

Introduction: A Symposium Honoring George A. Bartholomew¹

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INTRODUCTION

Only a few short decades ago, the biological sciences were being torn apart by a widening schism between molecular versus organismal biology. In recent years, however, many leading biologists have sought to unite these fields. Indeed, both sides increasingly recognize that we now have much to gain from working together. Contemporary molecular biology has extraordinary tools to explore the genetic, developmental, and mechanistic bases for organismal development and performance, but it needs knowledge of—and access to—organismal diversity in an environmental context. Contemporary organismal biology has that knowledge and access, as well as an appreciation for the environment, but it needs access to molecular and genetic tools. By working together, both groups gain. The synthesis of these once-warring disciplines is emerging within the domain of the exciting new field of “integrative biology.” This symposium was designed to highlight and explore new directions in integrative biology. Moreover, it addressed some important applications of integrative biology to crucial issues in conservation.

The symposium showcased presentations by a distinguished group of young biologists—the first ten winners of the George A. Bartholomew Award. This award was established in 1992 by the Division of Comparative Physiology and Biochemistry of the Society for Integrative and Comparative Biology (SICB) and thereafter has been given annually to a “Distinguished Young Investigator in Comparative Physiology, Comparative Biochemistry, or Related Fields of Functional Biology.” The primary goal of this Award was to honor young scientists within seven years post-Ph.D in the fields of integrative and functional biology, and to do so at a time (usually pre-tenure) when honors have maximal impact on their careers. A secondary goal was to add momentum to the emerging fields of functional and integrative biology.

The symposium and award also honor George A. Bartholomew. His many empirical papers contributed much to comparative and ecological physiology, and his insightful and lasting reviews codified the conceptual and philosophical foundations of integrative biology. Indeed, Bart pioneered integrative biology be-

fore the term was invented (Dawson, this volume)! Bart is also remembered for the extraordinary number and quality of students he mentored both directly (Dawson, this volume; Bennett and Lowe, this volume; <http://bartgen.bio.uci.edu/>) and indirectly (via his classic paper on advice to graduate students, Bartholomew 1982, *American Zoologist* 22:227–235). Moreover, Bart has received many honors, including membership in the National Academy of Sciences and the first Joseph Grinnell Medal (Museum of Vertebrate Zoology); and he served as President of American Society of Zoologists, the forerunner of SICB.

A BRIEF HISTORY OF THE BARTHOLOMEW AWARD

In 1991 Ray Huey proposed the idea of a Bartholomew award for young investigators to Linda Mantel, Chair of the Division of Comparative Physiology and Biochemistry. The idea was presented and approved in principle at the next Business meeting of the Division. Linda Mantel then formed a committee (Brian Barnes, Malcolm Gordon, Ray Huey, Henry John-Alder, and Mary Murphy) to draft proposed bylaws.

Several factors influenced the decision to name this award after George A. Bartholomew. Most importantly, Bart had an unparalleled record as a mentor and supporter of young scientists in functional biology (Dawson this volume; Bennett and Lowe, this volume). Moreover, as noted above, he was himself a pioneer of integrative biology. Naming the award after him guaranteed instant prestige for the Award.

The award is administered by the Division of CPB. However, applications are welcomed and solicited from *all fields* of integrative biology. Indeed, past Awardees have their main affiliations with various divisions of SICB (Ecology and Evolution, Comparative Endocrinology, Vertebrate Morphology). Thus the domain of Bartholomew Award is itself broadly integrative.

Award winners give a plenary lecture at the annual meetings of SICB. Their presentations have become an exciting and heavily attended feature of the annual meeting. Travel and meeting expenses of the winners are covered. And thanks to extraordinarily generous donations from the community to the Bartholomew Award Endowment Fund, as well as annually from Sable Systems, Inc., award winners have in recent years received cash prizes as well.

The first award was presented to Barbara Block in December 1993. The 11th award was to Jason Podrabsky in January 2004. By any standard, the caliber

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of Awardees has been outstanding (see below). Many have received other prestigious honors (*e.g.*, Block, Dickinson, and Hayes have received endowed professorships; and Block and Dickinson have received MacArthur Awards!), and many have already assumed leadership roles in the academic community, SICB, and in outreach.

This symposium provided an opportunity to look back at the first decade of this award and to assess whether the original goals have been met. We believe so—the high caliber of the Bartholomew Award winners unquestionably document the vibrancy of integrative biology. Moreover, we hope that the papers emerging from this symposium will inspire graduate students who are searching for exciting research directions in integrative biology.

The program

The program consisted of 11 main speakers. Raymond Huey and Gretchen Hofmann introduced the symposium and briefly described the history of the Bartholomew award. Then William R. Dawson (Professor Emeritus, University of Michigan), Bartholomew's first graduate student and a renowned mentor and integrative biologist himself, gave a personal talk, synthesizing Bart's role as a pioneer of integrative biology and as a graduate mentor. Thereafter the first 10 Award winners gave presentations. We had hoped George A. Bartholomew (Professor Emeritus, University of California, Los Angeles) would conclude the

symposium, but a sudden illness sadly prevented him from joining us. Fortunately, he has contributed a paper to this volume, providing an important synthesis of his timeless perspectives on integrative biology.

The main speakers are relatively young (two Professors, three Associate Professors, and five Assistant Professors). All are members of SICB and have diverse primary divisional affiliations (Comparative Endocrinology, Vertebrate Morphology, Comparative Physiology and Biochemistry, Ecology and Evolution). All are exceptional scientists with distinguished records. The topics they have chosen cut across many disciplines in integrative biology, but all share a unifying theme—namely, that of the power and of the extraordinary breadth of applications of integrative biology.

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