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References

1. *Endless Frontier, Limited Resources: U.S. R&D Policy for Competitiveness* (Council on Competitiveness, Washington, DC, 1996).

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Psychobiology and Biopsychology

In reference to Eliot Marshall's News & Comment article of 9 August (p. 731), it is difficult to understand why drug-abuse neuroscientists are concerned about being fully integrated into the National Institutes of Health (NIH) peer review system. Those scientists have conducted cutting-edge research on and have made major contributions to our understanding of brain and behavior: They predicted (from behavioral studies) the existence of and then identified several classes of opiate receptors, thereby revolutionizing the concept of neurotransmitters and brain function; they specified and cloned the receptors for every major drug of abuse (and discovered several completely novel ligands); they advanced the conceptualization of drug dependence as a biologically mediated disease; and they made fundamental discoveries involving the mechanisms of analgesia, tolerance and dependence, pleasure and pain, and reward and punishment, and then used all of this information to develop new treatments for drug abuse, alcoholism, nicotine addiction, and pain. In light of these and other impressive accomplishments, they should be able to compete successfully against and take their place among the best in the world in the life sciences.

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Marshall's article suggests that the distinction between psychobiology and biopsychology is fuzzy and hard to explain, even by NIH staffers. This portrayal of arbitrariness in naming these two neuroscience specialties is not justified. Psychobiology emphasizes biologically dependent variables (for example, brain states) as functions of psychological or behavioral independent variables. Biopsychology emphasizes psychologically or behaviorally dependent variables as functions of biological independent variables (for example, drug states). The two approaches to brain and behavior are complementary in that it is impossible to establish a causal link or isomorphism between a behavioral state and a brain state without both approaches. It is high time that the two were combined in NIH study sections.

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Science Teaching: How to Spend $5 Million

I second the opinion of Stan Metzenberg (Letters, 9 Aug., p. 721), regarding the absurdity of the National Science Foundation spending $5 million to encourage faculty at research universities to teach well. Metzenberg's critique, however, which aims at increased support for the "second-tier universities" where "faculty actually teach their own courses," leaves out the fact that it is this nation's liberal arts and sciences colleges which have historically produced a dispro-