present in the more severely mentally impaired males.

FAMILY DATA (FIGURE)

Clinical findings

A 22 year old normal female (IV.5) was seen for genetic counselling. She was the youngest child, and the only daughter, in a family with five children. Her oldest brother (IV.1) is normal. The second brother (IV.2) died in the neonatal period and was hydrocephalic. The third brother (IV.3) was prematurely born (26 weeks). No necropsy was performed and no further data are available. The fourth brother (IV.4) had progressive hydrocephalus from the age of 6 weeks onwards. A ventriculocardiac shunt was inserted. He died at the age of 2.5 years from septicaemia. Necropsy confirmed the presence of massive dilatation of the lateral ventricles with aqueductal stenosis. Her mother (III.1) was the first born in a sibship of eight children. One (III.4) died at the age of 6 months from pneumonia. One normal sister (III.8) has three daughters (IV.6, IV.7, IV.8); one of them (IV.7) died suddenly at the age of 9 months. Three brothers (III.3, III.5, III.6) are normal, but two other brothers (III.2 and III.7) are mentally retarded.

III.2 is a 52 year old, moderately mentally retarded male living in an occupational centre. Weight is 76 kg, height 161 cm, and head circumference 53 cm. Severe spastic paresis of the legs with hyperreflexia, hypertonia, and clonus makes walking even short distances difficult without support. The thumbs are flexed and adducted. He has simple speech, but cannot read or write.

III.7 is a 42 year old, slightly mentally retarded male working in a sheltered workshop. He has spastic paresis of the legs, but much less pronounced than III.2. He has normal thumbs and hands, and no dysarthria. Weight is 68 kg, height 165 cm, and head circumference 52 cm.

The maternal grandmother (II.3) was the third born in a family of nine children. Two older brothers (II.1 and II.2) died at a young age and there is no further information about them. Three brothers are normal (II.5, II.8, II.9). One normal sister (II.7) has two normal sons. One sister (II.6) died at a young age from pneumonia. One brother (II.4) is 77 years old with borderline intelligence. He worked in a

factory and was unmarried. He had a spastic gait and walking without help became impossible after the age of 50 years. Thumbs and hands are normal. Height is 160 cm, weight 60 kg, and head circumference 53 cm. CT scan of the brain could not be performed in the surviving mentally retarded males.

DNA studies

DNA was extracted from peripheral blood. After restriction enzyme digestion the resulting fragments were separated by agarose gel electrophoresis and alkali blotted onto Hybrid N-plus membranes. The membranes were hybridised with probes pERT87.1 and XJ1.2 on the short arm of the X chromosome and with VK21C (DXS296), U6.2 (DXS304), and St14.1 (DXS52) on the long arm. The disease clearly segregated with the Xq27.28 markers without recombination, confirming our previous findings of linkage of the MASA locus with the Xq27-28 markers.⁹

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BOOK REVIEWS

Genetic Approaches in the Prevention of Mental Disorders. Ed V Bulzyhenkov, Y Christen, L Prilipko. (Pp 119.) Berlin: Springer-Verlag. 1990.

This slim, but informative volume summarises the proceedings of a meeting organised by the World Health Organization and Fondation Ipsen held in Paris in May 1989. Despite its title, most of the book is not about prevention of mental disorders but rather focuses on recent developments in genetic epidemiology, linkage strategies, and the application of molecular biology to complex disorders such as schizophrenia and manic depression, as well as 'simple' diseases of psychiatric relevance such as Huntington's disease.

The range of topics covered is wide, from methods of diagnosis and classification of mental illness in relation to molecular genetic research to the genetic basis of brain development and neurocellular differentiation. In between, there are important theoretical papers, for example, Clerget-Darpoux on methodological issues in linkage analysis and McGue and Gottesman on the feasibility of applying single gene models in studies of schizophrenia. The sceptical stance and weighty statistical arguments here provide a useful counterbalance to the more upbeat and optimistic approach of, for example, Williamson and Goate who discuss the range of molecular genetic

strategies which may be used and already are being used to attempt to elucidate the aetiological basis of mental illness.

In summary, this is a book which those working in the field of psychiatric genetics will want to have in their departmental libraries and it will be of interest also to more general readers, whether they are primarily researchers or clinicians who have an interest in the intersection between molecular genetics and psychiatry.

