Violence and Biology

Michael Lyon's letter (8 July, p. 171) discussing what one of us (A.R.) did or did not state about the biological basis of violence at the February 1994 AAAS annual meeting contains misstatements and apparent misconceptions, and we would like the opportunity to clarify two points. First, the statement by Lyon that one of us (A.R.) claimed that brain scans of murderers showing frontal lobe dysfunction bolster the genetic basis of violence is incorrect. Instead, it was stated that, although the defect could conceivably be genetic in origin, it is more likely to be environmental in nature; the possible roles of environmental factors, such as severe child abuse, birth complications, and a history of head injury in predisposing to prefrontal dysfunction, were then outlined. We believe this because current evidence indicated that while property offending may have a genetic basis, violence seems not to (*1*). Second, it is inferred that the effect of our work is "to blame urban crisis on supposedly defective inner-city residents, especially young black men." We strongly disagree with this inference because (i) our work to date has been on whites, not blacks; (ii) inner-city violence is clearly a problem affecting all ethnic groups, not just one; and (iii) our findings highlight the critical importance of two *environmental* factors (early maternal rejection and birth complications) in predisposing to violence. We do, however, believe that our initial findings indicate that better perinatal health care to underserved, inner-city populations may help reduce violence. While we agree with the statement that we must not underestimate the potential misuse of biological research, we must likewise not underestimate the potential value of the new generation of biosocial research in helping us prevent violence.

Adrian Raine
Patricia Brennan
Sarnoff Mednick
Department of Psychology,
University of Southern California,
Los Angeles, CA 90089-1061, USA

References

1. S. A. Mednick, W. F. Gabrielli Jr., B. Hutchings, *Science* **224**, 891 (1984).

■

"Neurogenetic Determinism"

In his News Reports article "Behavioral genetics in transition" (Genes & Behavior, 17 June, p. 1686), Charles C. Mann refers to my critique of neurogenetic determinism given at the 1994 AAAS annual meeting and characterizes my comments as indicating that I fear such determinism "will erode human dignity." I do not believe I have ever written, said, or implied anything about "human dignity." What I have said is that an obsession with attempting to account for social distress or deviance, from "violence" to alcoholism, on the basis of genetic variation is poor science and a worse indicator of policy directions. It is bad science because it reifies and arbitrarily agglomerates complex social processes and reduces them to aspects of individual behavior to be "explained" in terms of serotonin levels in the cerebrospinal fluid of incarcerated criminals, shyness in early infancy, or even the differential tendencies of kittens to kill mice. It is bad social policy because it runs the risk of victim blaming, diversion of scarce resources, and the generation of a technocratic ideology which, as we have seen, even in *Science* (D. E. Koshland Jr., Editorial, 13 Oct. 1989, p. 189), can end up with speculations about the prospect of genetic engineering solving the problem of homelessness. The determinants of any individual's behavior clearly include their genes. But just as clearly, it would be ludicrous to ascribe the growth in homelessness in either the United States or the United Kingdom during the last 15 years to a rapidly spreading mutation, or to ascribe the high degree of violence in the United States in comparison with that in the United Kingdom to some abnormality in the American genotype. For both phenomena, the most parsimonious explanation must relate to the consequences of living in societies with dramatic extremes of wealth and poverty and highly individualistic social philosophies—and, in the case of American violence, to the presence of more than 200 million handguns. Good science—that is, science which can successfully explain the phenomenon it is studying—must begin by recognizing the organizational level appropriate to that phenomenon.

Steven Rose
Department of Biology, Open University,
Milton Keynes MK7 6AA, United Kingdom

Corrections and Clarifications

Note 41 (p. 1556) of the article "How nature builds the pigments of life: The conquest of vitamin B_{12}" by Alan R. Battersby (10 June, p. 1551) was incorrect as stated. The correct note should have read, "The possibility should be borne in mind that precorrin-3B (**15**) is initially generated as the δ-lactone (to C-20) but that, on keeping after release from the enzyme, it rearranges to the γ-lactone (to C-1)."

The caption for figure 5 (p. 1104) in the article "The return of Phineas Gage: Clues about the brain from the skull of a famous patient" by H. Damasio *et al.* (20 May, p. 1102) should have stated that the area of the brain colored green in the figure is Wernicke's area and that the area colored blue is the somatosensory cortex. In the same caption, the first word of the last descriptive phrase should have been "Medial," not "Medical."