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► **COVER:** 'Shape shifters' by Natasha Wallington, inspired by the Review on p105.


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To understand fully the role of the immune system in human health and disease, and to design and test preventive or therapeutic treatments for human diseases, *in vivo* studies of human cells and tissues will ultimately be required.

The importance of species context is illustrated by the role of mast cells in allergic and other non-allergic disorders. As Stephan Bischoff describes on p93, there are many differences between human and murine mast cells, with the most important difference being the large amount of information available on murine mast cells compared with that on human mast cells. It is no simple matter to extrapolate from studies in mice to the human situation and a crucial goal for the future will be to establish more relevant models for the study of human mast cells.

However, the utility of mouse models for carrying out *in vivo* experiments that would never be possible in humans should not be overlooked. The field of 'humanized' mice has therefore developed to combine the study of human cells with the practicality of mouse models. Leonard Shultz and colleagues (p118) describe the genetic modifications that have led to the development of immunodeficient mouse strains that allow engraftment with, and development of, human haematopoietic cells or tissues.

One important use of humanized mice is for the study of haematopoiesis. On p105, Frank Rosenbauer and Daniel Tenen review the role of transcription factors in controlling the hierarchy of myeloid-lineage development and how their mutation or dysregulation can lead to cancers such as acute myeloid leukaemia (AML). As discussed by Shultz and colleagues, humanized immunodeficient NOD-*scid* mice are an important host for studies of primary human AML, and they could facilitate the testing of gene-therapy approaches to this disease.