Newsdesk

Exposure to mercury during pregnancy is associated with an increased risk of hypertension

A study of 149 children in the Faroe Islands from the prenatal period to the age of 7, which was originally designed as an investigation of the effects of mercury on cognitive function, has revealed that exposure to even small amounts of mercury can have a deleterious effect on blood pressure. Exposure to mercury in this group of children appeared to be related to eating certain types of fish which accumulate mercury. Although the effects were not dose related, the cause for concern, according to Professor Grandjean who conducted the research, was that "mercury may also contribute to the development of serious disease and perhaps mortality".

Capitalising on Dolly: Geron pumps funds into the Roslin Institute

Geron Corporation of California has provided substantial research funding for the Roslin Institute in the wake of the cloning of the sheep Dolly. The funds are aimed at developing transplantation therapies for numerous degenerative disorders, many of which impinge on ophthalmological practice. Indeed, therapies for aging disorders are Geron's business. The grant is for £12m over 6 years and will ensure that the UK remains at the forefront of this technology. Professor Ian Wilmut, whose work underpins the development of Dolly, stated that the major challenge is in understanding cellular programming in order to make human cell therapy a reality. In the long term the aim would be to reprogramme cells without having to use eggs or to make embryos. Possibilities for retinal cell reprogramming may assist in diseases such as macular degeneration and the inherited retinal dystrophies.

Doyne Lecture 1999

Professor David Easty (Bristol University) delivered the Doyne Lecture at the 1999 Oxford Congress, which was essentially an overview of the activities of the United Kingdom Transplant Service since its inception in 1986 (under his direction). Some important observations have been made during this period. Altogether, there have been 28 000 corneal transplants since 1986; 25% of the donor corneas have not been usable, mostly on the basis of low endothelial cell counts, and significant attempts have been made to develop an optimal culture solution which will preserve, if not improve, corneal viability after donation. In addition, the Bristol unit has invested considerable effort in developing methods for corneal cryopreservation. Overall survival at 12 months was 88% and failure occurred most frequently during the first 10 weeks. The commonest cause of failure was rejection while surgeon experience was also an important factor. Interestingly, there may be a correlation between surgical skill and immunological rejection according to the data analysis. Donor factors appeared to be of little importance provided endothelial cell viability was acceptable. In particular, there was no clear evidence for the controversial protective role of MHC class II antigens in improving corneal graft acceptance rate and an answer to this question will await the results of a current prospective study being conducted by the UKTSSA. Future directions include the possibility of generating "customised" corneas biologically reconstructed from the three basic layers of epithelial cells stroma and an endothelial monolayer.

MRC immunology unit closes down

Strategic decisions within the Medical Research Council UK have led to the closure of the MRC Cellular Immunology Unit, which was located in the Dunn School of Pathology, Oxford University. The occasion was marked by a two and a half day symposium held in Oxford in July 1999. The meeting was introduced by Sir James Gowans who was responsible for setting up the unit in 1963. In those early days little was known about how lymphocytes carried out their functions or even how many different types of lymphocytes there were and James Gowans's seminal observations on trafficking of lymphocytes through the high endothelial venules of the lymphoid organs were remembered as a starting point for many of the later discoveries. The advances in immunology since that time have been unimaginable and many major contributions to current knowledge derived from the unit. These included the identification of CD4 helper T cells using an MRC monoclonal antibody, the establishment of the concept of the immunoglobulin superfamily, demonstration of aberrant MHC class II expression on non-haematopoietic cells, use of monoclonal antibodies to inhibit autoimmune disease, and many more recent studies including several molecular structural studies of important immunological molecules and the demonstration of regulatory T cells in the thymus which regulate autoimmunity. The meeting was devoted to invited talks by many previous and current staff of the unit. In addition, there were talks from several prominent immunologists with whom staff had collaborated over the years. However, many others from different fields of the discipline also attended to give their support to a unit for which there was enormous respect and to register their misgivings over its closure.

A third type of photoreceptor?

Two papers in the journal *Science* (1999; **284**:502–4 and 505–7) from a group of researchers at Imperial College, London, have shown that mice without rods or cones can still respond to light stimuli which induce circadian rhythms. The group used transgenic techniques by combining the rd mutation with a transgenic ablation of cones (cl) to produce mice lacking both photoreceptor classes. Despite the lack of photoreceptors the mice responded to monochromatic light to produce a normal suppression of pineal melatonin. In behavioural studies they also showed that circadian rhythms, which are normally entrained by light to follow the daily solar cycle (photoentrainment), in mice without cones (cl) or without both rods and cones (rdta/cl) showed unattenuated phase shifting responses to light in a wheel running test. The effect was abolished when the eyes were removed indicating that the eye was the site of photoreception for this response and that a third class of unknown photoreceptor probably accounted for these responses.

Using folate receptors to kill tumour cells

The biotechnology company Endocyte (West Lafayette, IN, USA) is using the vitamin folate to deliver cancer drugs and imaging agents to tumours. Many tumours such as those in head and neck, lung, brain kidney, and breast overexpress the folate receptor and are thus suitable for drug targeting by this means. Many drugs and other agents can be attached to folate and materials which have already been successfully delivered include genes, antisense molecules, proteins, smaller molecules, and imaging compounds. The company has developed a radioactive indium label to detect cancer cells which is currently undergoing phase II clinical trials. According to Ron Ellis who heads the company, this is the first time vitamins have been used as target molecules and their application to these situations including metastases and benign tumours is being explored. Endocyte has developed links with gene therapy companies and also with the National Cancer Institute to develop methods to deliver conventional chemotherapeutic agents such as paclitaxel and daunorubicin. Other patents held by the company for use in drug targeting include the vitamins biotin, thiamin, and riboflavin.