human history than the genetic relationships." They do not specify, however, any basis for their belief. Our data provide the first evidence that "much later" translates on average into a factor of 5 or 10. Genetic data indicate that most human linguistic phyla known today must have arisen approximately 25,000 to 8,000 years ago, while Khoisan, Indopacific, and Australian arose perhaps 30,000 to 50,000 years ago. In contrast, modern humans are more than 100,000 years old. While our dates for the origin of linguistic phyla seem more convincing than the few statements in the linguistic literature, they do not necessarily disagree with them.

L. CAVALLI-SFORZA
Department of Genetics, Stanford University, Stanford, CA 94305
A. PIAZZA
Dipartimento di Genetica, Biologia e Chimica Medica, Universita di Torino, 10126 Torino, Italy
P. MENOZZI
Instituto di Ecologia, Universita di Parma, 4311 Parma, Italy
J. MOUNTAIN
Department of Genetics, Stanford University

REFERENCES

1. L. L. Cavalli-Sforza, A. Piazza, P. Menozzi, J. Mountain, *Proc. Natl. Acad. Sci. U.S.A.* **85**, 6002 (1988).
2. L. L. Cavalli-Sforza *et al.*, *Cold Spring Harbor Symp. Quant. Biol.* **51**, 411 (1986); A. M. Bowcock *et al.*, *Gene Geogr.* **1**, 47 (1987).
3. B. Efron, *The Jacknife, Bootstrap and Other Resampling Plans* (Society of Industrial and Applied Mathematics, Philadelphia, PA, 1982); J. Felsenstein, *Evolution* **39**, 783 (1985).
4. P. Astolfi, K. K. Kidd, L. L. Cavalli-Sforza, *Syst. Zool.* **30**, 156 (1981); M. Nei, *Molecular Evolutionary Genetics* (Columbia Univ. Press, New York, 1987).
5. N. E. Morton, *Outline of Genetic Epidemiology* (Karger, Basel, Switzerland, 1982). L. L. Cavalli-Sforza, in *Human Population Genetics; The Pittsburgh Symposium*, A. Chakravarti, Ed. (Van Nostrand–Reinhold, New York, 1984), pp. 229–248.
6. L. L. Cavalli-Sforza, P. Menozzi, A. Piazza, in preparation.
7. J. H. Greenberg, *Language in the Americas* (Stanford Univ. Press, Stanford, CA, 1987).
8. I. Goddard, *Curr. Anthropol.* **28**, 656 (1987).
9. A. G. Kluge and J. S. Farris, *Syst. Zool.* **18**, 1 (1969).
10. J. S. Farris, *Am. Nat.* **106**, 645 (1972).
11. J. Archie, *Evolution*, in press.

Erratum: In Eliot Marshall's article "Bomb factories of the 21st century" (News & Comment, 20 Jan., p. 305), it was erroneously reported that the Department of Energy proposed to close down the Mound Facility in Miamisburg, Ohio. In fact the department suggested shifting all radiation-related work (amounting to 30% of the total) to other sites.

Erratum: In figure 3B (p. 699) of the report "Calicheamicin γ_1^I and DNA: Molecular recognition process responsible for site-specificity" by N. Zein *et al.* (12 May, p. 697), the stereo pair was incorrectly printed and inverted. The correct representation is a mirror image of what was shown.

Agency for International Development

Announcement of
Malaria Vaccine Research & Development
Request for Applications
[RFA-ST/H-89-001]

Background. For more than 20 years, the United States Agency for International Development (A.I.D.) has supported a program of applied research in malaria vaccine development. Currently, the primary research foci of the Malaria Vaccine Research & Development Project include:

—the identification and characterization of malaria parasite antigens, with emphasis on asexual, sporozoite, and liver stages of the parasite by immunochemical and/ or molecular biological methods, for development of vaccine candidates;

—the elucidation of the importance of identified antigens and B-cell and T-cell epitopes in providing a protective immune response in naturally acquired human malaria and in relevant animal models, including appraisals of strain specificity of protective immunity;

—the elucidation of humoral and cellular effector mechanisms of protective immunity to malaria and the development of *in vitro* correlates of protective immunity;

—the modification of the structure and/or mode of presentation of antigens, which have been shown to have a role in protection, in an attempt to increase their ability to induce a protective immune response;

—the testing of vaccine candidates for immunogenicity, safety, and efficacy in appropriate animal models, including non-human primates.

Proposals. A.I.D. is soliciting proposals for Cooperative Agreements describing a program for malaria vaccine research. In general, the range of activities requested in the RFA is as outlined above. However, there is a special interest in proposals whose major emphasis is on development of vaccines that induce responses mimicking natural immunity (*i.e.*, a state characterized by protection from disease but not necessarily from infection) thus allowing restimulation of immunity through natural exposure to parasites. It is the intent of A.I.D. to support 3-year research programs. **Only U.S. institutions are eligible for these grant awards.**

Applications. The American Institute of Biological Sciences (AIBS) will process all applications. **Proposals must be received by September 1, 1989.** The complete RFA and detailed information on the application process may be obtained from:

American Institute of Biological Sciences
1800 North Kent Street (Suite 930)
Arlington, Virginia 22209
fax: 703-527-4404