One hundredth birthday of John Edsall

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We celebrate in a few months' time the 100th birthday of John Edsall. He was born in 1902, the year in which the peptide bond was first proposed and generally accepted [1], after which one could begin to envisage protein molecules in terms of the atoms they contain and the links between them. In other words, the entire history of structural protein chemistry, from its beginnings to the present-day marvels of automated proteomics, has unfolded in John Edsall's lifetime. And he has appropriately been acutely aware throughout his career of protein chemistry's historical setting, its theoretical background and its relation to society as a whole.

John Edsall joined the department of physical chemistry at Harvard Medical school in 1926, while still a third year medical student, under a program designed to give those who were so inclined a research experience to relieve the tedium of purely clinical studies. This particular department, with Edwin Cohn as its director, was a most unusual venture for any medical school, but it proved to be uniquely fitted to John Edsall's theoretical predilections. The partnership between Cohn and Edsall led (among other accomplishments) to a great textbook of protein chemistry, *Proteins, Amino Acids and Peptides as Ions and Dipolar Ions*, published in 1943 [2]. This book, as its title implies, concentrates on the physicochemical features of proteins, especially on the macromolecular nature of protein molecules and the profusion of electrostatic charges on the molecular surface – it was the book from which many of us (including myself) first learned the fundamentals of protein chemistry.

Edsall's individual research projects in the laboratory were consistent with this emphasis on fundamental theory. He was among the rare breed of scientists who seek logical consistency and clarity rather than novelty. He did the kind of experiment that would wrap up a subject, complete the evidence, set the record straight. His first project was typical: jointly with Alexander von Muralt, who was a visiting fellow at Harvard, he set out to apply the exotic method of flow birefringence to the study of muscles [3]. In this technique one measures the tendency of particles in a flowing solution to orient themselves in the direction of the lines of flow, a tendency most pronounced for highly asymmetric (rod-shaped) particles. Edsall and von Muralt were able to show that the protein 'myosin', extracted from muscle, retained in solution the rod-like characteristic that the active contracting protein must surely have had in muscle itself – a clear indication that the mechanism of muscle contraction could eventually be explained on a molecular basis. (Of course, Edsall's 'myosin' cannot be equated with the protein we now call 'myosin'. It was not until after 1940 that the mixture of proteins in muscle cells began to be properly disentangled.)

In another early project Edsall used Raman spectroscopy (less than 10 years after Raman's initial report) to demonstrate that amino acids in neutral solution are zwitterions – dipolar entities, simultaneously bearing positive and negative charges [4]. This fact and its obvious extension to proteins had been long disputed and, by some, only reluctantly accepted.

During the second half of his 'century', John Edsall has devoted most of his energies to public service. He was one of the founders of *Advances in Protein Chemistry* in 1944; he served as editor-in-chief of the *Journal of Biological Chemistry* from 1958 to 1968. His role at the interface between science and the public interest (some of it more narrowly between science and government) has been particularly significant.

Edsall is remembered especially for his courage and leadership during the fearful McCarthy era of the 1950s. Virtually unique among his colleagues, he spoke out publicly in a letter to *Science* [5]. He denounced intimidation on the basis of unfounded accusations that were not connected to scientific competence and that had in some cases led to revocation of research grants. He resolved that "I shall neither ask for nor accept funds from any Government Agency that denies support to others [on this basis]". And he did as he promised, returning the unexpended balance of his NIH grant to the agency.

In a similar vein, Edsall became an active participant in the case of supposed scientific fraud that involved the laboratory of David Baltimore in the early 1990s and testified in favor of the whistle-blower, Margot O'Toole, before the congressional subcommittee that investigated the matter. He wrote personal letters to Washington officials on the subject and published letters expressing his own strong personal views regarding ethics and scientific responsibility in *The Scientist* and in *Ethics and Behavior* [6].

Throughout his career – though often speaking for all of us – John Edsall has had only a single academic allegiance, always a member of one of the Harvard faculties. He was a tutor in biochemical sciences at Harvard College from 1928 to 1968, and chairman of the Board of Tutors from 1931 to 1957. He faithfully attended College functions: an enterprising photographer took his picture at Commencement in 1999, eagerly waiting to join the procession in a wheelchair, with a placard attached to proclaim him a member of the class of 1923 [7].

References

[1] Fruton, J.S. (1985) Proc. Am. Phil. Soc. 129, 313–370.
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[3] von Muralt, A. and Edsall, J.T. (1930) J. Biol. Chem. 89, 315–350; 351–386.
[4] Edsall, J.T. (1937) J. Chem. Phys. 5, 225–237, 508–517.
[5] Edsall, J.T. (1955) Science 121, 615–619.
[6] Edsall, J.T. (1994) Ethics Behav. 4, 239–247.
[7] Harvard Magazine (1999) 101, no. 5.

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John Edsall was born in Philadelphia on 3 November 1902. When he was ten John moved with his family to the Boston area, as his father, David Edsall, had become Jackson Professor of Medicine at Massachusetts General Hospital (he was later dean of the Harvard Medical School).Â John became emeritus in 1973, remaining actively engaged for more than twenty years. On 12 June 2002 John Edsall died, five months short of his hundredth birthday. While John found the last two years of medical school disappointing, he compensated by joining Edwin J. Cohn's Department of Physical Chemistry, where some of the earliest studies on proteins were underway. Thus began a long research career devoted to proteins and their constituent amino acids. John Edsall Beery's Timeline. 1959. June 12, 1959. Birth of John. Minneapolis, Hennepin County, Minnesota, United States. 1981. February 25, 1981. Age 21. Death of John. California, United States. ???? Burial of John. Minneapolis, Hennepin County, Minnesota, United States. Genealogy Directory Celebrity Births Deaths and Ages. When was Incidents in the Life of John Edsall created? Asked by Wiki User. 012.Â Simple Life - Elton John song - was created in 1992. When was John McBain - One Life to Live - created? John McBain - One Life to Live - was created in 2003. What is the difference between theatre and real life incidents? theatre is not always true real life incidents actually take place and is real. When was Lush Life - John Coltrane album - created? Lush Life - John Coltrane album - was created on 1957-05-31. Important incidents in the life of Pythagoras? From his theory our work is easier. Explore genealogy for John Edsall born abt. 1817 Breamore, Hampshire, England died 1896 Kent including father + descendants + more in the free family tree community.Â â†‘ Source: #S5 Note: http://search.ancestry.ca/cgi-bin/sse.dll?db=canadianpl&h=60378&ti=5543&indiv=try&gss=pt 3 _APID 1,1263::60378 Data: Text: Birth date: abt 1818 Birth place: Arrival date: 11 Jul 1871 Arrival place: Quebec, Quebec Departure date: Departure place: Liverpool, England; Londonderry, Ireland. Acknowledgments. Thank you to Jim Thompson for creating WikiTree profile Edsall-26 through the import of DavideSide.ged on Jul 22, 2013. Click to the Changes page for the details of edits by Jim and others. More Genealogy Tools. Sponsored Search. One hundredth birthday of John Edsall. Article. Jul 2002.Â The concept of hydrophobic interactions unnoticed by quantum chemistry has become one of the decisive factors involved in protein structuring [14][15][16]. The Levinthal paradox in the era of protein simulation and prediction takes the form of the multiple minima problem [17], in which structure prediction techniques assume the evolutionary nature of structure changes and use homology modelling [18].