the muscle fiber, with a varying ratio of capillary blood supply to oxygen consumption; in other words, there is marked heterogeneity. Three contributions deal with modifications and improvements to the basic single-capillary Krogh-Erlang model for oxygen movement from blood into the cells, but only in muscle and using only one dimension of measurement: the distance between capillary and muscle fiber. Eggleton and Ross describe improved morphometrics, particularly the use of capillary domains—two-dimensional polygons limiting the cross-sectional area of muscle fibers supplied by each capillary. The actual domains are obtained by microscopy and show a smooth statistical distribution of domain size. Hoofd takes an analytic approach to updating the Krogh-Erlang model, listing 15 simplifying assumptions and investigating the effect of some of them, such as that there are multiple capillaries rather than a single one, that oxygen flux is facilitated by hemoglobin in erythrocytes and myoglobin in muscle cells, and that there is heterogeneity in distribution. Groebe reviews the numerical data available for use in models and uses a variant of the Krogh-Erlang model to demonstrate that several of the simplifying assumptions can safely be ignored.

Oxygen transport in plants, a topic that should fascinate those interested in oxygen delivery to mammalian tissues, is discussed by Beckett and Armstrong. In marsh plants oxygen is carried through a gas-filled cortex (aerenchyma) to cells deep in an anaerobic environment in which the loss of carbon dioxide radially combined with the local consumption of oxygen produces a negative pressure in the aerenchyma and convective flow from the air above. It would be interesting to compare oxygen and carbon dioxide transport in plants with transport in the gas-filled tracheoles of insects. The models of plant ventilation put forth in this chapter are especially useful because they can be tested experimentally.

I recommend this book to anyone interested in the most recent developments in morphometry and modeling of gas transport systems.

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Vignettes: Quasi-Knowledge

I wonder whether the phrase "ontogeny recapitulates phylogeny" would so persistently have fascinated biologists, or so long have survived among the debris of half-forgotten science that we all retain from high school, if it were not rather euphonious. Would something like "development repeats evolutionary history" have worn so well?

—*Keith Stewart Thomson*, in *The Common but Less Frequent Loon and Other Essays* (Yale University Press)

If you made a list of all the things you know for certain under four headings: (1) those things that you know from direct experience, (2) those that logically follow from self-evident truths, (3) those that you believe because you were told, (4) those you "just know" because of an intuitive gut-level feeling, which one of the headings would have the longest list?

—*Mihaly Csikszentmihalyi*, in *The Evolving Self: A Psychology for the Third Millennium* (HarperCollins)

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