portionate growth of the entire posterior supratemporal region.

These preliminary data suggest that disproportionate growth, and perhaps exaggerated asymmetry, occur in the posterior supratemporal region in individuals with Williams syndrome. However, establishing whether this asymmetry is a source of musical ability will have to await more detailed analyses. Also, the fact that individuals with Williams syndrome typically possess exceptional language abilities relative to other cognitive domains and despite mental retardation (2) introduces the possibility that planum temporale asymmetry is related to linguistic abilities rather than, or as well as, musical abilities.

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References

1. T. L. Jernigan, U. Bellugi, E. Sowell, S. Doherty, J. Hesselink, *Arch. Neurol.* **50**, 186 (1993).
2. U. Bellugi, P. P. Wang, T. L. Jernigan, in *Atypical Cognitive Deficits in Developmental Disorders: Implications for Brain Function*, S. H. Broman and J. Grafman, Eds. (Erlbaum, Hillsdale, NJ, 1994), pp. 23–56.

Fusion Progress

We disagree strongly with the letter by David Montgomery (8 Sept., p. 1328) in which he criticizes the fusion program for an alleged lack of scientific culture and content. He characterizes the field as it was in its infancy, approximately 20 years ago. He does not acknowledge the program's success and degree of scientific maturation in the intervening two decades.

It is important to understand the implications of the fact that the fusion process requires high temperatures, on the order of 10 kilovolts, and that the behavior of matter at these temperatures takes on special properties, well outside those typical of terrestrial experience. Investigating these properties has led to the development of the subfield of high-temperature plasma physics. Facilities have been developed that are capable of producing plasmas of fusion temperature and density, and, as well, the science governing the behavior of these plasmas has also been developed. This science base has three parts: (i) a much increased and continually expanding understanding of the underlying physics; (ii) an ability to test this understanding with specialized diagnostics routinely producing detailed time-resolved profiles of density, temperature, magnetic field, current, and so forth; and (iii) the development of sophisticated computer codes that translate fundamental understanding into practical tools for experimental testing of theory and for fusion facility design.

Montgomery criticizes, in particular, fusion plasma diagnostics. His characterization is out of date. Diagnostic instruments have been developed and widely deployed to measure the spatial and temporal profiles of *all* the internal plasma variables he says are largely lacking. Comparison of these measurements with theory indicates a mature, first-principles understanding of plasma stability, control, and current flow. Plasma transport, being driven by low-level turbulent processes, is less well understood from first principles and is the subject of intense current research. An empirical description is also being developed through a "wind tunnel" approach to design new machines.

Montgomery also criticizes the technical review processes of the fusion program. However, with the increased internationalization of fusion research over the past two decades, American plasma physics and fusion research have experienced much wider and more intense assessments than could be had earlier through the "rough-and-tumble atmospheres of university seminars."

Fusion is being pursued for its promise as an environmentally benign energy source. This mission orientation should not, and does not, lower its scientific standards. Indeed, the scientific progress of fusion is a subject of which we are most proud.

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CO Binding and Bending Energetics

Robert F. Service (Research News, 18 Aug., p. 920) provides a lively sketch of the debate over the geometry of carbon monoxide (CO) binding to myoglobin and its importance for understanding the protein's ability to discriminate CO from O_2. While Service focuses on the conflicting structural interpretations of spectroscopic and x-ray diffraction data, I would like to highlight the argument from energetics. Because electronic forces strongly favor an upright geometry, it takes more energy to bend the Fe-CO bond significantly than the protein can muster through steric forces. The estimation of this energy from vibrational spectroscopy (*1*) was one of the first of the "chinks . . . in the armor" of the bent-CO dogma.

The energy argument has an important corollary: The absence of significant bending does *not* mean that steric forces play no role in discriminating between CO and O_2 (*2*). Precisely because of CO's strong preference for upright binding, steric forces may well lower the CO affinity, even if they are not strong enough to bend the CO once it binds. Site-directed mutagenesis provides some support for this view. When the distal histidine residue, the side chain of which is positioned to interfere with upright binding, is replaced (*3*) by the sterically undemanding glycine, the CO affinity *increases*, by 1.0 kilocalories per mole. At the same time, the O_2 affinity *decreases*, by 1.6 kilocalories per mole, reflecting the importance of the attractive force of the hydrogen bond, mentioned by Service, between the distal histidine and the bound O_2. These changes suggest that steric repulsion of CO and H-bond attraction of O_2 are *both* important in discriminating CO from O_2. However, other influences may also be at play, including changes in the occupancy of the binding pocket by water molecules (*4*). Further work is needed to delineate the various contributions to the binding energies.

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References

1. X.-Y. Li and T. G. Spiro, *J. Am. Chem. Soc.* **110**, 6024 (1988); G. B. Ray, X.-Y. Li, J. A. Ibers, J. L. Sessler, T. G. Spiro, *ibid.* **116**, 162 (1994).
2. J. P. Collman, J. I. Brauman, T. R. Halbert, K. S. Suslick, *Proc. Nat. Acad. Sci. U.S.A.* **73**, 3333 (1976)
3. J. S. Olson *et al.*, *Nature* **336**, 265 (1988).
4. T. Li, M. L. Quillin, G. N. Phillips Jr., J. S. Olson, *Biochemistry* **33**, 1433 (1994).

Letters to the Editor

Letters may be submitted by e-mail (at science_letters@aaas.org), fax (202-289-7562), or regular mail (*Science*, 1333 H Street, NW, Washington, DC 20005). Letters will not be routinely acknowledged. Full addresses, signatures, and daytime phone numbers should be included. Letters should be brief (300 words or less) and may be edited for reasons of clarity or space. Beginning in October 1995, our previous policy of consulting with all letter authors before publication will be discontinued.