

Useful simulators that can inform StarCellBio design

12/17/13

The items listed are aspects of available simulators that we liked. These items/functionality should be considered when designing StarCellBio:

SDS-PAGE/WESTERN BLOT SIMULATORS

[Open University Virtual Labs Simulators](#)

Downloaded software that can only run on Windows from Open University in the UK (David Male)

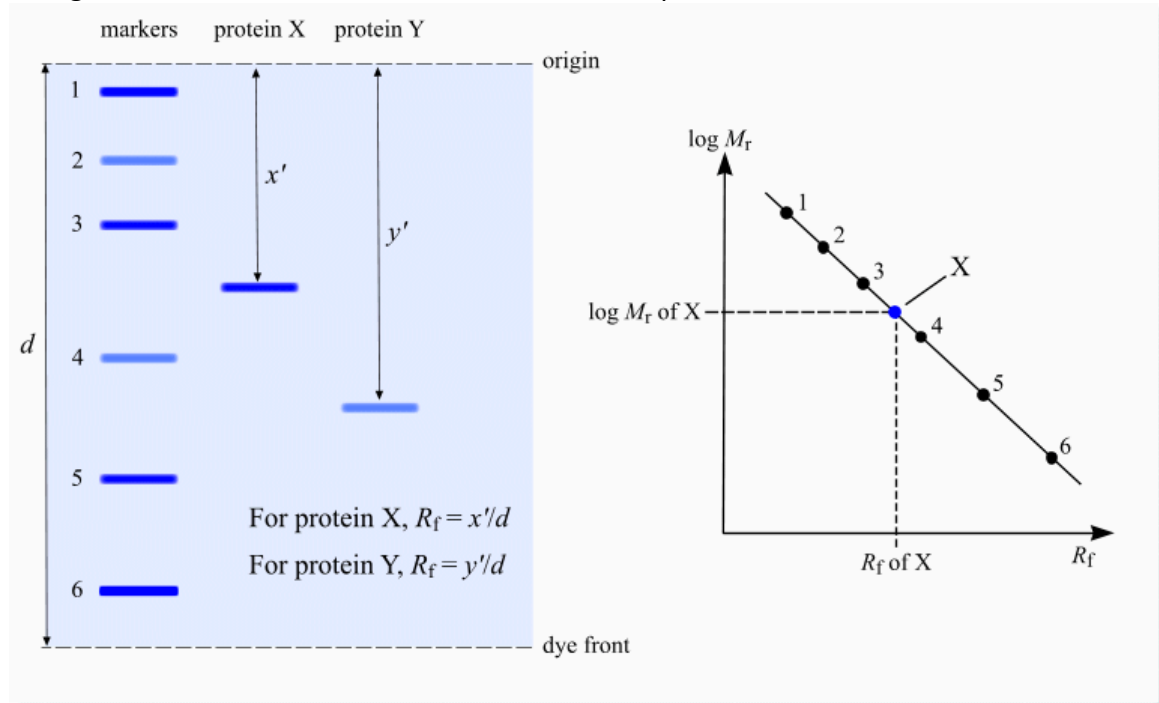
1. "SDS-PAGE & Western blotting" simulator

