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For a provocative interpretation of the language of science, tune into The Nobel Legacy on PBS.

In the day-to-day world, most people don't seem to talk much about science—not to their children nor to each other. Our world is powerfully enriched by science and technology. Yet, much of the public is simply unaware of science’s everyday relevance.

This is why Baxter is underwriting The Nobel Legacy, a three-part PBS science series. Increasingly, the public is called upon to make important decisions about science, on issues ranging from healthcare delivery to supercollider funding. To make sound decisions, the public needs to be better informed and scientifically aware.

Tune into The Nobel Legacy in April and May. In the medicine program, laureate Dr. J. Michael Bishop examines medical revolutions past and present. In the physics program, laureate Dr. Leon Lederman dramatizes the startling uncertainty of subatomic particles. And in chemistry, laureate Dr. Dudley Herschbach probes chemistry's unlikely origins in nature.

Check local listings for dates and times.
The Pharmacia Biotech & Science Prize

It has been said, “Love is a great exaggeration of the worth of one person over the worth of everybody else.” The same could be said of prizes, yet a world without love or prizes would be a lot duller than the one we have. Prizes play a particularly important role in science because they encourage those who succeed and provide an incentive for others to expend extra effort.

With this in mind, Science, with the generosity of Pharmacia Biotech, has established a prize for entry-level scientists at the beginning of their careers. In 1995, the prize will recognize outstanding graduate students in molecular biology. The purpose of this international prize is to reward good research and to give students from all regions of the world encouragement and visibility at an early stage of their careers. In modern times, when grant funding is particularly important and particularly difficult to obtain, such a prize can provide a helpful boost to a beginner.

Ultimately the worth of a prize is based on the quality of the recipients, so good criteria and a wise selection committee are essential. A good example of how not to give a reward is illustrated by the subcommittee of the International Union of Pure and Applied Chemistry (IUPAC) that recently equivocated on naming element 106 “seaborgium.” Glenn Seaborg, who co-discovered plutonium and who led the research on that new artificial element at a time when only its radioactivity could be measured, was honored by a Nobel Prize and many other awards for a lifetime of pioneering studies. He has gone on to use his great influence for many good causes of service to higher education and to the government of the United States. The American Chemical Society and many others supported the naming, which historically has been considered the prerogative of the discoverers; but the IUPAC accrediting body did not accept the suggestion, giving as a reason that Seaborg is alive. Fortunately, a higher body will review this decision. To reward only those who are no longer living imposes a penalty for longevity and deprives the individuals and their well-wishers of the pleasures of receiving and giving recognition. Award committees need to remember that they are the temporary carriers of a torch for a long list of names that will establish the caliber of an award.

Organizations wishing to initiate new prizes should learn from past endeavors. Therefore, Science will take its responsibility seriously. The first Pharmacia Biotech and Science prize will be awarded to a student who received a Ph.D. in 1994. To qualify, the student must write an essay of 1000 words discussing his or her research and putting it in perspective with the literature in the field. A committee of distinguished scientists will select the winner on the basis of the quality of the research and the quality of the writing, and the winning essay will be published in Science.

Because Science spans areas from mathematics to social science, we welcome the opportunity to co-sponsor prizes for work in other scientific fields, using the Pharmacia prize as a model. Such prizes can have a positive influence on the careers of the individuals and the progress of science, provided they are awarded with insight and fairness.

There are many prizes these days, but there are many scientists. In fact, a prize probably helps to mitigate one of the negative features of modern science, the enormous pace and the chance of a “savor” a breakthrough. In the “good old days” of fewer journals and fewer scientists, a major discovery was celebrated and noted by scientists in different disciplines, and then followed up at leisurely intervals by grateful successors. Today, there are so many journals and so much information that the original discovery is almost lost before eager and energetic followers take the logical next step. A prize rewarding a beginning scientist for a job well done and for placing his or her own discovery in a proper context of what has already been achieved and what might be done seems to fill a gap and will enrich and benefit the world of discovery.

