parameters, one could draw from the factors mentioned by Paul: Th1/Th2 cytokines; natural killer cells; markers that define cytotoxic, suppressor, activated, naïve/memory, or primed T cell subsets; and quantitative HIV polymerase chain reaction.

The language of AIDS immunology has changed over the years. It is imperative for the OAR to provide a much needed immunological thesaurus in order to give meaning to future AIDS trials.

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Biosphere 2

Gary Taubes' article about Biosphere 2 (News & Comment, 13 Jan., p. 169) does not acknowledge that "the previous management" were, in fact, the creative team that beginning in 1984 partially owned, designed, built, and then experimentally tested Biosphere 2 until April 1994 (*1*). Taubes writes as if Biosphere 2 materialized by itself. I conceived and invented Biosphere 2 and directed its research and development division; Margret Augustine co-designed and built Biosphere 2; William Dempster devised and supervised engineering systems, making essential patented inventions; Abigail Alling created and brought to sustained life the extraordinary ocean and marsh systems; Mark Nelson worked with me on biospheric theory and in convening international scientific conferences on closed ecological life systems (biospheres)—at the Royal Society (1987), at Krasnoyarsk, Russian Republic (1989), and at Biosphere 2 (1992).

Taubes states that "Mission One" experienced "technical glitches and [was] criticized for producing little of scientific value." We lifted off a complexly engineered $150-million project and ran it for a 2-year experimental test, as scheduled. Our "glitches" should be compared with those of any new experimental project.

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Oncogenes and Cancer

Most cellular oncogenes were discovered because they share their coding sequences with retroviral oncogenes. On that basis, it was postulated that cellular oncogenes could function like viral oncogenes, provided they have "somehow gone awry" (Jean Marx, Research News, 23 Dec., p. 1942). However, in the excitement about homology, nonhomology was overlooked, and cellular and viral oncogenes received the same names. But retroviral oncogenes have promoters that are 100 to 1000 times stronger than the promoters of the corresponding oncogenes from both normal and cancer cells (*1*). Therefore cloned viral oncogenes and artificial genes, in which the coding regions of unmutated cellular oncogenes (*ras*, *src*, and *myc*) are linked to retroviral

promoters (*2*, *3*), transform normal, euploid cells to cancer cells (*1*), but cloned cellular oncogenes do not (*4*).

The finding that point-mutated *ras* genes from some cancers transform aneuploid 3T3 mouse cells upon transfection appeared to be "making the link" between viral and cellular oncogene functions.

But the hypothesis that point mutation generates cancer genes is confirmed neither (i) experimentally nor (ii) numerically. All cells transformed by transfected *ras* genes proved to express *ras* genes 100 to 1000 times more than the cancer cells from which they were isolated—just as in cells transformed by retroviruses with *ras* genes (*1*, *2*). In other words, the transfection assay created an expression artifact in which some *ras* genes were rearranged and concatenated to allow high expression. In primary cancers, mutated *ras* genes are expressed no more than in normal proliferating cells (*1*). Indeed, point-mutated cellular *ras* genes, which transform 3T3 cells only upon transfection—are found in normal animals and in normal transgenic mice (*1*, *7*).

According to Daniel E. Koshland Jr. (Editorial, 23 Dec., p. 1925), 1 in 10^9 nucleotides is mutated every time a cell divides. As our cells contain 10^9 nucleotides and we are made up of 10^{14} cells, we contain 10^5 cells with a mutated *ras* gene. In addition, there are 70×10^5 cells with other mutated oncogenes in our bodies because there are 70 oncogenes in our cells. If these mutations were indeed oncogenic, we would all contain 70×10^5 cancer cells.

In view of this, it has been postulated that mutated cellular oncogenes play a role in multigene carcinogenesis. However, the autonomous viral oncogenes are not even models for multigene carcinogenesis (*5*). Moreover the oncogene mutation hypothesis predicts euploid cancers that are rarely found (*6*). Therefore I suggest that imbalance of chromosomes, carrying just normal genes—a perfect correlate with cancer (*6*)—be reconsidered for the understanding of oncogenesis (*1*).

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I disagree with the wording in two places in the Research News article by Jean Marx "Oncogenes reach a milestone." I am described as a "then [1972–1975] postdoc of Bishop's." Yet when I joined Michael Bishop, I was not a postdoc. I was a visiting scientist from France, holding a long-term, faculty-like position at the Centre National de la Recherche Scientifique.

Reference is also made to "Bishop and Varmus's discovery," when the first experimental evidence of the "Cellular origin of retroviral oncogenes" (*1*) is mentioned. This is work of which I am the first author and for which I received the 1987 Louis Jeantet Prize for Medicine.

The time has come to recognize the truth about this productive collaboration among scientists from France and the United States.

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China's Internet Links

As someone who has worked at both the Chinese Academy of Sciences' (CAS's) Computer Network Center and at the Institute of High Energy Physics (IHEP) in Beijing, I would like to correct an error in Ted Plafker's article "China to triple Internet links with commercial hookups" (News & Comment, 13 Jan., p. 168). The link between the CAS's Computer Network Center and Stockton, California, provided by Sprint is not "the single connection available since last spring," as the article states; nor is it "China's first direct link to a U.S. Internet gateway."

The first direct academic link from China to the United States was a link between IHEP to the Stanford Linear Accelerator Center. It was provided jointly by the Chinese Ministry of Post and Telecommunication and AT&T. It became operational in March 1993 and was used to connect IHEP with the DECnet portion of the U.S. Department of Energy's Energy Sciences network (ESnet). In March 1994, this link also became an Internet link through a gateway at ESnet. In August 1994, the far end of the link was moved from the Stanford Linear Accelerator Center to KEK, the high energy physics center of Japan, making way for a future transition from satellite to terrestrial communication using underwater fiber optic cables. Since 1993, IHEP has provided many Chinese scientists with access—first electronic mail only and, later, full access—to the Internet. Both Hu Daoyuan and Qian Hualin used IHEP's service before CAS's link to the United States was established.

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Zinc Selenide Lasers

In the Meeting Briefs of 22 April 1994, in a section entitled "Happy to see the blues" (Research News, p. 510), the work of Shuji Nakamura on gallium nitride blue light–emitting diodes (LEDs) was described, and comments were made about the rapid breakdown of zinc selenide lasers, "obviously rendering them useless for commercial applications." Gallium nitride blue light–emitting diodes should not be compared with lasers, because the conditions under which lasing occurs are vastly more demanding. The applied power density is much higher. Zinc selenide devices, when operated in the LED mode, show comparable lifetimes; these are steadily improving, as is common in the early stages of electronic devices.

Zinc selenide, as a laser, does indeed have serious problems; however, it is fundamentally a very rugged material (melting point, 1520°C). Laser action in the usable diode form has been positively established, and research solving the lifetime problems of these lasers is making rapid progress.

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