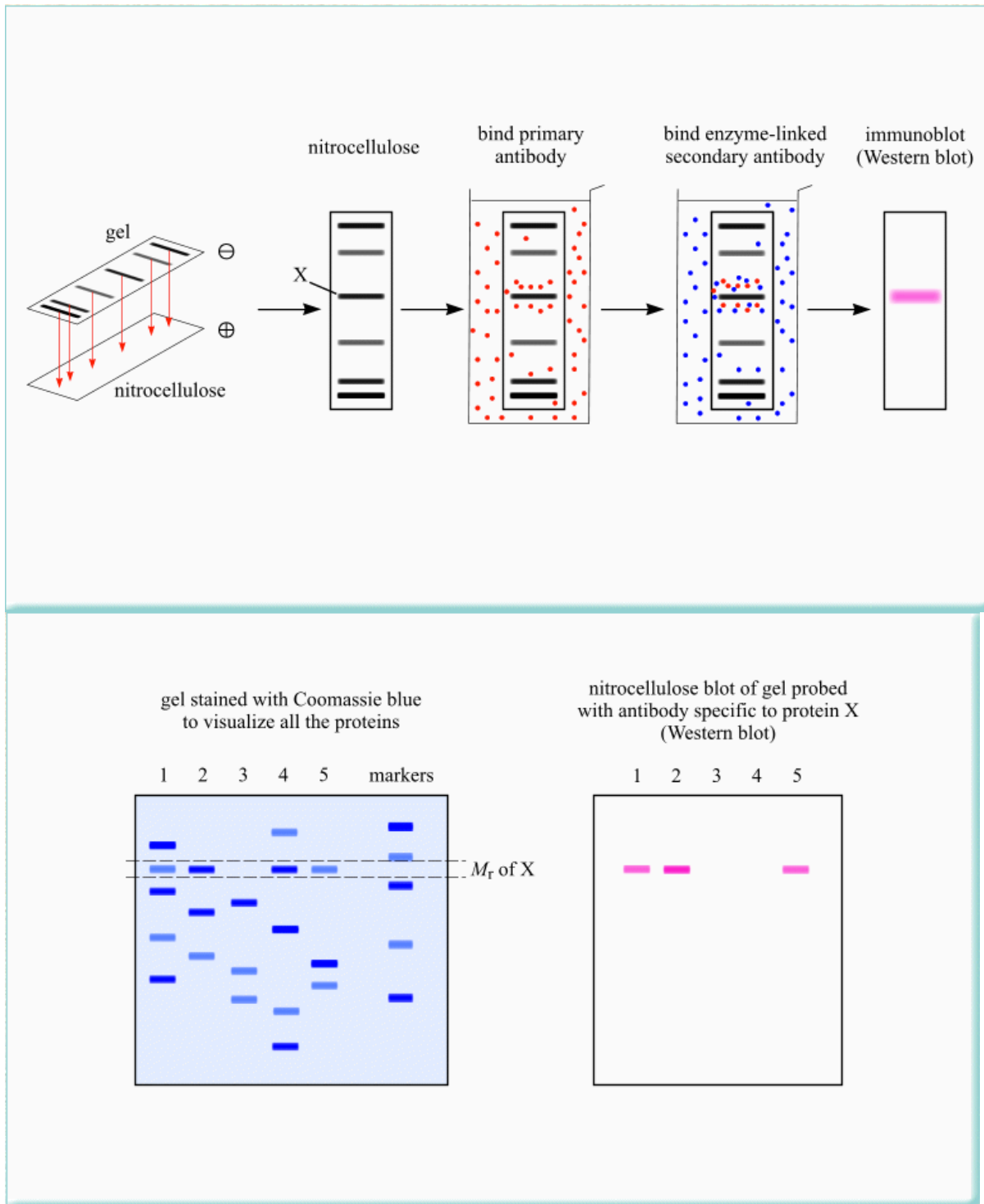
1a. Intro

- Western blot icon

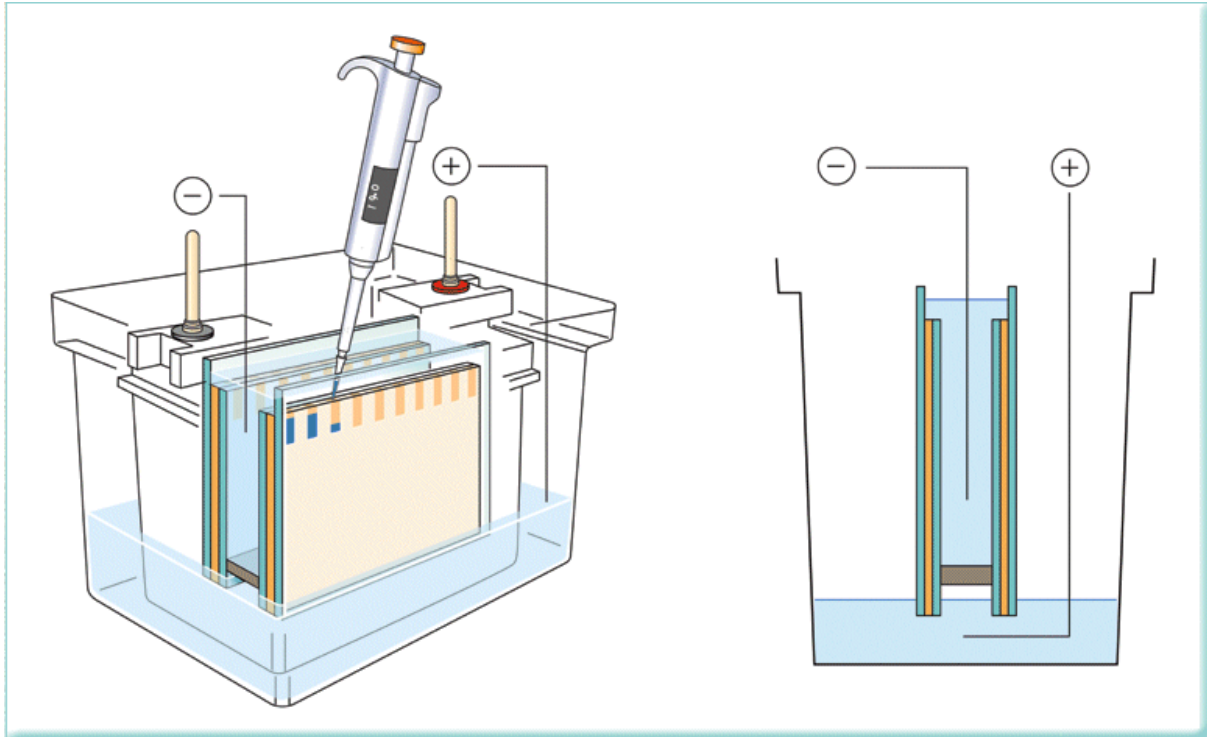


- Diagrams and animations of western blot that explain in detail how western blot works



