

Data and Dispute Mark AIDS Meeting

Amid protests by AIDS activists, researchers from around the world gathered in San Francisco last week to air new findings on today's most baffling epidemic. Scientific reports at the Sixth International Conference on AIDS ranged from sobering to promising, from clear-cut to questionable, chronicling many small steps forward but no giant leaps.

AIDS activists — angered by what they regard as the slow pace of treatment development and by federal policies restricting the U.S. entry of foreigners infected with the AIDS-causing virus (HIV) — vented their objections loudly throughout the five-day meeting. But clashes at the conference weren't limited to activists, as researchers wrangled over several controversial reports.

In one of the more provocative presentations, Luc Montagnier of the Pasteur Institute in Paris bolstered the highly speculative theory that an organism called a mycoplasma plays an important role in AIDS development. Montagnier says research conducted in his lab suggests HIV initially exists peacefully within the CD4 T-lymphocytes, white blood cells that assist in immune defenses. But co-infection with a mycoplasma, he contends, may transform the slowly replicating HIV into a killer.

Montagnier's group studied blood samples from 97 people with either AIDS-related complex (ARC) or full-blown AIDS, finding that 37 tested positive for mycoplasma. In addition, he says, when the team added mycoplasma to laboratory dishes containing a line of HIV-infected T-cells, the formerly lethargic virus began to replicate rapidly.

The new report dovetails with earlier findings by Shyh-Ching Lo of the Armed Forces Institute of Pathology in Washington, D.C. (SN: 12/2/89, p.356). In one study, Lo's group found mycoplasma in tissue samples from 24 of 34 people with AIDS. In another, they detected it in blood samples from 12 of 23 AIDS patients but found no trace of the microbe in blood from 22 healthy individuals. If further research establishes that the mycoplasma can act as an AIDS cofactor, people infected with both HIV and mycoplasma might prevent or delay disease progression by taking antibiotics along with antiviral treatment such as AZT, Lo and Montagnier assert.

Many scientists voice skepticism of the mycoplasma hypothesis, noting that mycoplasmas are common laboratory contaminants and questioning whether Montagnier's results might stem from sample contamination rather than patient infection. Jay A. Levy of the University of California, San Francisco, says his

team has tested the blood of 20 AIDS patients without finding a trace of mycoplasma.

In another controversial report, Martin Delaney of the San Francisco-based Project Inform described preliminary results of an ongoing study involving 46 HIV-infected people taking both AZT and "compound Q," an experimental treatment derived from the root of a Chinese cucumber plant. Upon entering the study, some volunteers were asymptomatic, while others had ARC or AIDS; all showed CD4 T-cell declines of about one per cubic millimeter of blood every three days despite AZT treatment, Delaney says. Such a decline usually heralds the start of serious illness for HIV-infected people.

Clinicians gave each person a monthly dose of compound Q in addition to AZT. After 116 days, the data showed a statistically significant rise in their CD4 counts, Delaney reports. Volunteers gained an average of two CD4 cells per cubic millimeter every three days, he says. The University of California statistician who analyzed the data told SCIENCE NEWS that about one-third of the study group showed a "dramatic" T-cell rise after taking compound Q.

A number of conference participants assailed the study, which is conducted without FDA oversight and involves no control group. "You don't know and we don't know whether this is a flash in the pan," said Arnold Relman, editor of the

NEW ENGLAND JOURNAL OF MEDICINE, who served on a drug panel with Delaney at the meeting.

Scientists seemed more united in their cautious optimism regarding prospects for an HIV vaccine, as researchers described incremental steps toward agents that might someday shield uninfected people from the virus and infected people from progression to AIDS. Gale E. Smith of MicroGeneSys, Inc., in West Haven, Conn., added to earlier evidence suggesting that his company's experimental vaccine elicits an HIV-specific immune response in healthy volunteers who test negative for the virus (SN: 6/9/90, p.363). "We are now seeing functional antibody and T-cell responses that in theory are capable of attacking and destroying all strains of AIDS virus," Smith says. The vaccine uses a genetically engineered HIV surface protein.

