Accordingly, one might wonder whether B27 indexes high testosterone levels in men and B8 indexes low testosterone levels in women. The latter point has been tested explicitly by Gerencer *et al.*⁴ who reported that indeed B8 does index low testosterone levels in women ($\chi^2=5.0$, $p=0.025$). In regard to men, one may exploit the data on their mean testosterone levels by MHC class I antigens published by Ollier *et al.*⁵ These workers published data on 138 healthy males and 71 male patients by 12 different markers at the B locus. The mean testosterone levels of the HLA-B27 positive men ranked respectively second and third out of 12 in the two rankings. These were independent rankings so their joint significance may be assessed by the Haldane-Smith test⁶ ($z=1.64$, $p=0.05$, one way).

I suggest that high testosterone levels are a necessary but not sufficient condition for the expression of HLA-B27 associated disease, and low testosterone levels for the expression of HLA-B8 associated disease.

It is interesting to consider HLA markers and testosterone levels in regard to idiopathic haemochromatosis, a condition in which men outnumber women by about 20 to 1.⁷ This disease is reportedly associated with HLA-A3 (risk ratio 8.2) and HLA-B14 (risk ratio 4.7).⁸ These antigens are both strongly associated with high testosterone levels in the data of Ollier *et al.*⁵ Their rankings were third out of eight, and first out of eight, and first out of 12 and second out of 12, respectively. Assuming no linkage disequilibrium between these two antigens, it is valid to test the rankings as independent. Tested against chance expectation by the Haldane-Smith test, the rankings jointly just fall short of significance at the 0.01 level (two way), so there is a strong suggestion that high androgen levels are associated with this condition too.

Thus there is substantial evidence for the hypothesis that HLA antigens operate as markers for disease by indexing hormone levels which are pathogenic.

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- 1 Ivanyi P, Hampl R, Starka L, Mickova M. Genetic association between H-2 gene and testosterone metabolism in mice. *Nature* 1972;238:281-2.
- 2 Brewerton DA, Caffrey M, Nicholls A, Walters D, Oates JK, James DCO. Reiter's disease and HL-A27. *Lancet* 1973;ii:996-8.
- 3 Schwimmbeck PL, Oldstone MBA. Molecular mimicry between human leukocyte antigen B27 and *Klebsiella*: consequences for spondylarthropathies. *Am J Med* 1988;85(suppl 6A):51-3.
- 4 Gerencer M, Tujic M, Kerhin-Brkljajic V, Kastelan A. An association between serum testosterone level and HLA phenotype. *Immunol Lett* 1982;4:155-8.
- 5 Ollier W, Spector T, Silman A, *et al.* Are certain HLA haplotypes responsible for low testosterone levels in males? *Disease Markers* 1989;7:139-43.
- 6 Haldane JBS, Smith CAB. A simple exact test for birth order effect. *Ann Eugen* 1947;14:117-24.
- 7 Bothwell TH, Charlton RW. Historical overview of hemochromatosis. *Ann NY Acad Sci* 1988;526:1-10.
- 8 Sveigaard A, Platz P, Ryder LP. HLA and disease 1982—a survey. *Immunol Rev* 1983;70:193-218.

BOOK REVIEWS

HELEN E HUGHES

The Rubinstein-Taybi Syndrome in the Netherlands: A Clinical Genetic Survey. R C M Hennekam. (Pp 81; Dfl 49.50.) Amsterdam: Thesis Publishers. 1990.

In 1985, Dr Raoul Hennekam embarked on a clinical study of Dutch children and adults with the Rubinstein-Taybi syndrome. The results of his endeavours are now available in the form of this short book of 11 articles or chapters, some of which have been published separately in the *American Journal of Medical Genetics*, among others. The size of the book in no way reflects the amount of work involved in producing the very comprehensive data on 45 affected subjects ranging in age from 0 to 60.5 years, and who represent an almost total ascertainment of the syndrome in the Netherlands in the late 1980s.

In a nutshell, these series of articles and extensive bibliography bring together all that is currently known about this well recognised syndrome. As just over a third of Dr Hennekam's

cohort are over the age of 18 years, his findings provide the best available data on the natural history of this syndrome into adulthood. The growth data on the Dutch subjects are combined with those on an additional 50 American patients (Stevens and Blackburn) in order to produce very useful height, weight, height velocity, and OFC curves. The chapter that includes detailed results from the psychological and speech studies is of particular value and the one likely to be of most relevance to parents and caregivers.

This study was initiated by the Dutch parents support group and the results brought together in this book should be available to all professionals involved in the health and educational care of children and adults with Rubinstein-Taybi syndrome. The book also serves as a model to researchers embarking on clinical studies of other syndromes with multiple anomalies/retardation in the future. Dr Hennekam is to be congratulated on his efforts, and also on the choice of such a delightful cover photograph.