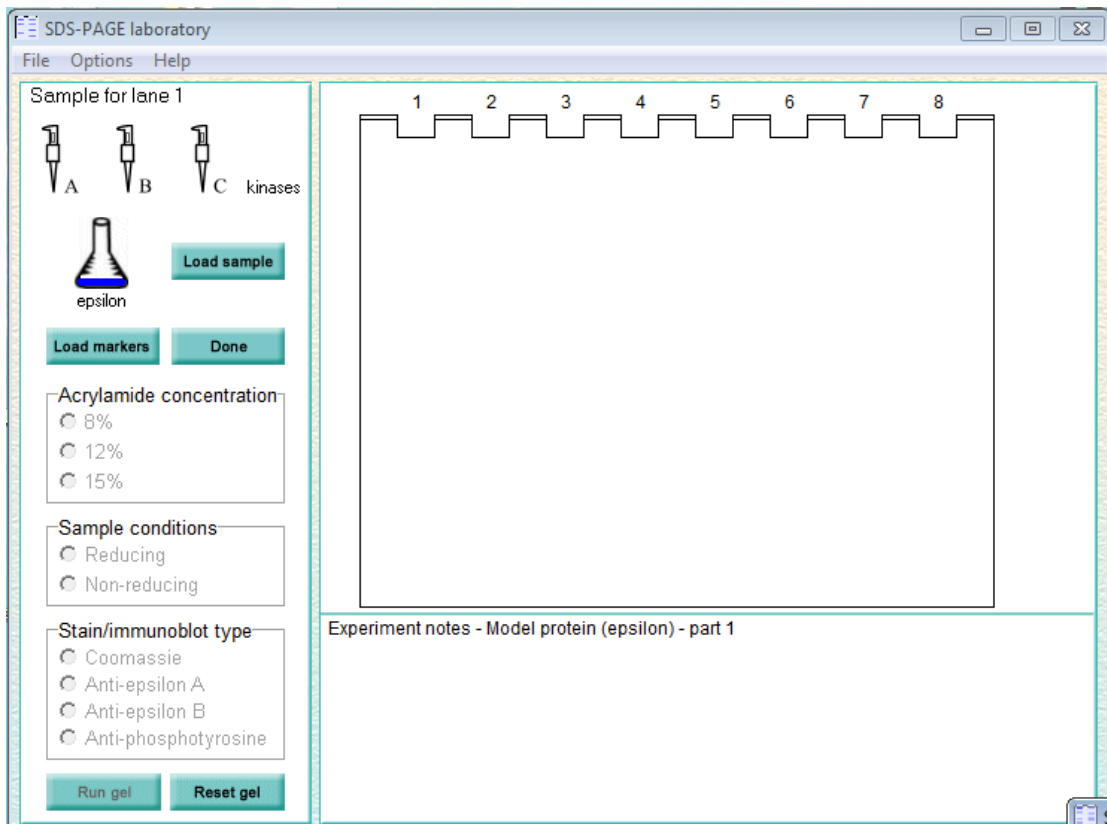


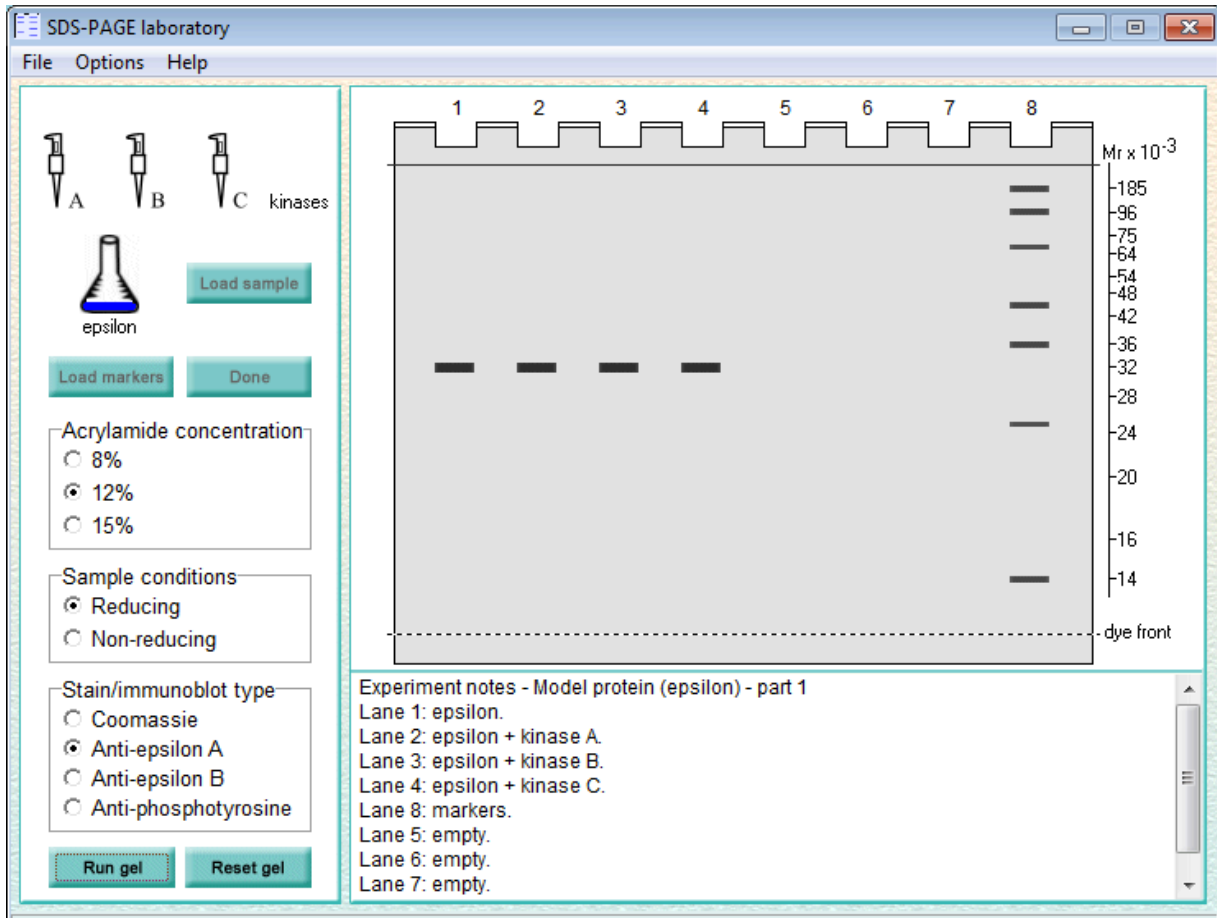
- Diagram of the western blot gel running apparatus



