Metabolism energizes all biological processes, and its tempo may importantly influence the ecological success and evolutionary fitness of organisms.We also discuss theoretical and practical implications of interactive effects on metabolic rate and provide suggestions for future research, including holistic system analyses at various hierarchical levels of organization that focus on interactive proximate (functional) and ultimate (evolutionary) causal networks.Our review highlights the complex, intimate inter-relationships between physiology and ecology, knowledge of which can shed light on various problems in both disciplines, including variation in physiological adaptations, life histories, ecological niches and various organism-environment interactions in ecosystems.

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