Garvan Institute of Medical Research

Leaders in Science

Professor Andreas Strasser

Senior Principal Research Fellow
Molecular Genetics of Cancer Division
The Walter and Eliza Hall Institute of Medical Research

"How does p53 actually protect us from developing cancer?"

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Host: Professor Robert Brink

Professor Strasser and his team are investigating the control of apoptosis, the cell death program essential for development and homeostasis. By using transgenic mice over-expressing the cell death inhibitor Bcl-2 and knock-out mice lacking one of its antagonists, they demonstrated that abnormalities in the control of apoptosis can cause autoimmune disease or cancer and render tumour cells refractory to anti-cancer therapy. Professor Strasser and his co-workers established that mammalian cells have two distinct signalling pathways leading to apoptosis, one triggered by ligation of cell surface "death receptors" and the other by certain developmental cues, cytokine deprivation or stress signals. Using biochemical and molecular biology techniques, Professor Strasser and his team discovered novel regulators that are essential for initiation of programmed cell death and showed that they function as sentinels for damage to various vital intra-cellular structures, such as the cytoskeleton. These discoveries have major implications for cancer research, developmental biology and immunology and suggest novel therapeutic strategies for tumours, autoimmunity and degenerative diseases. Current research interests include identification of the signalling pathways that mediate developmentally programmed cell death in mammals and those that are responsible for chemotherapy-induced killing of cancer cells, with the goal to develop improved strategies for treatment of cancer and autoimmune diseases.