The Pharmacia Biotech & Science Prize for Young Scientists is, we hope, an important step toward helping science in general and new investigators in particular.

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Guidelines for Xenotransplantation

In the ScienceScope item "FDA airs qualms over xenotransplants" (6 Jan., p. 19), it was stated that the U.S. Food and Drug Administration (FDA) is concerned that "Xenografts might allow dangerous pathogens lurking in animals to jump to humans." Readers might assume that Institutional Review Boards (IRBs) and Institutional Animal Care and Use Committees (IACUCs) at universities are not paying enough attention to this issue. This is not the case. For example, at the Columbia-Presbyterian Medical Center in New York City it is committed to conducting a thorough review of this possibility.

As noted in the ScienceScope item, surgeons at our institution have requested permission from the IRB and the IACUC to transplant a baboon heart into a human as a life support measure until a human heart becomes available. After initial review, many issues arose that were discussed with the investigator, including possible infectious disease consequences. A half-day workshop was held by the two committees to which the investigative group and several outside experts in various disciplines were invited. Again, the infectious disease issue and the possibility of a threat to the public health received close scrutiny. Thus, an extensive initial review of the protocols was conducted.

Several experts in infectious diseases from outside the institution were consulted who expressed a range of opinions. There are little data on the possibility of a new infectious agent arising from xenotransplantation and, hence, there is a wide range of opinion on the probability of such an occurrence and its potential danger. Therefore, our institution has recommended that a group of experts on recurrent and emerging infections be convened to help decide this issue. The Institute of Medicine will hold a workshop to attempt to develop an acceptable protocol for minimizing the possibility of an emerging infection. The findings of the workshop could act as a guide for us and for other institutions interested in clinical xenotransplantation and for agencies such as the U.S. Centers for Disease Control and Prevention, the National Institutes of Health, and the FDA, should they decide to proceed with xenotransplantation.

Ralph B. Dell* Donald S. Kornfeld†
College of Physicians and Surgeons of Columbia University, 630 West 168th Street, New York, NY 10032, USA

*Chair, Institutional Animal Care and Use Committee, Columbia University Health Sciences. †Chair, Institutional Review Board, Columbia Presbyterian Medical Center.

U.S. Neutron Sources

In the article "The looming neutron gap" (News & Comment, 17 Feb., p. 952), Daniel Clery and Andrew Lawler discuss the consequences of the cancellation of the Advanced Neutron Source (ANS) for neutron-scattering research in the United States. I have been a strong supporter of the ANS and agree that cancellation of the project will prevent the United States from taking the lead in this important field. However, the analysis presented was incomplete because the most productive, cost-effective U.S. neutron source is not mentioned. The research reactor at the National Institute of Standards and Technology (NIST) is in the final stages of completion of a major enhancement to its capabilities, the Cold Neutron Research Facility. The combined neutron facilities at NIST serve many more researchers than does any neutron facility at the Department of Energy (DOE), with nearly 1200 participants from 48 industries and 85 universities in the United States (and from many non-U.S. institutions). The array of instruments,
when fully operational, will approach the versatility represented at the Institut Laue-Langevin in Grenoble, France, with performance at least comparable to that of the best European reactor facilities.

None of this, of course, changes the fact that the United States must proceed to build next-generation neutron sources, and enhance existing sources where possible to meet growing needs. While construction of a new source is primarily the responsibility of DOE, we at NIST will continue to support this effort in the future as we have in the past. We will also continue to provide the best possible neutron facilities for U.S. researchers here at NIST well into the next century.

