## Retraction

IN OUR RESEARCH ARTICLE "FUSION-competent vaccines: Broad neutralization of primary isolates of HIV" (*1*), we reported that immunogens comprising formaldehyde-fixed cocultures of cells expressing the human immunodeficieny virus–1 (HIV-1) envelope glycoprotein and those expressing CD4 and CCR5 receptors were able to elicit, in CD4- and CCR5-transgenic mice, antibodies capable of potent neutralization. Recently, we have uncovered a specific cytotoxic effect of these complex sera that accounts for a major fraction of that reported neutralization. The cytotoxicity resulted in a significant undercount in the numbers of infected foci in our assay and, thus, the appearance of virus neutralization. This effect was variable in fusion-competent sera and, importantly, was notably reduced in sera from mice immunized with numerous control immunogens. The basis for the specific cytotoxic effect is unknown. This unappreciated cytotoxicity significantly reduces both the potency and the breadth of primary virus neutralization. Therefore, we retract our published results.

We continue our efforts to understand the conformational changes in the envelope glycoprotein that mediate virus binding and entry, in the belief that this information will inform HIV vaccine development. We regret our error and the premature hopes that our publication engendered.

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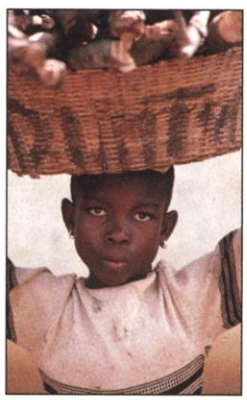
Reference

1. R. A. LaCasse *et al.*, *Science* **283**, 357 (1999).

## Looking at Child Labor

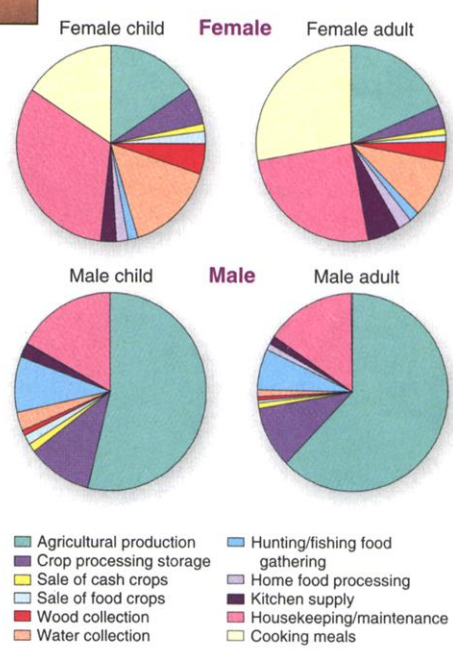
EXCESSIVE CHILD LABOR HAS BEEN WIDELY observed, particularly in underdeveloped countries, where the International Child Labor Program estimates that there are at least 250 million working children between the ages of 5 and 14. As a consequence, child labor has been widely condemned by statutory agencies. However, there is a paucity of objective information regarding how child labor impacts on education, leisure, sleep, and other activities. This information is important because child labor is likely to contribute to the economic viability of many food-insecure societies (*1*, *2*). If objective data demonstrated that children's labor left intact education, leisure, and sleep, such labor practices may actually be less onerous than previously thought. Conversely, if such data detailed deleterious effects of child labor on these variables, it would underscore the condemnation of excessive child labor. To redress this deficit in knowledge, we comprehensively and objectively investigated the impact of child labor in children from agricultural communities in the Cote d'Ivoire, where child labor is commonplace (*3*).

We studied 1228 children, aged 6 to 14 years old, and 3352 adults living in three agricultural regions of Cote d'Ivoire separated by more than 400 km: the Northern Savane, the West Forest, and the East Forest. Because of the geographical diversity, the 6-month study period encompassed the gamut of agricultural intensities and activities. A trained enumerator observed each child or adult participant for all waking hours over 7 days. Every 15 min during waking hours, the enumerator assigned one of 200 numeric codes to objectively represent the subject's activity for that period. All activities (nonwork and work) for each individual were recorded separately and independently of cohabitants' activities. Because the study was conducted to objectively quantify all physical activities over a prolonged period of time, it seems unlikely that work practices of children would become altered compared with adults. This contention was supported by the internal consistency of the results.



