USE OF COMPUTATIONAL METHODS FOR IMAGE VISUALIZATION AND ANALYSIS
KEPLER AND IMAGEJ

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July 6, 2012

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Biological background

- EphA3 receptors are seen at high levels in various forms of cancers and tumors. At the Lackmann lab, anti-ephA3 antibodies are radiolabelled in order to visualize its efficacy in tumor targeting.

Figure 1: Fluoresced sections of image are radiolabelled tumors, while surrounding is tMSC (Vail)
Computational Background

- Images are derived through confocal imaging, and will be analyzed through the automation of data acquisition and analysis using ImageJ scripts and the Nimrod/K workflow engine. Final determination of the success of antibodies will be through calculating the ratio between islands of fluoresced tumors within the surrounding tMSC.
Progress

• Met with Dr. Vail to determine requirements of Nimrod/K and ImageJ scripts

• Began using .lif exporter with ImageJ GridJob on Kepler
  • Bio-Formats Importer unpackages .lif files into editable image files on ImageJ

• Wrote starter ImageJ script to get rid of noise, set threshold values to determine ratio of fluorescence:tMSC

• Downloaded the OMERO.insight client and followed through tutorials
Tentative Plans

• Waiting to gain access to OMERO.insight
  • OMERO client can be used for modifying and adding description to .tif images
  • Will be used with Kepler Scientific Workflow System

• Start constructing ImageJ scripts
  • Flow from Bio-Formats import → Kepler → ImageJ script

• Study past Kepler Workflows using OMERO and ImageJ
Exploring Melbourne CBD!

UFO at Federation Square
Reading Illumination Art Exhibition
Melbourne Central Business District
State Library
Many thanks to…

Monash University
• Dr. David Abramson, Science Director- Monash e-Research Centre
• Colin Enticott
• Slavisa Garic
• Dr. Mary Vail, B.Sc., Ph.D

UC San Diego
• Dr. Ilkay Altintas, Director for Scientific Workflow Automation Tech. Lab at San Diego
• Dr. Peter Arzberger, Executive Director National Partnership for Advanced Computational Infrastructure
• Dr. Gabriele Wienhausen, Associate Dean for Education in the Division of Biological Sciences
• Ms. Teri Simas

Eureka! Scholarship at University of California, San Diego
National Science Foundation through the PRIME program
PRIME at University of California, San Diego