**J. Michael Rowe**
Reactor Radiation Division, National Institute of Standards and Technology, Gaithersburg, MD 20899-0001, USA

Clery and Lawler conclude, "But until the next century, U.S. researchers will have to traipse across the Atlantic to conduct their experiments at the world’s cutting-edge neutron-scattering facilities." Neutron scattering is not an end in itself, but merely one technique used to characterize substances. To do cutting-edge neutron-scattering research, one probably has to use a cutting-edge neutron-scattering facility. However, other research fields, such as materials science or biology, that use neutron scattering have other options available for cutting-edge research. The hoped for Advanced Neutron Source (ANS) in the United States was designed for neutron radiation effects research and neutron-induced production of transplutonium elements for research, in addition to neutron-scattering research. Although the design driver in the ANS was neutron-scattering experimentation, design compromises were made to accommodate the other research areas. So comments in the article about the drawbacks of dual-use facilities may have been overstated, even though there are indeed problems with facilities that have more than one constituency.

Neutrons used in research can sometimes be replaced by probes of other types or other characterization techniques. Although neutrons provide a powerful method with which to obtain measurements of certain characteristics of materials, chemicals, and substances, it is possible to obtain proper characterization using other techniques. There is no doubt that the ANS or another powerful neutron source for the United States would be extremely useful. It appears that a window of opportunity for such a facility was missed by the previous Congresses, and preparation should be made for the next opportunity. Given the present budgetary situation and other factors, one may have to temporarly focus on improvements to existing facilities, alternative techniques, or advances in instrumentation to increase the effective neutron flux at the sample. If too much emphasis is placed on a neutron-scattering gap rather than on research advances, wrong policies or priorities, such as eliminating other research to accommodate neutron-scattering facilities, may result. The resulting harm would encompass the neutron-scattering research community as well as the remaining research fields.

**Louis Ianniello**
20006 Holly Pond Way, Gaithersburg, MD 20879, USA

### AIDS Data

In a set of letters entitled “AIDS-associated Kaposi’s sarcoma” (24 Feb., p. 1078), there is one by Michael S. Ascher *et al.* (p. 1080) in which my letter in Science of 20 January (p. 313) is discussed. Ascher *et al.* write that “Duesberg misrepresents data from the San...”
Francisco Men's Health Study (SFMHS) cited by us.” Ascher et al. then assert that “there were 27 nonusers of ‘poppers’ [nitrite inhalants]” among the 215 AIDS patients. However, the 27 nonusers are neither documented in the 1993 paper by Ascher et al. (1) they say 1 misrepresent, nor anywhere else in the literature until now.

Our independent re-investigation (2) of the database of Ascher et al. shows that AIDS among the 215 patients reported (1) was “almost completely limited (98%) to respondents who reported using drugs,” as only 3 out of the 215 patients reported that they had not used drugs. Moreover, our study (2) revealed 45 human immunodeficiency virus (HIV)–negative men with one or more AIDS-defining conditions.

Peter Duesberg
Department of Molecular and Cell Biology, University of California, Berkeley, CA 94720, USA

References

Response: In our 24 February letter to Science, we cited data from our earlier commentary on drug use and AIDS (1). In his letter, Duesberg did not acknowledge that a clearly defined category of light users of “poppers” was made up of 161 persons reporting less than weekly use or no use during the 2 years before their entry into the SFMHS. In our letter, we provided the additional information, not included in the original article, that 27 of the 161 had reported no “popper” use during the designated period.

B. J. Ellison et al. have reported that an independent analysis of data from the SFMHS revealed 45 HIV-seronegative AIDS cases (2) in contrast to our study, which found none. Table 1 of Ellison et al.’s paper lists these alleged cases according to presenting diagnoses: Salmonella (18 cases), a common foodborne pathogen, is not AIDS-defining unless it is recurrent and systemic. With respect to CD4+ cell counts of less than 200 per microliter (14 cases), we have previously identified such individuals in the SFMHS (3) and have demonstrated that they are asymptomatic with single low counts in a background of normal CD4+ values. Herpes zoster (nine cases) has never been in the AIDS case definition of the Centers for Disease Control and Prevention. Thrush-oral candidiasis (six cases) is a common commensal in immunocompetent persons; to be AIDS-defining, candidiasis must affect the esophagus, bronchi, or lungs. Immune thrombocytopenic purpura (two cases) and nonpulmonary tuberculosis (one case) likewise occur at low frequency in immunocompetent persons. The alleged cases occurred in 581 HIV-seronegative study subjects observed over a period of 96 months (4648 person years).

