sci. U.S.A.* **98**, 5419 (2001).
6. T. P. Hughes *et al.*, *Science* **301**, 929 (2003).
7. D. Pauly, *Trends Ecol. Evol.* **10**, 430 (1995).
8. J. B. C. Jackson *et al.*, *Science* **293**, 629 (2001).
9. C. Safina, *Eye of the Albatross* (Holt, New York, 2003).
10. Florida Keys National Marine Sanctuary, Draft Revised Management Plan (Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Sanctuary Program, Washington, DC, Feb. 2005), pp. 1–361.
11. Great Barrier Reef Marine Park Authority, New Policy Web Site, www.gbrmpa.gov.au/corp_site/management/zoning/zoning_publications.html.
12. J. J. Leichter, H. L. Stewart, S. L. Miller, *Limnol. Oceanogr.* **48**, 1394 (2003).
13. S. R. Palumbi, *Nature* **434**, 713 (2005).
14. G. Garrett, Director, Monroe County Marine Resources Department, personal communication.

Written in Our Genes?

IN 1983, LANGSTON AND COLLEAGUES reported that accidental exposure of humans to 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) induces a Parkinsonian state (*1*, *2*). The authors hypothesized that damage to the substantia nigra might reflect a selective toxicity of MPTP for dopaminergic neurons. In the two decades since that initial report, a large body of evidence has accumulated to support this hypothesis. The mechanism of cell death appears to involve the selective uptake by dopaminergic neurons of the toxic MPTP metabolite 1-methyl-4-phenylpyridinium (MPP+). Dopaminergic neurons, such as the ones that populate the substantia nigra, are generally identified by the presence of tyrosine hydroxylase, the enzyme that catalyzes the first and rate-limiting step in the conversion of tyrosine to dopamine. Remarkably, the intimate connection between MPTP and dopaminergic neurons is immediately evident from a cursory perusal of the primary sequences of human, mouse, or rat tyrosine hydroxylase, each of which begins with the NH_2-terminal sequence methionine-proline-threonine-proline… (MPTP… in the single letter amino acid code) (*3*). Once again, an answer appears to be written in our genes—in this case, with unusual clarity.

JEREMY NATHANS

Howard Hughes Medical Institute, Department of Molecular Biology and Genetics, Johns Hopkins Medical School, 735 North Wolfe Street, Room 805 PCTB, Baltimore, MD 21205–2185, USA.

References

1. J. W. Langston, P. Ballard, J. W. Tetrud, I. Irwin, *Science* **219**, 979 (1983).
2. J. W. Langston, P. Ballard, *N. Eng. J. Med.* **309**, 310 (1983).
3. S. Ichikawa, T. Sasaoka, T. Nagatsu, *Biochem. Biophys. Res. Commun.* **176**, 1610 (1991).

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.

CORRECTIONS AND CLARIFICATIONS

Random Samples: "Skyward" (6 May, p. 789). Due to a reporting error, Faith Vilas was incorrectly described as having been a high school science teacher earlier in her career. Also, Vilas has had extensive experience with telescopes in recent years.

Editors' Choice: "Food preservative" (1 Apr., p. 19). The *Streptomyces* bacteria supplied by the female beewolf protects its larva, and not the immobilized honeybee, from infection by fungi.

Essays: "When science is not enough: fighting genetic disease in Brazil" by M. Zatz (1 Apr., p. 55). The first sentence of the Essay is incorrect. It should read, "In my country, Brazil, one among five babies who die in the first year of life have a gene-related disorder."

Policy Forum: "Are U.S. coral reefs on the slippery slope to slime?" by J. M. Pandolfi *et al.* (18 Mar., p. 1725). In the bottom figure on p. 1725, Caribbean sites are purple (not green, as described in the legend), and some data points are not seen because of superimposed dots. Otherwise, the labels point to the dots in order. For example, the Bahamas and

eastern Panamá are represented by the purple dot partly showing above the red dot for the Main Hawaiian islands and Florida Keys. The lettering for the Outer Great Barrier Reef (Outer GBR) should be black.

Reports: "BZR1 is a trancriptional repressor with dual roles in brassinosteroid homeostasis and growth responses" by J.-X. He *et al.* (11 Mar., p. 1634). There was an error in the Fig. 3C legend. The sentence that reads, "Dots indicate BR-induced genes and crosses indicate BR-repressed genes" is incorrect. It should read, "Crosses indicate BR-induced genes, and dots indicate BR-repressed genes."

Reports: "The geometric distance and proper motion of the Triangulum Galaxy (M33)" by A. Brunthaler *et al.* (4 Mar., p. 1440). The credit in the legend for Fig. 1 should read "{Image courtesy of T. A. Rector [National Radio Astronomy Observatory (NRAO)/Associated Universities, Inc. (AUI)/NSF and National Optical Astronomy Observatory/Association of Universities for Research in Astronomy/NSF], D. Thilker (NRAO/AUI/NSF), and R. Braun (ASTRON).}" In addition, the second-last sentence of the first paragraph of the paper (p. 1440) ("This pushed…") should have been deleted.

Brevia: "Membrane insertion of a potassium-channel voltage sensor" by T. Hessa *et al.* (4 Mar., p. 1427). The correct URL for the supporting online material is www.sciencemag.org/cgi/content/full/1109176/DC1.

TECHNICAL COMMENT ABSTRACTS

COMMENT ON "The Oceanic Sink for Anthropogenic CO_2"

Ralph F. Keeling

The inventory of anthropogenic CO_2 in the ocean, estimated by Sabine *et al.* (Research Articles, 16 July 2004, p. 367), is an imperfect measure of the change in ocean carbon because it neglects the impact of recent warming on ocean chemistry and circulation. Allowing for warming, the change in ocean carbon is likely ~6% smaller than estimated, although uncertainties in the correction are large.
Full text at
www.sciencemag.org/cgi/content/full/308/5729/1743a

RESPONSE TO COMMENT ON "The Oceanic Sink for Anthropogenic CO_2"

Christopher Sabine, Nicolas Gruber

We argue that our estimate of anthropogenic CO_2 inventory is insensitive to changes in ocean circulation and heat content and warrants no adjustments. Carbon-climate feedbacks may have also altered ocean carbon content, but the proposed correction is too tentative and within the published uncertainty of the current estimate. Nevertheless, this discussion highlights the need for continuing oceanic observations.
Full text at
www.sciencemag.org/cgi/content/full/308/5729/1743b

COMMENT ON "Inflammatory Exposure and Historical Changes in Human Life-Spans"

Elisabetta Barbi and James W. Vaupel

Finch and Crimmins (Reviews, 17 Sep. 2004, p.1736) claim that analysis of Swedish data "reveals strong associations between early-age mortality and subsequent mortality in the same cohorts." However, these associations are modest and period effects have generally been more important than cohort effects. Future trends in life expectancy are unlikely to be slow merely because early-life mortality is now low.
Full text at
www.sciencemag.org/cgi/content/full/308/5729/1743c

RESPONSE TO COMMENT ON "Inflammatory Exposure and Historical Changes in Human Life-Spans"

Caleb E. Finch and Eileen M. Crimmins

In environments with high levels of infection, we hypothesize that inflammatory pathophysiology is a strong mechanistic link between early and later cohort mortality and morbidity. Using historical Swedish data, we show that cohort effects are stronger than period effects in associations of early and old age mortality. We argue that Barbi and Vaupel did not choose appropriate tests of our hypothesis.
Full text at
www.sciencemag.org/cgi/content/full/308/5729/1743d