PETER MCGUFFIN

In Situ Hybridisation: Application to Developmental Biology and Medicine. Society for Experimental Biology Seminar Series 40. Ed N Harris, D G Wilkinson. (Pp 288; £35.00) Cambridge: Cambridge University Press. 1990.

Reports of symposia are frequently characterised by the wide variation in style and approach taken by the authors of the different chapters, and by their rapid obsolescence. The first trait must be laid at the door of the editors for their inability to establish a consistent format. The second is the result of a system which inhibits scientists from discussing their most exciting data until they are published in a journal, and of the inevitable delays between the meeting and publication of the proceedings.

This volume was intended to be the proceedings of a symposium held during the meeting of the Society for Experimental Biology in Edinburgh in 1989. Most of the chapters are concerned with the application of *in situ* hybridisation to the study of gene expression in plant and animal systems, although the last three chapters do address the subject of the clinical application of the technique. There is little uniformity of either style or content in the chapters, for, while some include detailed laboratory protocols, others contain only an outline of the methodology, while yet others are little more than a superficial review of the field.

The first two chapters deal with the use of non-isotopic labels for *in situ* hybridisation. That by Coulton is a good, broad overview of the whole subject, with detailed protocols for most of the methods, but the chapter by Raap *et al* is a brief and very superficial survey. The next five chapters discuss aspects of *in situ* hybridisation to mRNA in various animal systems. Two of them (Giaid *et al* and Perry-O'Keefe *et al*) include detailed protocols, while that by Wilkinson has a brief outline of the methods used, and those by Angerer *et al* and Ingham *et al* are rather general reviews. The next four chapters discuss the application of *in situ* hybridisation to mRNA in plant systems. Each of these chapters includes some description of the methods used, but only in that by Wright and Greenland is there sufficient detail to be useful as a practical guide. This is a regrettable deficiency, for the problems facing newcomers to this area of the subject have little coverage in general publications. The final chapters are concerned with clinically relevant aspects of the technique. That by West describes its application to prenatal diagnosis, and includes detailed protocols, while the chapter by Herrington *et al* is a review of applications in pathology, and the last chapter (by Wells) is again more practical, though methods are only described in outline.

Overall, it is hard to say to whom this book would appeal. It has adequate reviews, and is therefore useful as an approach to publications in the field, but this is such a rapidly evolving area that these reviews are likely to be already outdated. In most cases the techniques are not described in sufficient detail for the book to be useful as a handbook, and the depth with which the subject is treated varies greatly from chapter to chapter. All in all it seems likely that this is the sort of book which will appear on departmental library shelves, be consulted by newcomers to the field for the first six months, and then rapidly forgotten. It is unlikely that many scientists will need their own copy.

JOHN R GOSDEN

Human Genetics: A Modern Synthesis. Gordon Edlin. Boston: Jones and Bartlett. 1990.

This textbook has been designed primarily for use by those without a scientific background but with a wish to understand more about genetics. The author has considerable experience in teaching courses with this aim and his book is structured along the lines of a series of 'lectures' (20 chapters of factual information) and 'seminars' (brief discussions of contentious issues). It also attempts to provide the reader with a 'tutor' in the form of glossaries for each chapter, suggestions for further reading, and a series of questions and answers and possible essay topics.

The breadth of issues addressed is impressive, ranging through classical genetics, relevant basic organic and biochemistry, bacterial and eukaryotic genetics, application in biotechnology and medicine, evolution, and ethics. In attempting to cover so much ground there has perhaps been a tendency for outlines of one or two basic principles to become excessively pruned while other areas are covered in detail which may be excessive. For example, the chapter on human hereditary diseases could easily, I feel, leave the genetics novice failing to grasp *how* linked markers are used diagnostically despite a fairly detailed discussion of the probe G8 and Huntington's disease.

A better understanding of genetics by the whole population is going to be essential as biotechnology pervades our lives to an ever increasing extent. There is a real need for an uncluttered, intelligible guide to this area which can appear daunting and even menacing to the outsider. Until understanding is more widespread, the ways in which this new technology is applied will be decided on behalf of the population rather than by consensus. The anxieties increasingly but belatedly expressed in relation to environmental issues are a prime example of the consequences of selling technology to enthusiastic but naive consumers. This book is not faultless, but the more of the target readership it reaches the better.

JULIAN SAMPSON