The proposed AIDS–drug-use association is a classic example of confounding, that is, a suggestion of a correlation caused by the association of a spurious factor (drug use) with a factor (HIV infection) causally related to the outcome (AIDS). The standard statistical methods that we used to differentiate cause from confounding factors showed, in this case, that HIV was the cause and that the drug-use association was spurious (1).

Michael S. Ascher
Haynes W. Sheppard
Division of Communicable Disease Control, California Department of Health Services, 2151 Berkeley Way, Berkeley, CA 94704, USA

Warren Winkelstein Jr.
School of Public Health, University of California, Berkeley, CA 94720, USA

Pharmacia Biotech
Uppsala, Sweden. (And the rest of the world)
Cell Cycle Arrest

We were pleased to see the three reports (1–3) and Research News article by Jean Marx (p. 963) in the 17 February issue that highlight the induction of the protein p21(WAF1) cyclin-dependent kinase (Cdk) inhibitor in myogenesis (1) and the high level of expression of p21(WAF1) in terminally differentiated tissues (2). These findings elegantly extend the findings published last fall in our papers “Induction of p21(WAF1/CIP1) during differentiation” (4) and “Induction of differentiation in human promyelocytic HL-60 leukemia cells activates p21, WAF1/CIP1, expression in the absence of p53” (5). We had reported that multiple differentiation inducers caused immediate-early and sustained up-regulation of p21 in many cell types through a p53-independent pathway. The report by Skapek et al. (3) demonstrating p21(WAF1) reversal of a cyclin D1-mediated differentiation block in muscle raises the hope that in some settings p21(WAF1)-inducing agents may be anti-oncogenic. We would caution, however, that this strategy would be ineffective in settings in which p21(WAF1) induction is uncoupled from growth arrest. An example is our demonstration that deregulated c-myc expression is capable of uncoupling p21(WAF1) induction both from growth arrest and from differentiation (4).

Richard Steinman
University of Pittsburgh School of Medicine,
Pittsburgh, PA 15213, USA
Barbara Hoffman
Dan A. Liebermann
Temple University School of Medicine,
Philadelphia, PA 19140, USA
Paul B. Fisher
Comprehensive Cancer Center,
Columbia University,
New York, NY 10032, USA

References
2. S. B. Parker et al., ibid., p. 1024.
5. H. Jiang et al., ibid., p. 3397.

“More” Is Not “Different”

I agree with Sheldon Krimsky (Letters, 17 Feb., p. 945) that “altering an inert chemical structure and modifying an organism are two very different things.” Yet, he illogically extends this observation to a comparison of two organisms. Modification of an organism by traditional breeding and by recombinant DNA methods are not very different things. The fact that we can make a greater variety of changes by recombinant DNA is not an inherent reason to place a higher regulatory burden on products of recombinant DNA techniques.

Ulrich Melcher
Department of Biochemistry and Molecular Biology,
Oklahoma State University,
Stillwater, OK 74078–0454, USA

Sampling Zooplankton: Correction

We have learned that there is an internal inconsistency in the zooplankton dataset used in our report “Climatic warming and the decline of zooplankton in the California Current” (3 Mar., p. 1324) (1). The data

References

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file we used, written from the archive maintained by the National Marine Fisheries Service, was found to change at the end of 1977, without notation, from values of zooplankton normalized by sample volume to raw values of zooplankton volume. Because the series was treated uniformly, pre-1978 data were incorrectly normalized a second time, while post-1978 data were handled correctly. This boosted pre-1978 values by up to a factor of 2. Correction of this error does not change the conclusions of our report. There has been a large decrease in zooplankton biomass during the past 43 years, which is likely related to the concurrent warming of the upper 100 meters. However, the correction does reduce the magnitude of the observed downward trend in zooplankton.