A killed, whole-virus vaccine also fared well in early human trials, according to Alexandra M. Levine of the University of Southern California in Los Angeles. Levine says 19 ARC patients and 50 people with asymptomatic HIV infection showed no ill effects — and 60 percent developed an immune response — after receiving the vaccine (SN: 8/19/89, p.116).

Despite encouraging results, many vaccine researchers say they don't expect to see an AIDS vaccine in widespread use before the turn of the century.

— K.A. Fackelmann

EPA suspects ELF fields can cause cancer

In its two-year analysis of studies exploring a possible connection between cancer and extremely low frequency (ELF) electromagnetic fields, the EPA concludes that a growing body of data now shows "a consistent pattern of response which suggests, but does not prove, a causal link." The draft report, unveiled in summary form last week, comes on the heels of several new epidemiologic studies linking cancers with exposures to ELF fields.

Electric and magnetic fields abound in nature. They also emanate from the flow of electricity through everything from transmission lines to household appliances. In the 11 years since Nancy Wertheimer and Edward Leeper reported their groundbreaking study suggesting a link between electric power lines and childhood leukemia (SN: 4/21/79, p.263), more than three dozen epidemiologic investigations have focused on the connection between electromagnetic fields and human cancer. Biological studies, however, have yet to prove a cause-and-

effect relationship.

The eight strongest epidemiologic studies, all involving children, "consistently found modestly elevated risks (some statistically significant) of leukemia, cancer of the nervous system and, to a lesser extent, lymphomas," the EPA report states. Those results do not seem attributable to confounding factors or biases generated by study design, according to the report.

Occupational studies, though weaker, point to excesses of the same cancers and "tend to support" these childhood studies, the report's authors note. Moreover, they say, tissue and cellular studies suggest it's "biologically plausible" that such fields might cause cancer.

In an earlier draft, the EPA authors concluded that ELF fields appear to represent a "probable human carcinogen," MICROWAVE NEWS reported last week in its May/June issue. However, according to the newsletter, that phrase was stricken sometime after March 12 and replaced with a more equivocal conclusion. MICRO-

WAVE NEWS quotes William Farland, director of EPA's health and environmental assessment office, as saying he made the change because he would have "concerns classifying [ELF fields] as a probable human carcinogen if I really did not understand how it was working."

In an April 25 letter to EPA Administrator William Reilly, Rep. Peter H. Kostmayer (D-Pa.) argued that EPA's technical reasons "for not formally classifying power-line electromagnetic fields as a potential carcinogen may have merit, but for the purpose of protecting American citizens the distinction is moot. . . . Electromagnetic fields have passed the 'duck test'; if it acts like a potential carcinogen, it must be addressed as a potential carcinogen."

But this potential carcinogen is like no other, according to a May 1989 background paper on its biological effects by the congressional Office of Technology Assessment (OTA). "ELF fields appear to be an agent to which there is no known analog," the OTA authors stated, noting that ELF effects on human tissue are subtle, complex and poorly understood, and that researchers don't even know what dose-related characteristics are important. "It may not be safe to assume that if ELF field exposure leads to health risks, exposure to stronger fields or exposure for longer periods is worse than

exposure to weaker fields or for brief periods," they wrote.

Even as EPA was completing its review, the AMERICAN JOURNAL OF EPIDEMIOLOGY published four more reports on ELF fields and cancer. One, in the May issue, showed no statistical link between a parent's work exposure to ELF fields and a child's chance of developing neuroblastoma, one of the most common childhood cancers. A similar study in the June issue found that men in certain industries face double the normal risk of fathering a child with neuroblastoma.

Two reports in the May issue focused on electric blankets. A study of white men turned up no link between the blankets and testicular cancer, while a study of women and children revealed a quadrupling in the risk of brain tumors among children whose mothers slept under electric blankets during the first trimester of pregnancy. The latter study, conducted by David Savitz and his co-workers at the University of North Carolina in Chapel Hill, also hinted that a child's use of electric blankets might increase his or her risk of childhood cancer by 50 percent, although the researchers say the subset of individuals involved was too small to be statistically significant.