- Western blotting video

1b. Tool



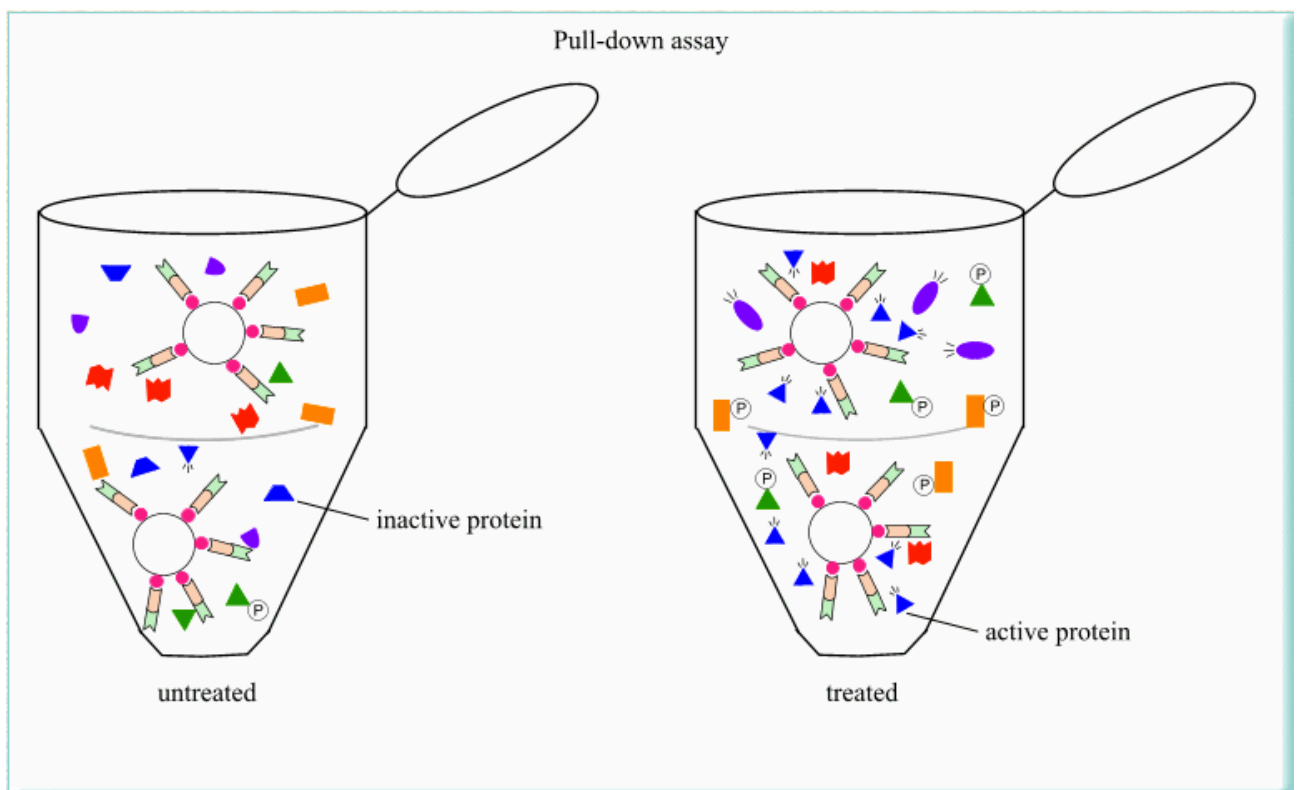
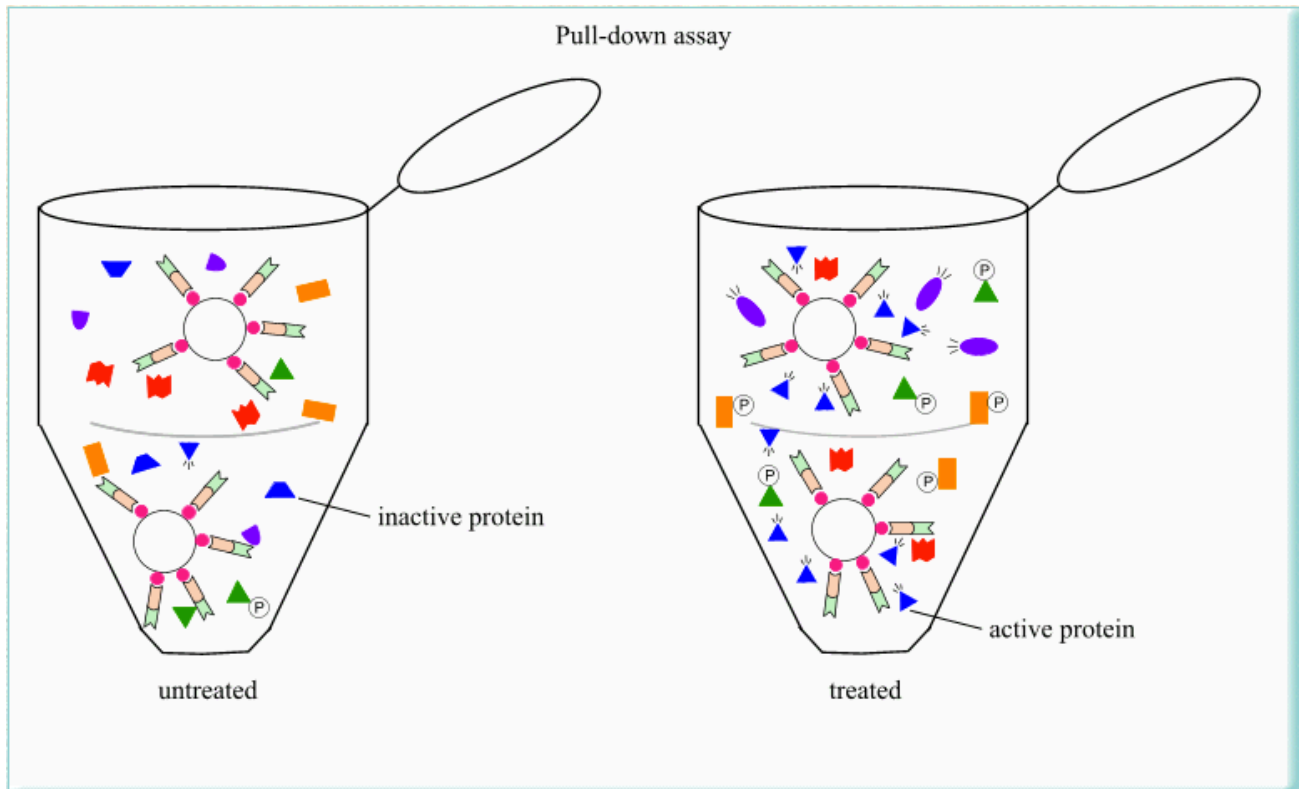


- Simulation of lanes being loaded.
- Load marker button
- Easy to run and see gel simultaneously
- Simulation of samples running through different acrylamide % gels
- Coomassie gel staining capability
- Movable horizontal line to align protein bands with known protein size markers
- Visual representation of the gel so that students see the wells they will load with samples.
- Simulation of the gel running with a migrating dye front
- Key for the gel (which samples are loaded onto which wells) is immediately underneath the gel
- Being able to run both reducing and nonreducing gels

