ImmunoTools IT-Box-Cy55M-Award 2013

Dan Stratton

PhD Supervisor: Prof. Dr. Jameel Inal

Cell & Mol. Immunology Research Centre
London Metropolitan University
166-220 Holloway Road, London, N7 8DB

Biochemical and Physiological Roles of Microvesicles

Research into microvesicles (MV's) released from cells is a burgeoning field from cancer research to infectious diseases and many areas remain a mystery. It is postulated they have a role in cell-cell communication. Our research group (CMIRC) is investigating the possible mechanisms for inducing cell death. In vitro experiments MV's from different cell sources (including erythrocytes and monocytes) have been observed to induce cell death in TPH-1 and Jurkat cell lines. We have observed the chemotactic activities of MV's in "finding" THP-1 cells to infect them. Determining which cytokines are incorporated in the MV's as they bud from their parent cell and their biological roles will help elucidate their role in health and disease. We are investigating the action of cytokines on cell lines and then determining the presence of the cytokine in the MV's and the cell they originate from. Using recombinant proteins we can investigate the effects of cytokines on cell lines in vitro. Extending this work proteomic techniques including HPLC and QTof can determine the presence of cytokines in MV's, then further work on their biological effects can progress using recombinant proteins. Cytokines play a key role in cell differentiation and death.

Assessing the role of MVs requires a wide array of quality recombinant proteins; for example, culture assays investigating cell differentiation, activation or death (e.g. IL-2, IFN-gamma, IL-12, IL-3, TNF, IL-4, IL-5, IL-6, IL-10, and IL-13). Chemotaxisis experiments (e.g IL1,TNF, CCL2, RANTES),cytokine stimulation of MV release, various immuno-modulation experiments in which we stimulate immune cells with recombinant cytokines of interest (eg.IL-10 associated with anaemia) and evaluate their presence in MVs.

The cytokines chosen from the ImmunoTools IT-box would enable the initial investigation of the role of MVs in intracellular communication and chemotaxis.

ImmunoTools IT-Box-Cy55M for Dan Stratton

includes 55 recombinant mouse cytokines

rm EGF, rm Eotaxin / CCL11, rm FGF-a / FGF-1, rm FGF-b / FGF-2, rm FGF-8, rm Flt3L / CD135, rm G-CSF, rm GM-CSF, rm GRO-a / CXCL1, rm GRO-b / CXCL2, rm IFNgamma, rm IL-1alpha, rm IL-1beta, rm IL-2, rmIL-3, rm IL-4, rm IL-5, rm IL-6, rm IL-7, rm IL-9, rm IL-10, rm IL-11, rm IL-13, rm IL-15, rm IL-16, rm IL-17A, rm IL-17C, rm IL-17F, rm IL-19, rm IL-20, rm IL-21, rm IL-22, rm IL-25 / IL-17E, rm IL-27, rm IL-31, rm IL-33, rm IP-10 / CXCL10, rm LIF, rm MCP1 / CCL2, rm M-CSF, rm MIP-1α/ CCL3, rm MIP-1β / CCL4, rm MIP3α / CCL20, rm MIP3β / CCL19, rm NGF-beta, rm PDGF-AA, rm PDGF-BB, rm RANTES / CCL5, rm sCD40L / CD154, rm SCF, rm SDF-1α / CXCL12a, rm SDF-1β / CXCL12b, rm TNFα, rm TPO, rm VEGF DETAILS