



from **IUPS**

COMPARATIVE PHYSIOLOGY IN IUPS AND AT IUPS 2009

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Comparative physiology under a variety of different names has been an integral part of physiological science since the earliest days of the field. The pioneering experimental biologists who first studied physiological processes in non-human animals were comparative physiologists whether or not they acknowledged, or were aware of, that fact. This remains true today. The definition of physiology that was recently proposed for official adoption by IUPS (Report to IUPS Council of the Long-range Planning Committee, December 2007) makes this explicit :

“Physiology is the study of the functions and integrative processes of life at all levels of structural complexity between the molecular level and that of the whole organism. It includes all organisms, and frames function in evolutionary, environmental, ecological and behavioral contexts. It embraces a cross-disciplinary approach to modern science, through which physiologists aim to achieve translation of this knowledge into human health.”

This short essay is not a complete history of the contributions of comparative physiology and comparative physiologists to IUPS or to the Inter-

national Congresses of Physiology. It is instead a summary of some of the main recent developments and trends that have led, during the 55 years since the founding of IUPS in 1953, to the current healthy and visible state of the field in the scientific program of the 2009 Kyoto Congress.

The starting point for the modern history was the founding in 1970, in Acquasparta, Italy, of the International Conferences on Comparative Physiology by Knut Schmidt-Nielsen, Liana Bolis, Simon Maddrell and Richard Keynes, with C. Richard Taylor and Ewald Weibel joining the leadership of the group shortly thereafter. This group became the Interunion Commission for Comparative Physiology (ICCP) in 1972, thus forming a bridge between IUPS, IUBS, and IUPAB, with IUPS maintaining the strongest interest in comparative physiology. Since 2002 the Commission has been entirely an IUPS body. Its present name is Commission VII : Commission on Comparative Physiology : Evolution, Adaptation, and Environment. (The author of this article has chaired the Commission since 1993 ; his final term ends 2009).

The principal activity of the Commission from 1972-2000 was the organizing of a series of 14

small (fewer than 100 participants), primarily invitational, symposia on selected comparative physiological topics. These meetings were called the International Conferences on Comparative Physiology. They were independent of the IUPS Congresses. They were held at 2-3 year intervals at one of several locations in Europe. The scientific programs of many of the Conferences resulted in the subsequent publication of a series of influential books. They ended primarily due to the retirements of the main organizers and because the new leadership decided to change the focus of Commission activity.

Several members of the ICCP, as well as other physiologists from around the world, also maintained significant presence for comparative physiology in the scientific programs of the IUPS Congresses held between 1972 and 2000. Congress programs regularly included up to several comparative symposia, numbers of contributed papers, and several satellite symposia. Comparative programming usually amounted to less than 5% of session numbers.

Comparative physiology has been almost continuously represented in the structure of IUPS. Pierre Dejours and Ewald Weibel were long-term members of Council, and Knut Schmidt-Nielsen and Ewald Weibel both were elected to terms as President. The author of this article presently serves as Treasurer.

Knut Schmidt-Nielsen and others also founded a scientific review journal (originally called "News in Physiological Sciences," first issue February 1986; present name "Physiology") that is published jointly by IUPS and the American Physiological Society. Schmidt-Nielsen was the journal's first Chief Editor, a position he occupied until June 1988. Numerous important comparative physiological review articles have been published in that journal.

An important legacy of the Conferences ap-

pears for the first time in the scientific program of the 2009 Kyoto Congress. A modest but significant fund of book royalties remaining from the publications was donated to IUPS by the remaining original organizers in 2007. This fund was supplemented by a contribution from the publishers of the *Journal of Experimental Biology*, which had been related to the Conferences from the beginning, and the total became the endowment for a new named lecture series on comparative physiological subjects to be presented at each of the next four Congresses. The series is named in honor of Knut Schmidt-Nielsen. Commission VII selected the 2009 Schmidt-Nielsen lecturer. He is Prof. Brian Barnes, from the University of Alaska, Fairbanks.

Since the mid-1990s Commission activities have centered primarily on further strengthening the representation of comparative physiology, broadly defined, in the scientific programs of the IUPS Congresses. These activities have been manifested in several ways: symposia, featured topic sessions, and workshops have been promoted, supported, or organized; lecturers for named lecture series (August Krogh and Knut Schmidt-Nielsen Lectures) have been selected; and satellite symposia have been organized. The overall result has been that 10-15% of scientific programming for both the 2005 San Diego Congress and now the 2009 Kyoto Congress is on comparative physiological subjects.

The program for the Kyoto Congress includes multiple symposia suggested by international organizers and also by Japanese organizers. There will be a significant number of contributed papers and posters. There is a workshop on bioging organized by Japanese scientists. The Schmidt-Nielsen lecturer is mentioned above; the Krogh lecturer is Prof. Tobias Wang, from the University of Aarhus, Denmark. Finally there will be a post-Congress satellite symposium with the

title "Survival in a Changing World." That symposium will take place on the island of Awaji; it is sponsored by the Journal of Experimental Biology and has been organized by an international committee including a Japanese scientist.

All Congress participants interested in areas relating to comparative, ecological, environmental, and evolutionary physiology are encouraged to attend any or all of these sessions.