2. "Investigating intracellular signalling pathways" simulator

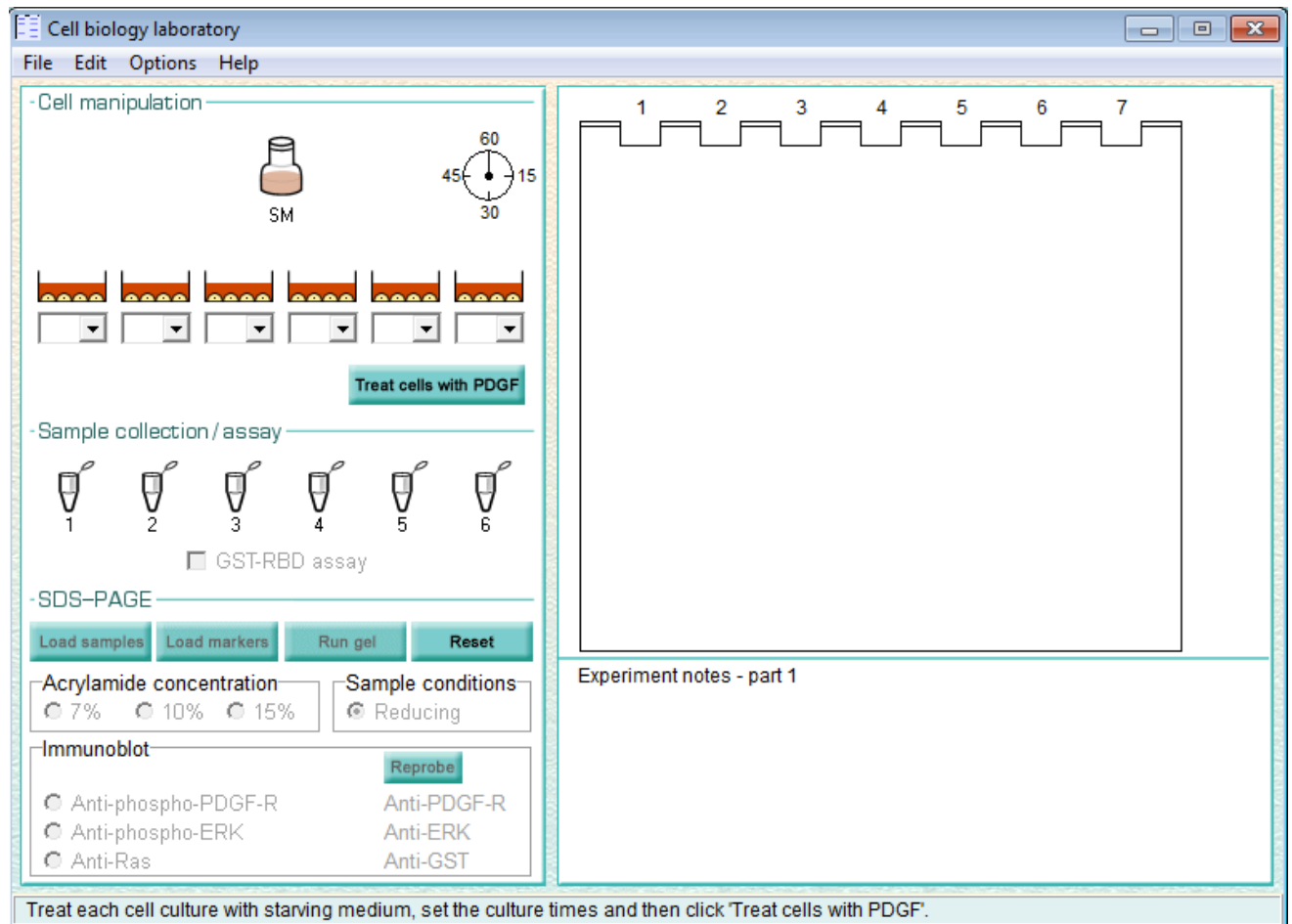
2a. Intro

- Immunoprecipitation explanation/visuals



- Explanation for how to interpret phosphor western blots (comparisons with non-phospho western blots)