Yale University researchers have begun documenting ELF exposures among 4,000 pregnant women. Because the aver-

age ELF exposures associated with electric blankets are so large, "we should be able to see the effects of those exposures if there are any," says epidemiologist Leeka Kheifets of the Electric Power Research Institute in Palo Alto, Calif., which is sponsoring the study.

EPA is now distributing a draft of its full report to two outside panels of scientific reviewers. Meanwhile, Congress stands poised to consider a pair of bills that could boost federal funds for research into the biological effects of electromagnetic fields, including ELF fields from residential power lines. — J. Raloff

Radiation limits to plunge

For the first time in 13 years, the International Commission on Radiological Protection (ICRP) will recommend a sharp reduction in current limits for exposures to ionizing radiation. "Radiation is more risky than we thought in 1977—a factor of three more dangerous," explained commission chairman Dan J. Beninson in announcing the decision last week in Washington, D.C.

ICRP is an independent scientific organization based in Didcot, England. Though compliance with its policies is voluntary, most governments base their nuclear regulations on them.

ICRP will call for reducing allowable annual worker radiation exposures from 50 to 20 millisieverts. (A chest X-ray, for comparison, typically delivers only 200 *microsieverts* to the lung.) The guidelines would allow some flexibility, however, such as a five-year averaging of doses. The current 1-millisievert limit on annual doses to the public from human activities (such as power plant emissions) would remain, Beninson says, though the commission would lower the acceptable averaging period from a lifetime to just five years.

The new guidelines are not expected to affect most workers. Where radiation protection is good, Beninson says, most workers already receive doses "substantially below" the proposed limits.

Beninson says he expects ICRP to ratify the new proposals at its November meeting in England. After that, it could take governments three years or more to translate the proposals into working regulations. □

Iraq temple may be ancient medical center

In a surprising discovery, archaeologists have found that a huge temple excavated in Iraq was dedicated to the Babylonian goddess of healing, until now considered a minor deity by researchers. The temple apparently served as a center of healing activities, reports McGuire Gibson of the University of Chicago's Oriental Institute, which released news of the discovery last week. Further work will yield important insights into early medical practice, he asserts.

The temple is in Nippur, the ancient religious center of Mesopotamia. Archaeologists first excavated the ruins in 1972. Soon thereafter, shifting sand dunes covered the site, preventing further work until digging machines cleared out much of the desert blanket in 1988.

From January through March of this year, Gibson's team examined a layer of the temple dating to between 1600 B.C. and 1200 B.C. At least five building levels lie beneath this layer, probably extending back to about 3000 B.C., he says.

Artifacts found in the temple indicate it was dedicated to Gula, goddess of healing. A lapis lazuli disk contains an inscription to Gula. Six dog figurines—one in bronze, the rest in baked clay—resemble objects associated with Gula worship at other Babylonian sites. The team also unearthed clay figurines of humans, each making a gesture referring



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Dog figurine unearthed at the temple of Gula in the Mesopotamian city of Nippur. Similar figurines at nearby sites are linked to the goddess Gula.

to a physical ailment. For instance, one figure holds his throat while another holds his stomach.

Mesopotamians made regular pilgrimages to Nippur, and some probably sought healing remedies at Gula's temple, Gibson asserts. The prominence of the temple suggests "these people were very worried about their health," he notes.

The team will return to the site next January, hoping to uncover clay tablets describing medical practices at the temple. Medical prescriptions outlining herbal and mineral treatments appear on Babylonian clay texts dating to as early as 2000 B.C., but the ingredients' identities often remain unclear, says Robert D. Biggs of the Oriental Institute, an authority on ancient medicine. Known Babylonian treatments, such as swamp-grass

potions, probably had no important physiological effects, Biggs contends.

Gula's temple may hold pollen and seeds revealing other types of plants prescribed by Babylonian physicians, Gibson suggests. Moreover, he says, the site may illuminate the working relationships among an ancient trio of healing professions: physicians; magicians who devised spells to drive out disease-causing demons; and priests who prayed for healing. — B. Bower