
Book Reviews

Hsu, T.C.: Human and Mammalian Cytogenetics. A Historical Perspective. Heidelberg Science Library.

Berlin-Heidelberg-New York: Springer 1979. XIII/186 pp. 27 figs. Soft bound \$ 13.20

The history of science offers a large number of examples showing that methodical discoveries may be the basis of new experimentation and thinking of a whole generation of researchers. This is also true for the field of human and mammalian cytogenetics which has been well established during the past 20 years on the ground of several technical improvements. To portray the evolution of human and mammalian cytogenetics and to emphasise recent and future research in this field are the aims of this book. It is fortunate that Prof. Hsu undertook this task, since he actively participated in the development of human and mammalian cytogenetics. The reader becomes acquainted with the personality and motivation of many cytologists and molecular biologists and he is allowed to take a look behind the scenes in science. Thus he learns the curious circumstances by which Hsu (independently of Hughes and Makino and Nishimura) discovered the hypotonic pretreatment of mitotic cells to yield improved chromosome preparations – a finding which led human and mammalian cytogenetics out of the 'Dark Ages'. The reader learns the ins and outs of the discovery of the lymphocyte culture method by Peter Nowell, which is now a standard method in cytogenetic laboratories all over the world. But who knows that Nowell's paper was classified by one of the referees of Cancer Research as having 'no conceivable significance to science'? And who realises that the manuscript on the C banding method of Arrighi and Hsu was rejected by the *Lancet* since the data reported seemed to be without medical applicability? And who knows the story of the Chinese hamster Donald who delivered the cell line Don (not DON!)?

Prof. Hsu writes with intellectual warmth, vividness, and honesty. With melancholy he remembers the time of the great discoveries, but he also shows that there is no reason for pessimism even if the cytogenetics of the future will not be based upon as simple technical prerequisites as it was in the beginning of its establishment.

B. Kaina, Gatersleben

Ohno, S.: Major Sex-Determining Genes. Vol. 11: Monographs on Endocrinology.

Berlin-Heidelberg-New York: Springer 1979. 140 pp., 34 figs., 6 tabs. Hard bound DM 39,-

The author of this book is well known to geneticists and breeders through his title 'Evolution by Gene Duplication'. This new book presents interesting ideas. As is expected in a monograph, the larger part of the book is specifically dedicated to sex-determination and is therefore of particular value to scientists interested in this topic. However, knowledge of this well-documented example of a regulatory hierarchy is of general importance.

The point of the book is to show that sex determining mechanisms in mammals consist of two independent regulatory systems. Each is placed under the control of one master regulatory gene product. The H-Y antigen is the determinator of primary sex, and the nuclear-cytosol steroid-receptor protein is the secondary sex determining mechanism. Both are founded on the principle of a feminine basic embryonic plan. The genetic difference between males and females is kept to a minimum, dependent on a few (very

possibly one) testis-determining gene(s) on the Y chromosome. In male embryos of mammals the H-Y structural gene is activated at the 8-cell stage and its expression is constitutive. The current dogma of the function of the nuclear-cytosol steroid-receptor protein is that it has a high affinity to a specific steroid hormone. The hormone-receptor complex then moves into the target cell nucleus, binds to acceptor sites in the genetic material, resulting in the induction of specific structural genes.

The book is divided into three parts: 1. Sexual Dimorphism as a Dispensable Appendage of the Sex-Determining Mechanism; 2. H-Y Antigen and Chromosomal Determination of Primary (Gonadal) Sex; 3. Nuclear-Cytosol Androgen-Receptor Protein and Hormonal Secondary (Extragenital) Sex Determination. Chapter 4: 'The Number of Genes in the Mammalian Genome and the Need for Master Regulatory Genes' may be of special interest. As well as including results on genome organization, it also has some results on the evolution of genes.

E. Günther, Greifswald

Nachmansohn, D.: German-Jewish Pioneers in Science, 1900-1933. Highlights in Atomic Physics, Chemistry and Biochemistry.

Berlin-Heidelberg-New York: Springer 1979. XX, 388 pp., 27 figs., Hard bound \$ 33.00

This book is even more gripping than Laura Fermi's report on the intellectual migration from Europe between 1930 and 1941 (*Illustrious Immigrants, Chicago 1968*). German Jews were by far the largest national group in the emigration wave, which was caused by the racial discrimination of the Nazis. This wave ended one of the most fertile and close periods of cooperation between the German and Jewish civilization, which found its expression in the unexpected, and never again achieved, rise of science in Germany. It is correct that David Nachmansohn, who is very well known for his exploration of the chemical and molecular basis of nerve excitability and bioelectrics and who was one of the many who escaped the holocaust, to single out Moses Mendelssohn as the pioneer of the entry of Jews into German science. The cooperation between liberal Germans and Jews reached its climax between 1880 and 1933 and resulted in an unprecedented level of creativity. During the generation after the turn of century this is demonstrated in the fields of atomic physics, chemistry and biochemistry. Brilliant short biographies of F. Haber, R. Willstätter, O. H. Warburg, O. Meyerhof, C. Neuberger, G. Embden, H.A. Krebs, S. Ochoa, R. Schoenheimer, E.B. Chain are embedded in a description of the historical background of the cooperation, and the general development of chemistry and physiology in the 19th century. The reflections on the roots and fruits of the collaboration between German and Jewish scientists try to give a thorough-going analysis of the complementary character of the two ethnic groups. This must end with a question mark. Of course one should like to have a comparable study of biologists and geneticists; a few names which spring to mind are Kurt Stern, Charlotte Auerbach, Erwin Chargaff, Paul Weiss and the unforgettable Richard Goldschmidt. But the author of the book in question restricts himself to his own bitter experience and circle of acquaintances. The book ends with a description of the present collaboration between German and Israeli scientists. It is inclined to reconciliation. But this does not take away the disturbing conviction that a unique historical chance was missed.

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