existence of distinct types. However, the two tests in Chiapas emphasize the need for more accurate "tuning" of genetic matches between native and sterile flies to assure removal of all types of screwworms simultaneously.

We use the term "gamodeme" to avoid the semantic polemics associated with identifying "species" among closely related forms. "Species" was used (*2*) only where types D and I were able to increase in the presence of sterile type F flies. Mating discrimination must be very high for a population to withstand such an excess of sterile flies. We consider an ability to withstand such a strong challenge to be adequate evidence of sufficient isolation in nature to warrant the species distinction. Further identification of species will depend on analyses with pure type cultures, which are unavailable. Whether or not any types eventually achieve formal species status, it is important that the natural diversity be recognized and its relevance to the eradication program be ascertained. The USDA has implemented changes in this direction, and we wish to encourage those responsible to continue. We cannot overemphasize the need for much more information concerning parthenogenetic reproduction and competitive interactions among different types of screwworms.

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T-Lymphocyte Immunology and Hominoid Evolution

In a study of primate T-cell reactivity with various antibodies to human T-cells, Haynes *et al.* (*1*) find that the number of human T-cell determinants absent on the T lymphocytes of various nonhuman primates is an approximately linear function of the time since the divergence of each primate's lineage from the lineage leading to *Homo*. More precisely, a correlation coefficient (Pearson's *r*) of 0.99 obtains between the number of such absences (*2*) and the divergence times estimated by Sarich and Wilson (*3*). The T cells of the African apes react with all reagents specific to human T cells; those of other primates do not. Haynes *et al.* suggest that their findings support two hypotheses: (i) that there has been a roughly constant rate of evolutionary change in primate T-cell antigen determinants, and (ii) that "man and African apes shared a relatively recent common ancestor"—perhaps about 5 million years ago, as proposed by Sarich and Wilson (*3*).

Haynes *et al.* are asking their valuable and suggestive findings to carry a greater weight of theory than they are able to bear. Finding a linear relationship between determinant absences and divergence times cannot at one and the same time confirm divergence-time estimates *and* support the thesis that the number of such absences is a linear function of time since divergence from the human lineage. The linear relationship is confirmed only if the divergence-time estimates are as secure as the immunological findings; conversely, the divergence-time estimates are confirmed by their correlation with numbers of absent human T-cell determinants only if we have independent reasons for expecting that the relationship between these two variables will be linear. In this case, both the divergence-time estimates and the assumed constant rate of change are controversial. Various opponents of the school of thought pioneered by Sarich and Wilson have challenged the Sarich-Wilson divergence-time estimates by postulating nonlinear rates of molecular evolution in the Hominoidea (*4*). Similar postulates, applied to the data of Haynes *et al.*, would yield different estimates of divergence times. The high coefficient of correlation that Haynes *et al.* find between divergence time and number of absent human T-cell determinants is partly determined by the divergence-time estimates they employ, which yield one cluster of points at 5 to 10 million years and another at 40 million years (with only one point in between), thus virtually ensuring a high value of *r* if a direct relationship of any sort, linear or not, obtains between the two variables. Even if a linear relationship is assumed, almost equally high coefficients of correlation can be obtained by quite different divergence-time estimates. For example, the assumption that African apes, orangutans, gibbons, macaques, and New World monkeys diverged from the human lineage at 10, 15, 20, 40, and 55 million years, respectively, yields an *r* of 0.986 when applied to the T-cell data, which is not significantly different from the *r* obtained by Haynes *et al.*

The data of Haynes *et al.* are compatible with the now generally accepted notion that orangutans are less closely related to us than chimpanzees and gorillas are; but the support they provide for this notion is negligible, because the sole human T-cell determinant that is absent in orangutans is present in gibbons. The only respect in which the T-cell determinants of African apes resemble those of human beings more closely than do those of orangutans is therefore a primitive retention (symplesiomorphy), which cannot argue for monophyly of a human-gorilla-chimpanzee grouping (*5*).

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2. I am grateful to Dr. B. F. Haynes for informing me that *R*, the symbol used in his article (*1*), signifies the same coefficient as the usual lowercase *r*. Coefficients of correlation (*r*) and of determination (r^2) computed by Haynes *et al.* (*1*) apparently assume a divergence of *Homo*, not only from *Pan* and *Gorilla* but also from *Homo*, 5 million years ago, as shown in their Fig. 1; those given by me assume zero divergence times and zero immunological difference for the point representing *Homo-Homo* comparisons.
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7. I thank Drs. W. L. Hylander and R. F. Kay for their comments on earlier drafts of this manuscript.

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