Cytogenetics stages its own revival

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Human and Mammalian Cytogenetics: An Historical Perspective. By T.C. Hsu. Pp. 186. (Springer: New York, Heidelberg and Berlin, 1979.) Paperback $13.20; DM24.

IN 1959, Jerome Lejeune of Paris discovered the trisomy of chromosome 21 in those unfortunate individuals afflicted with the congenital syndrome then known as mongolian idiocy, now called Down's. With simultaneous discoveries by several British groups of the X0 sex chromosome constitution as the cause of Turner's syndrome in sterile women as well as of the XXY constitution in sterile men with Klineferter's syndrome, 1959 heralded the birth of human cytogenetics. Although the scale was obviously at least an order of magnitude smaller than that of the discovery of the DNA double helix in 1953, these discoveries, nonetheless, generated immense interest. In the heady day of an emerging molecular biology that was sure to become the core of the new biology, who would have thought that the venerable chromosome cytology of a distinctively pre-War vintage would stage its own revival? Furthermore, in so delicate a creature as *Homo sapiens,* who would have thought so gross a genetic imbalance as the trisomy of a whole chromosome could give rise to live births?

In spite of its belated birth, at least by 10 years in my reckoning, the revived old soldier did not immediately fade away. On the contrary, subsequent events made a long success story out of human and attendant mammalian cytogenetics. Soon, Lyonisation (inactivation) of one of the female's two X-chromosomes was established as the dosage compensation mechanism unique to mammals, and the discovery of evolutionary conservation, as opposed to innovation, of mammalian linkage groups in general, and the X-linkage group in particular, dramatically altered our view of the nature of natural selection. Somatic genetics based on cell fusion to produce interspecific somatic cell hybrids became the precocious child of human and mammalian cytogenetics. The technique of *in situ* hybridisation proved useful in localising prepeated DNA sequences on individual chromosomes. When an apparent senescence was about to start, Caspersson came to the rescue with the innovation of a chromosome banding technique.

Now that senior members of the group involved in these initial excitements have passed or are approaching retirement age, one might expect a series of memoirs of those events. Professor T.C. Hsu of Houston opens up with a noteworthy salvo giving his own breezy and gossippy account. Of course, Rudolph Virchow's dictum *Omne cellule a cellule* applies equally well to scientific discoveries. The well publicised discoveries of 1959 were preceded by earlier ones; for example, the development of tissue culture techniques, the use of hypotonic pretreatments (T.C.'s own discovery) and colchicine, and the correct description of the normal human karyotype by J.H. Tijo and A. Levan that rectified earlier misunderstandings. Earlier still, a few outstanding investigators such as Sajiro Makino of Sapporo and Robert Matthey of Lausanne had accomplished a great deal in mammalian cytogentics without any of the above noted modern conveniences. In T.C.'s portrayal of those participants of the drama, one finds a number of witty gems; for example his accounts of Sajiro Makino and Kurt Benirschke.

It should be pointed out, however, that three participants of the same event are likely to give three entirely different versions of it. The fact is that the excitement of 1959 was essentially a European affair to which those of us across the Atlantic played second fiddle. Therefore, I await with great anticipation equally witty, but entirely different versions from some senior members of the European group.

Who should read T.C's memoir? I should say everybody, particularly those researchers of the younger generation — as recommended by M.J.D. White in his foreword, but for a different reason. I see one lamentable defect in the otherwise bright young generation brought up with the television screen. Because of their apparent abhorrence of printed words, the papers that they never read are unashamedly quoted and misunderstood and the writing style of scientific manuscripts is becoming entirely monotonous, as though they had been turned out by the same old computer. Julius Ceasar wrote his *Commentaries* and Augustus his *res gestae.* While nobody seems to care about them, almost everybody seems to know Claudius' gossippy memoir *a la* Robert Graves. If books like T.C.'s can rekindle the joy of reading in the heart of younger scientists, Professor Hsu should feel very proud. □

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