

Automated analysis of white blood cells from microscope images

Overview

Polarity (ie cell shape and asymmetric distribution of molecules) is an important regulator of the fate of immune cells (T cells). To study this topic we place T-cells transfected/transduced to express fluorescently labelled proteins in culture with infected cells and image their activity with a microscope for periods extending from several hours to several days. These experiments provide us with rich sets of images in which the dynamic behaviour of tens to hundreds of T-cells can be observed simultaneously.

One of the problems associated with these experiments is that it takes extensive periods of time to analyse the huge amounts of data acquired during the experiments. Single frames contain images of many cells that move about and change shape and function over the entire experiment. In order to overcome this problem we are developing a software system that segments, tracks and registers the T-cells in the movies in order to automate analysis.

The goal of this project will be to develop and realise an algorithm for segmenting movies of T-cells in microscope images.

Requirements

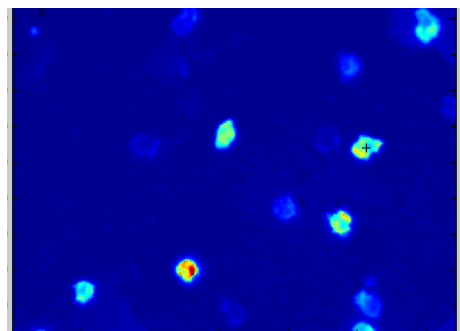
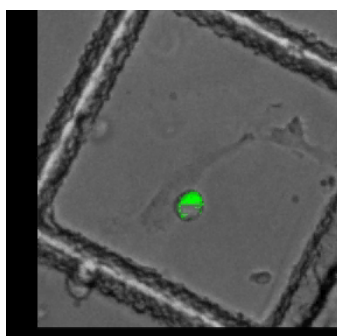
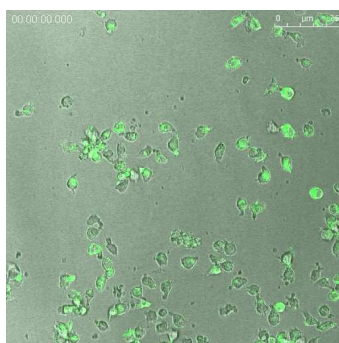
A course in image processing
Good knowledge in Matlab

Duration

1 semester

Contact

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This project is in collaboration with Prof. Sarah Russell, Peter MacCallum Cancer Centre, Melbourne, Australia