Essential Medical Genetics. 3rd ed. J M Connor, M A Ferguson-Smith. (Pp 259; £24.95.) Oxford: Blackwell Scientific Publications. 1990.

This well established and popular basic textbook now enters its third edition with this issue. The format of the book remains unchanged in that there are two sections to the text. The first 11 chapters outline and explain basic genetic principles, while the remaining 10 chapters refer to the modern day practice of medical genetics. This latter comprehensive section covers genetic counselling, prenatal diagnosis, single gene disorders, congenital malformations, and chromosomal disorders. The topics of population screening and prevention of genetic disease are also included, as are excellent contributions on immunogenetics and cancer genetics. The basic principles section deals with topics such as DNA structure and function, mitosis and meiosis, chromosomes and aberrations thereof, patterns of inheritance, gene mapping, and population genetics. Three brief appendices outline odds and probabilities, simple applications of Bayes's theorem, and coefficients of inbreeding and relationship. Dividing

the two sections of the book is a short self-assessment section of questions and answers. This format works well. Not only are the basic principles emphasised, but their importance in the clinical context becomes apparent in the second part of the book.

The preface to the first edition clearly identified undergraduate students as the target market for this book. That preface has now been omitted and replaced by a new one, which directs this new edition at those whose practice as clinicians, scientists, counsellors, and teachers requires an understanding of modern medical genetics. To this end, new chapters have been added dealing with the genetics of common disorders and cancer genetics. The text generally has been updated to take account of advances since the last edition. Some figures have been replaced and new figures have been added. Tables are now printed in a separate colour, as are key subheadings within each chapter. All of these changes underline the continuing thought and effort on the authors' part which this new edition represents. These efforts have produced a useful and concise basic textbook, which is well bound, attractively presented, and enjoys the advantage of an index.

The range of topics covered is broad and should give interested readers a flavour of the clinical situations in which a geneticist may usefully contribute. No book is perfect, however, and the specific problem with this one is that the quality is quite variable from one chapter to the next. The contributions on chromosomes, chromosomal aberrations, and cancer genetics are excellent, with a clear text complementing exceptionally good diagrams. In contrast, the same clarity is not apparent in the chapter on population genetics, which seems destined to confuse readers. The

greatest disappointment is the chapter dealing with nucleic acid structure and function, in which the combination of a loose text and poor labelling of some new figures makes frustrating reading. These fundamental areas surely deserve careful revision in the next edition to bring them into line with the high standard which the book generally sets. Notwithstanding these reservations this is a book to be recommended. It will serve students well and, although unlikely to command pride of place on the clinical geneticist's bookshelf, may be a useful basic source of reference when memory fails.

WILLIAM REARDON

Genes and Cancer. Ed Desmond Carney, Karol Sikora. (Pp 348; £24.95.) Chichester: John Wiley. 1990.

This is an excellent compilation of short reviews covering most current research into the molecular biology of cancer. In some 300 pages it provides an insight into the whole field from the biochemistry of individual oncogenes to the potential applications of molecular biology to cancer therapy. Established principles are clearly explained, and there is no lack of up to the minute data. A feature of the book which should be particularly useful for those not active at the bench is the inclusion of succinct overviews of technical procedures. The layout of the book in general follows a logical sequence, although it is not clear why chapters on mitochondria and inherited cancer syndromes should have been included in the section on transcriptional control! There are only two notable shortcomings: firstly, the absence of any significant account of tumour suppressor genes—a surprising omission given their current interest; secondly, the omission of direct

referencing in the text. While this was presumably done deliberately in the interest of readability, it will be frustrating to many readers to have to guess at the relationship between 'Further reading' references and statements in the text. This is particularly annoying in relation to tables. Overall, though, the book is good value and should appeal to a wide audience interested in modern cancer research.

DAVID WYNFORD-THOMAS

NOTICE

Developmental and Genetic Disorders of the Central Nervous System

The 23rd Annual March of Dimes Clinical Genetics Conference on Developmental and Genetic Disorders of the Central Nervous System will be held on 7 to 10 July 1991 at the University of British Columbia, Faculty of Medicine, Vancouver, BC, Canada. Basic and clinical scientists will provide a comprehensive overview of the advances made by molecular, cellular, developmental, cytogenetic, biochemical, and clinical genetic approaches to understanding normal and abnormal central nervous system development and function. The programme includes plenary sessions, optional primer session, ethics and counselling panel, and diagnostic dilemmas session. For informational brochure, contact Professional Services Department, March of Dimes Birth Defects Foundation, 1275 Mamaroneck Avenue, White Plains, NY 10605, USA. Tel: (914) 428-7100.