Third, our model implies that as organisms vary in size, they must redesign their resource distribution networks in order to comply precisely to the predicted quarter-power scaling. For example, as mammals vary in mass over more than seven orders of magnitude, they change the branching architecture of the circulatory and respiratory systems, the exchange surface between these systems in the lungs, the oxygen affinity of hemoglobin, the density of capillaries in the tissues, and the genetic code and developmental program that direct these changes. When the variation in mass is not too large, organisms may be able to "get away" without making all of these changes, causing the observed exponents to deviate from those predicted by our model.

Fourth, several of the references cited by Beuchat (*2*) conclude that quarter-power scaling is widespread in biology and discuss at length its possible mechanistic basis. There is little discussion of third-power scaling.

Fifth, the deviant values mentioned by Beuchat were obtained empirically. She offers no theoretical explanation for them. Our model develops a theoretical and mechanistic basis for the ubiquitous quarter-power scaling in biology. It also predicts some departures from these values, such as the small deviations from quarter-power scaling observed in the smallest mammals.

Finally, our model is not intended to account for all observed variation in biological allometry. Like any model, it is a deliberate oversimplification that can serve as a point of departure for understanding a much more complicated reality. It should be useful if it captures the essence of the mechanisms that underlie biological scaling and if, by making theoretical predictions, it helps to explain observed deviations from these values.

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References

1. M. D. Pagel and P. H. Harvey, *Am. Nat.* **132**, 344 (1988).
2. A. M. Hemmingsen, *Rep. Steno. Mem. Hosp. (Copenhagen)* **9**, 1 (1960); K. Schmidt-Nielsen, *Scaling: Why Is Animal Size So Important?* (Cambridge Univ. Press, Cambridge, UK, 1984); W. A. Calder III, *Size, Function and Life History* (Harvard Univ. Press, Cambridge, MA, 1984).

Corrections and Clarifications

The News article "NIH case ends with mysteries unsolved" by Jocelyn Kaiser (26 Sept., p. 1920) should have indicated that the refrigerator mentioned was in a conference room, not in a laboratory.

In the Table of Contents for the issue of 5 September (p. 1411), the title of the report by K.-C. Yeh *et al.* (p. 1505) was incorrect. The title should have been "A cyanobacterial phytochrome two-component light sensory system."

In reference 41 (p. 725) of the article "Exploitation of mammalian host cell functions by bacterial pathogens," by B. B. Finlay and P. Cossart (2 May, p. 718), the page number for the article cited should have been "712," not "5313."

Letters to the Editor

Letters may be submitted by e-mail (at science_letters@aaas.org), fax (202-789-4669), or regular mail (*Science*, 1200 New York Avenue, NW, Washington, DC 20005, USA). Letters are not 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. They may appear in print and/or on the World Wide Web. Letter writers are not consulted before publication.