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Biology of the Reptilia. Vol. 16, Ecology B: Defense and Life History by Carl Gans; Raymond B. Huey

Review by: Steven J. Arnold

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phagocytosis or endocytic pinocytosis are seen as a possible means to enhance the efficacy of antiviral compounds. The final chapter describes the application of anti-phytoviral substances in agriculture, and suggests that antiviral therapy has advanced further in plants than in animals and man. The book will be most valuable for the serious students of molecular virology, immunology, vaccines, and antiviral therapy—Hjordis M. Foy, *School of Public Health and Community Medicine, Epidemiology, University of Washington*

Biology of the Reptilia. Vol. 16, Ecology B: Defense and Life History. Carl Gans and Raymond B. Huey, eds. 659 pp. Alan R. Liss, 1988. \$74.50.

This beautifully edited and produced volume reviews the state of the art in studies of reptilian antipredator behavior and life history. From Greene's encyclopedic chapter, I concluded that progress in the study of defense mechanisms can be attributed to a handful of recent experimental studies (by Smith and by Gehlbach, for example). That conclusion was reinforced by Pough's chapter on mimicry, in which the history of experimental work on insects is held up to herpetologists as a model. Pough goes

beyond lessons from lepidopterists and suggests that mimics will only crudely resemble their models when the models are as dangerous as venomous snakes. Janzen's photographs of abstract mimicry of vipers by moth and butterfly larvae illustrate this point. Chapters on comparative studies of life history by Dunham, Miles, Morin, Reznick, and Wilbur underscore the growing crisis in this discipline—estrangement between theory and data analysis. These authors analyze extensive new compilations of data and uncover new trends, but they take essentially no guidance from the voluminous theoretical literature on life-history evolution. Theory is invoked as a litany and not to provide an agenda of urgent untested predictions.

Either we lack a truly predictive theory or we need more work on the connections between theory and data analysis. One way out of the present cul-de-sac is suggested by Harvey and Zammuto's analysis of mammalian life history in *Nature* (1985), which revealed a correlation between life expectancy and age of first reproduction by removing the masking effects of body size. Another promising path is Zeng's effort in *Evolution* (1988) to build formal connections be-

tween intra- and interspecific studies of correlation. Other challenges for life-history workers are to incorporate new methods and results from the study of eggs and embryos (reviewed by Packard and Packard) and to go beyond conventional life tables to measure male fecundity. Why should the study of paternity and mating systems be divorced from the study of life history?—Stevan J. Arnold, *Ecology and Evolution, University of Chicago*

Oral Sustained-Release Formulations: Design and Evaluation. Avraham Jacobi and Eva Halperin-Walega. 252 pp. Pergamon Press, 1988. \$42.

This book reflects current thinking on the design and evaluation of sustained-release dosage forms for oral use. As well as describing prospective methods for applying pharmacokinetic data to evaluate the feasibility of a sustained release product, the implications of nonlinear kinetics and protein binding for sustained-release products are discussed. The effects of GI physiological factors such as motility, pH, and gut flora on the rate and extent of drug absorption are related to the fed and fasted states and also to disease state. There is a separate chapter devoted to the

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