

MEETING REPORT

Experimental Biology 2001 Orange County Convention Center, Orlando, Florida March 31–April 4, 2001

If you've never been to an Experimental Biology (EB) meeting, then nothing will have prepared you for the scale of the congress, or the centre that hosts it. The annually staged conference visits a different US city every year. This year, over 11,000 scientists converged on the Orange County Convention Center, Orlando, for a five-day celebration of recent developments in the biological sciences.

The American Physiological Society (APS) is one of the seven societies that together comprise the Federation of American Societies of Experimental Biology (FASEB). The APS is structured so that each section within the society contributes a selection of symposia titles to the program, which includes lectures, workshops, and poster sessions.

The Comparative Physiological Section of the APS is responsible for hosting three featured topic sessions and one symposium. This year's topics included sessions on subjects from signalling in cell stress, circadian organisation in vertebrates, evolution of the hypercapnic ventilatory response and the physiology of life history. The session chaired by Ken Storey (Session 812), working at Carleton University, Canada, presented studies on hibernation and apoptosis, and physiological responses at a molecular level. J. Woodgett from Toronto described the use of DNA microarrays to uncover the different protein expression patterns that underlie cellular responses to stress (Session 812).

More generally, the meeting covered much of the recent developments in nitric oxide and its many physiological roles, including nitric oxide regulation of hemoglobin (Session 107). The most exciting sessions looked to the future, with an emphasis on physiology in the postgenomic era and the powerful new techniques that it has ushered in. During the symposium on Functional Genomics (Session 550), M. Driscoll discussed the application of RNA interference techniques applied to mechanosensation in *C. elegans* (abstract number 710.5). The session on bioinformatics in biology and engineering (Session 616), highlighted the interface between complex mathematics and the biological world. J. Bassingthwaite, from the University of Washington, presented developments in the Physiome Project (www.physiome.org) and paved the way for a bright future in bioinformatics.

A series of symposia, supported by the United States Department of the Army, focused on the molecular basis of environmental physiology (Session 864). The second of the three sessions focused on molecular responses to hypoxia. Not surprisingly, the transcription factor Hypoxia inducible factor (Hif1) took central stage, with its regulatory effects on heme oxygenase, nitric oxide synthase and sodium transport confirming it as the key to many fundamental physiological processes.

Even as the meeting was drawing to close in Florida, the Comparative Physiology Section had already called for suggested titles for next years meeting, to be held in New Orleans.

The Scholander Prize

The APS annually awards The Scholander Prize at the FASEB Experimental Biology meeting to the young scientist who submits the most outstanding poster in the field of Comparative Physiology. The successful candidate is rewarded with a \$200 bursary, and a copy of Scholander's book, 'A Life in Science' (Alaska University Press).

The prize, which is judged by the Comparative Physiological Section of the APS, is presented in memory of Per Frederik Scholander, whose career spanned five decades and covered most of the globe. Scholander entered the University of Oslo in 1924 as a medical student, but finding that medicine did not satisfy his

curiosity, he neglected his medical studies in favour of his love of botany. Two years after graduating from his medical degree, his career was launched when he was awarded a PhD for his work on lichens. After graduating, he established his own laboratory in Oslo. He shifted his interests from plants to mammals, beginning a study on the physiology of diving mammals, which continued for several years in collaboration with Harald Erikson. In 1939, he was awarded a Rockefeller Fellowship to work with Larry Irving at Swarthmore. Over the following twenty years, his interests proliferated to include cold acclimation in birds animals and plants. His research took him to laboratories in Europe and the USA and included studies of acclimation in humans, which even took him to work with Aborigines in Australia. He joined the Scripps Institute of Oceanography in 1958, where he conceived the idea of a research vessel, designed to the specifications of marine research. His dream was realised in 1966 with the launch of Alpha Helix, which served the community for over 20 years and contributed to expeditions from the tropics to the poles. Throughout his career, Scholander published more than 200 research papers on subjects ranging from super cooling in fish to the contribution of vines to ocean circulation.



Thirteen posters were presented by entrants from laboratories around the world. This year's winner, Shi-Qiang Wang presented his work on calcium regulation during hypothermia in cardiac cells. He compared the behaviour of rat heart, which ceases to function at lower temperatures, with heart tissue from the hibernating ground squirrel. He found that as he lowered the temperature, intracellular calcium in the rat heart became very unstable, causing the loss of contractility, but the ground squirrel heart continued to function well, even at 4°C. Wang then showed the importance of calcium uptake by the sarcoplasmic reticulum (SR), when he disrupted the squirrel heart and made it vulnerable to hypothermia by inhibiting the SR calcium pumps. He then reasoned that if

he could upregulate the pumps in the rat heart, then that would make the rats resistant to hypothermia. Miraculously, by providing the rat heart with extracellular ATP, he was able to reverse the thermal sensitivity of the rat, and keep the heart beating, even at previously catastrophic temperatures. Wang's research has significant potential for the treatment of hypothermia, and he's continuing the work, looking at the underlying signalling pathways. A beautiful, and truly comparative study that could will have far reaching beneficial consequences.

Continuing the tradition of comparative physiology, the other posters featured a wide variety of creatures with intriguing life styles. Michael Russell, this year's runner up, described his work on the sea lamprey aorta, which he's hoping to develop as a model for vasoconstriction in hypertension. Three posters discussed work on osmotic regulation in aquatic organisms, while Lynn Hartzler at U.C. Irvine explained her study of pH regulation in lizards and snakes. M. Simoyi, from Zimbabwe, gave details of his study of broiler chickens, and the possible role of uric acid as a free radical scavenger.

All of this year's contributions were presented to a very high standard with great enthusiasm. The quality of research presented was definitely a fitting tribute to a great life in science.

Kathryn Phillips
Cambridge