EDITORIAL

Repair, regeneration and development may seem at first sight to be an unusual topic for discussion at an ophthalmological symposium, but it was the title of the very successful Twenty-Third Cambridge Ophthalmological Symposium under the chairmanship of the embryologist Professor Christopher Wylie. In normal early development cells not only increase their number but at each division become more and more differentiated. To achieve this, remodelling occurs continuously and redundant tissue is constantly removed to be replaced by other, often more specialised tissues. All of this takes place in accurately programmed sequences, each cell having its specified life span, its function being determined by its neighbours and the influence of substances at sources remote from the structure in which it finds itself. Developmental scientists have come a long way in the understanding of processes which allow the body to develop into an intact fully functional unit and in identifying the building blocks which enable it to reproduce itself identically when necessary. Nowhere is this extraordinary ability more apparent than in the structure and function of the eye. Our knowledge of processes of development are vital not only to an understanding of teratology but, through the knowledge of what makes cells function and communicate with each other, to ways of influencing and preventing pathological changes occurring.

The differentiation of multipotential stem cells to cells which have a specific and single function is particularly apparent in the study of repairing tissue, where the mechanisms and the results of injury differ widely in the immature and mature organism. Why is it, for instance, that in the embryo injured tissue will heal by invisible mending, whereas in pigmented skin will produce gross overproduction of scar tissue as in keloid? Why is it that in general neurological tissue will never regenerate, but only repair? These are the sorts of problems that have been addressed by the authors in this issue. An understanding of the processes concerned may well lead to solutions being found to disorders which involve specialised tissues, so that it may become increasingly possible to target specific cells or organs in the treatment of disease, or to transplant functioning highly differentiated organs. These exciting prospects are not so far away as they originally appeared to be.

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