Cruise-by-cruise averages of log-transformed data show the decline of zooplankton volume (Fig. 1A; see figure 2A in our report), which is especially prominent from 1978 to the present. Average values over all cruises in a year were transformed back to natural units by taking the inverse logarithm (Fig. 1B). The average zooplankton volume over the final 7 years of the survey (1987–1993) was 70% lower than the average over 1951–1957. The reduction was approximately uniform with respect to distance from shore, possibly intensifying slightly offshore (Fig. 1C; see figure 3A in our report).

Dean Roemmich
John McGowan
Marine Life Sciences Research Group,
Scripps Institution of Oceanography,
University of California, San Diego,
La Jolla, CA 92030–0230, USA

References

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Vignettes: Psychopharmacology

To the prehistoric Mesoamericans, the cacao tree was the embodiment of the Earth’s treasures and spiritually represented a bridge between Earth and the heavens. . . .

Today, chocolate is the food of romance. People have long thought of it as an aphrodisiac, especially in modern Western societies. Its pleasure is part pharmacological, part psychological, part physical. Chocolate contains more than three hundred identified chemical substances, including theobromine and methyloxantine—two mildly addictive caffeine-like substances—and phenylethylamine, a stimulant chemically similar to the human body’s own dopamine and adrenaline. Phenylethylamine acts on the brain’s “mood centers” and presumably induces the emotion of falling in love, a matter of only partly understood brain chemistry.

—Allen M. Young, in The Chocolate Tree: A Natural History of Cacao (Smithsonian Institution Press)

Several years ago while browsing through an old bookstore in Portland, Oregon, I came upon a fascinating two-volume book published in 1855 entitled The Chemistry of Common Life. A section of this book starts with the title “The Narcotics We Indulge In” and proceeds to describe tobacco; the hop; the poppy; Indian hemp; the betel nut; the peppermuts, cocoa and horn apples; the Siberian fungus; and the “minor” narcotics. After reading this section, I was impressed by the knowledge of the scientific community of the early 1800s; for example, they had determined that 1% of ingested “morphia” is excreted in urine and that children have been poisoned by the milk of nurses who had taken laudanum.

—John A. Adamovics, in Analysis of Addictive and Misused Drugs (John A. Adamovics, Ed.; Dekker)
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1995 Mentor Awards
Call for Nominations

Lifetime Mentor Award (10 or more years)
Mentor Award (less than 10 years)

The American Association for the Advancement of Science (AAAS) invites nominations for the 1995 Mentor Awards. The two categories are Lifetime Mentor Award and Mentor Award. These annual awards honor individuals who, during their careers, demonstrate extraordinary leadership to increase the participation of women of all racial/ethnic groups; African American, American Indian, and Hispanic men; and/or people with disabilities in science and engineering fields and careers.

A prize of $5000 and a commemorative plaque for the Lifetime Mentor Award will recognize an individual who has mentored and guided significant numbers of students from these underrepresented groups to the completion of doctoral studies and/or who has impacted the climate of a department, college, or institution to significantly increase the diversity of students pursuing and completing doctoral studies. This individual will have served in such a role for 10 years or longer.

The Mentor Award, a prize of $2,500 and a commemorative plaque, will recognize an individual who has mentored a significant number of students over a period of less than 10 years.

The AAAS Mentor Awards are administered by the Committee on Opportunities in Science (COOS).

Deadline for the 1995 Mentor Awards
nominations is 1 August 1995

The 1995 Awards will be presented during the Association’s Annual Meeting in Baltimore, MD in February 1995.

For more information on the AAAS Mentor Awards please contact Yolanda S. George or Paula Lee at (202) 326-6670.

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