

THE *Current*

May 9, 2002

Gail Gallesich Brown

BIOLOGISTS TAKE NEW LOOK AT METABOLISM

Research in metabolism published in this week's issue of *Nature* explains that the relation between rates of metabolism and body mass in animals may be more complicated than current models can describe. The authors offer a new model, and a new understanding of the problem, as Ewald Weibel says in the News and Views section of the journal.

Raul K. Suarez, co-author and associate professor of biology at the University of California, Santa Barbara, calls the publication a "concept paper" suggesting that multiple factors must be considered when defining metabolism in relation to size. Such factors include the sizes of different organs, the physiological state (rest or exercise), energy supply and demand pathways.

Wiebel poses the question, "Why should a mouse burn six times more energy per minute than a human? The first intuitive answer is, to keep warm." He explained that this idea appeared to be supported when it was found in 1883 that the body's surface-to-volume ratio or the $2/3$ power of body mass. Another slightly different number was developed in 1932, which since that time, many investigators have contested or rationalized, according to Wiebel.

"There may not even be a single power law relation between metabolic rate and body size," said Wiebel of the new research. (The authors) "find it to be different for basal and maximal metabolic rate, and explain why."

Suarez studies hummingbirds, which are at the upper limit of metabolism for vertebrates. He also studies flying insects. Collaboration with scientists at the University of British Columbia -- Charles-A. Darveau, Russel D. Andrews, and Peter W. Hochachka -- who co-authored the paper, led to the insights

embodied in their article in Nature. [_x000B_](#)

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.