Children were engaged in labor for half the time that adults were, representing 2 to 3 hours per day. Two-thirds of the children did not attend school, and the average duration of education was 142 min/day for those that did. Moreover, work burdens of children who did not attend school were threefold greater than those of children who attended school. It is notable that children had similar leisure time (598 min/day) and sleep duration (536 min) compared with adults (560 and 520 min/day, respectively). Thus, child labor in these communities was associated with decreased education. The tasks that the children performed mirrored the intensity of the tasks that the adults performed (see graph). Gender disparity in work practices appeared to override the influence of age. Female children worked 60% longer than male children. Girls worked both on domestic and agricultural tasks, whereas boys worked predominantly in agriculture (see graph), which is consistent with the gender division of labor seen in the adults from these communities (*4*). Thus, although children worked for half as long as their parents, they performed equally onerous tasks.

This study explicitly demonstrates the impact of child labor on "childhood" in the Cote d'Ivoire. Children's contribution, expressed either in labor duration or intensity, is substantial, and we estimate that children directly contributed 11% of the economic productivity of their communities. Multivariate analyses of the variables that predict child labor in these communities (*3*) identified poverty and low parental ed-




**The distribution of work tasks for male and female children and adults separated by gender.**

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ucation as predictors of children joining the workforce. The key role of poverty in predicting child labor is also illustrated by the impact of the acute economic recession that affected Cote d'Ivoire between 1985 and 1988. Here, child labor increased from 962 to 1593 hours per year, with the greatest increases being in families of lowest income (*3*). Thus, there appear to be specific variables; poverty is one, associated with children participating in labor and lacking education.

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References and Notes

1. C. Grootaert, R. Kanbur, *Intl. Labor Rev.* **134**, 187 (1995).
2. Food and Agriculture Organization (FAO) of the United Nations, *The State of Food Insecurity in the World* (FAO, Rome, 2001).
3. C. Grootaert, "Child labor in Cote d'Ivoire" (Policy Research Working Paper 1905, World Bank Social Development Department, Washington, DC, 1998).
4. J. A. Levine *et al.*, *Science* **294**, 812 (2001).

5. J.A.L. is supported by NIH-DK56650

## Letters to the Editor

Letters (~300 words) discuss material published in *Science* in the previous 6 months or issues of general interest. They can be submitted by e-mail (science_letters@aaas.org), the Web (www.letter2science.org), or regular mail (1200 New York Ave., NW, Washington, DC 20005, USA). Letters are not acknowledged upon receipt, nor are authors generally consulted before publication. Whether published in full or in part, letters are subject to editing for clarity and space.

## Coral Reef Biodiversity and Conservation

IN THEIR REPORT, "MARINE BIODIVERSITY hotspots and conservation priorities for coral reefs," C. M. Roberts *et al.* (15 Feb., p. 1280) present a strategy for marine conservation based on centers of endemicity. They define "endemics" as species that occur in ≤10 square grids of ocean that contain coral reefs (each cell being $5 \times 10^4$ km$^2$), regardless of the spatial distribution of occupied cells. As a consequence, endemicity and location are confounded. Where all grid cells containing reefs are contiguous, an endemic would have a geographic range the size of the Great Barrier Reef, the largest reef system in the world. Alternatively, on isolated oceanic reefs, an endemic occupying 10 dispersed cells could stretch across an ocean. Ignoring this distinction, Roberts *et al.* attempt to show concordance in patterns of endemicity among fish, corals, snails, and lobsters. However, many of these "multitaxa centers of endemism" have no endemic corals. As the architects of reefs upon which so many other species depend, corals cannot be dismissed as an unimportant exception. Furthermore, Roberts *et al.* confuse centers of marine endemicity and centers of high biodiversity (i.e., true hotspots), stating that "centers of endemism are major biodiversity hotspots" (p. 1280). Instead, many of the apparent centers of endemism they identify are very small marginal locations with low overall diversity (e.g., Cape Verde Islands and Easter Island). Furthermore, in an era of global warming, we caution against using conservation strategies that focus heavily on endemics. It would be interesting to use climate modeling to predict which coral reef regions are most at risk and to what extent they differ from the 18 locations identified by Roberts *et al.*

Roberts *et al.* also state the advantages of