

Lab Times competition: the solution and the winners

The Coal Merchant's Son

Jens Christian Skou is a Danish scientist and Nobel laureate who discovered the first ion-transporting enzyme, the Na⁺/K⁺-ATPase, in the 1950s. "Jens Christian Skou" was also the correct answer to the *Lab Times* December competition.

Adenosine-5'-triphosphate (ATP), often described as the "currency of life", has always been a fruitful subject for researchers. After Alexander Todd's work on ATP's structure and chemical synthesis in the 1940s, and Peter Mitchell's discovery of the chemiosmotic mechanism of ATP synthesis in the 1960s, three colleagues succeeded in clarifying further the secrets of this magic molecule. One of these three was **Jens Christian Skou**. Skou's is also the Danish scientist's name that we asked for in *Lab Times* 6-2008 (page 64).

Born in the tiny town of Lemvig in Northwestern Denmark as the offspring of a Jutland coal merchant, Skou didn't have research in mind when he graduated in medicine from the University of Copenhagen in 1944. When he began working as a surgeon at the University of Aarhus in 1947, however, he became interested in scientific work. He decided to use the effect of local anaesthetics as the subject of his doctoral thesis. Doing experimental work soon amused the young physician so much that he decided to give up surgery entirely. As it turned out, this was an excellent decision.

Skou studied the impact of narcotics on cell membranes. Using the leg nerves of the



Jens Christian Skou (born 1918) – fly-fisher, ATPase discoverer, Nobel laureate.

shore crab (*Carcinus maenas*) as a model system, the young Dane isolated a novel sodium-potassium pump which was responsible for the active ion transport of sodium and potassium across the cell membrane.

Discoverer of the famous ATPase

It was the discovery of the famous Na⁺/K⁺-ATPase in the early 1950s, that brought Skou the Nobel prize four decades later. Now an old man of 90, Skou enjoys fly-fishing and spending a lot of time with his grandchildren.

Lots of *Lab Times* readers identified the correct name (and a few got it wrong). The ten lucky winners are:

- **Wolf Scheible** (Max-Planck Institute of Molecular Plant Physiology, Potsdam, Germany; photo 1);
- **David Millar** (UCL Medical School, London, United Kingdom);
- **Rob Wüst** (Institute of Membrane and Systems Biology, University of Leeds, United Kingdom; photo 2);
- **Mini Bajaj** (Institut für Ingenieurbiologie & Biotechnologie, Karlsruhe, Germany; photo 3);
- **Françoise van Vliet** (Institut de Recherches Microbiologiques, Brussels, Belgium);
- **Emilia Botello** (Universidad de Extremadura, Badajoz, Spain);
- **Marion Peter** (Institute of Molecular Genetics, Montpellier, France);
- **Jesús Lascorz Puértolas** (German Cancer Research Center/DKFZ, Heidelberg, Germany);
- **Magda Mroz** (Department of Molecular Medicine, Beaumont Hospital, Dublin, Ireland);
- **Rajiv Vaid Basaiawmoit** (Interdisciplinary Nanoscience Center/iNANO, University of Aarhus, Denmark; photo 4).

Please accept the congratulations of your *Lab Times* editors!

WEANÉE KIMBLEWOOD



Wolf Scheible, Potsdam



Rob Wüst, Leeds



Mini Bajaj, Karlsruhe



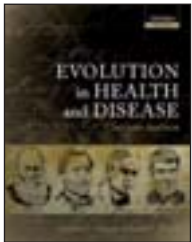
Rajiv Vaid Basaiawmoit, Aarhus

Book review: *Evolution in Health and Disease*

Medicine Needs Evolution

A new book about the influence of evolutionary ideas on medical problems emerges as a veritable treasure trove, according to our *Lab Times* reviewer.

Imagine that Charles Darwin, Alexander Fleming, Louis Pasteur and George Williams met at a round table. What would emerge from the discussion of those masterminds? Would they come up with answers to notorious medical ‘why?’ questions? Why do (or don’t) we get sick. Why does vaccination (not) work. Which aspects of modern life are pathogenic? And would – at last – evolutionary thought be introduced into the education of medical doctors, as some doctors and evolutionary biologists have advocated for at least ten years?



Why add new courses to the already over-filled curriculum of medical doctors? “*Evolutionary thinking provides insight and saves lives when one is prescribing antibiotics, managing virulent diseases, administering vaccinations, advising couples who have difficulty conceiving and carrying offspring to term, treating the diabetes and high blood pressure of preg-*

nancy, treating cancer, understanding the origins of the current epidemics of obesity, diabetes and autoimmune diseases, and answering patients’ questions about aging,” argue Stephen Stearns *et al.* in the first chapter of *Evolution in Health and Disease*. Lots of arguments. Are they convincing though? Find out for yourself; its worth it.

Evolutionary ideas were introduced into the medical world in the early 90s when Randolph Nesse and George Williams published their lucidly written book *Why we get Sick*. The physician and the evolutionary biologist teamed up to elaborate on the evolutionary backgrounds of health and disease.

Darwinian medicine on the rise

Since then, Darwinian medicine has been coming along nicely as a comparison of the two books, written in 1994 and 2007 respectively, reveals. The evolution of genomic research offered formerly undreamt-of-possibilities. The analysis of DNA sequences allows glimpses into the history of human populations and the involvement of humans’ genetic variation in health and disease. Sequencing whole pathogens’ genomes indicated their history and enabled the design of new hypotheses about the selective pressures that have shaped and continue to shape the pathogens’ genomes.

The book is a veritable treasure trove. Care for an example? Read about how *Bordetella pertussis*, the cause of whooping cough, changed its niche from many hosts to humans alone purely through gene loss and how it has recently increased in virulence by loss of regulation of virulence factors. Or how vaccination works, though evolution allows pathogens to develop new antigens that could outmaneuver the immune systems’ memory. New perspectives on the evolution of virulence are discussed as well as how biological processes contribute to the emergence of cancer.

The book was written by 47 scientists and some issues are picked up on repeatedly, for example in the part about pathogens. Here, the editors could have exercised more care. The book is writ-

ten in an extremely clear, mostly nontechnical style, ranging from basic evolutionary principles and genetic variation all the way to the evolutionary context of human aging and degenerative disease.

Of course, evolutionary biology is not going to provide easy answers to medical problems; nor does it provide a simple guide for intervention. And whether doctors and researchers who learned a substantial amount about evolution would be more effective than a control group is an open question. But introducing evolutionary ideas into medicine and medical issues into evolutionary biology will benefit both disciplines. Ecogenetics and pharmacogenetics reveal spectacularly how, together, evolution and medicine could cultivate new perspectives.

KARIN HOLLRICHER

Stephen Stearns and Jacob Koella (eds.): *Evolution in Health and Disease*. 2nd edition, Oxford University Press, 2008. 368 pages, €59.-- (Amazon), €65.-- (list price).