2b. Tool



- Simulation of time passing through the use of a clock and simulation of samples getting collected
- Visuals of tubes for collecting samples
- Visual representation of plate of cells
- Simulation of adding a drug treatment into a plate - not for set up but simulating the process of running these experiments
- Reset experiment button

[Rochester Institute of Technology Western Blot Simulator](#)

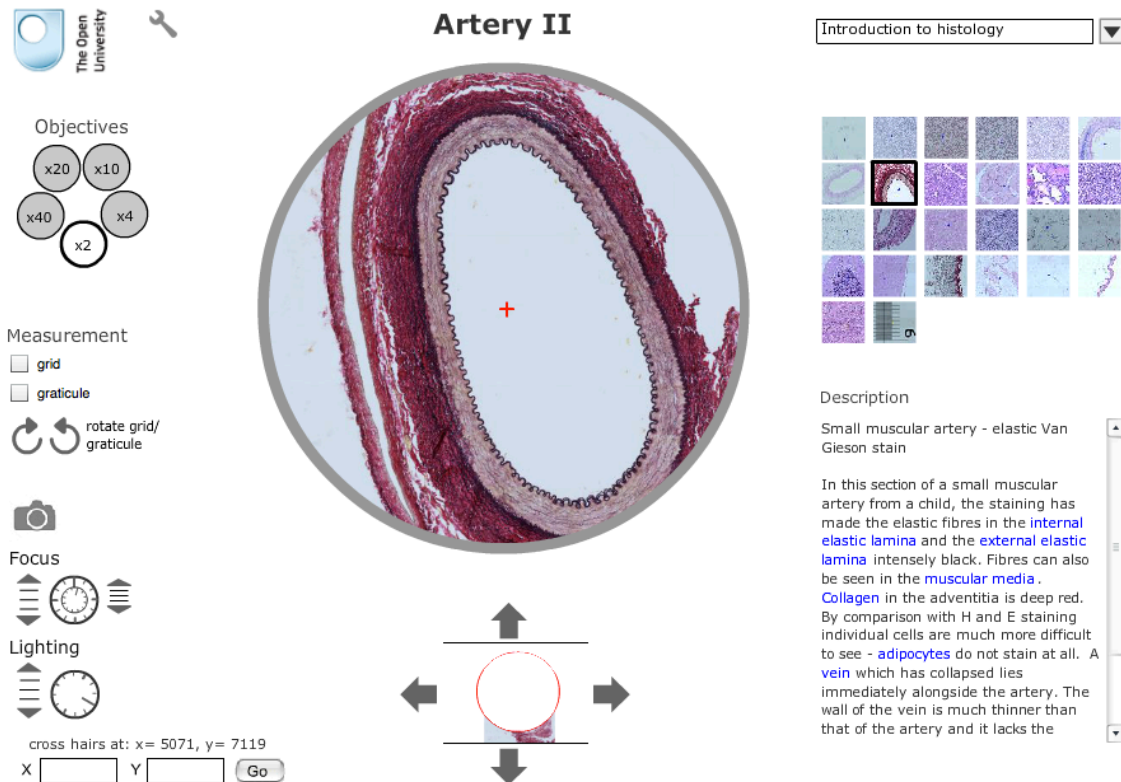
Web applet.

- Students need to run and stop gel

MICROCOPY SIMULATORS

Virtual Microscope

Web application from the Open University in the UK (David Male)



- Clean interface
- Visual representation and simulations of manipulations that can alter how the image is seen (focus, lighting, objectives, etc)
- Ability to make measurements
- Ability to annotate images such that items within the description are linked to a particular location in the image
- Sound of a slide being loaded
- Open source code

University of Delaware Virtual Compounding Microscope

Web applet that simulates how a compound microscope works. Has some nice features, but a lot of work to just be able to see an image.



[Virtual microscope from University of Illinois](#)

Videos:

<http://www.piercenet.com/method/overview-electrophoresis>