Web alert

Movie-time

Chemistry & Biology May 1999, 6:R149

 ISSN 1074-5521

Movies are a useful and often essential tool in biological and chemical research, and the web provides an ideal mode of distribution for these scientific movies. A variety of fields within biological chemistry make use of movies to convey information illustratively; from the cellular, to the molecular and finally the atomic level. Some of the movies on the websites that are mentioned here are easily accessible with no special applications required, but in some cases applications such as the NIH image program may be needed to view the files.

A very interesting starting point for the researcher who is new to the use of video microscopy is provided by *Solutions* —an internet magazine that specialises in this area (http://www.videomicroscopy.com)— where numerous technical tips on imaging technology, relevant references and a list of 'who's who' in the field can be found.

A site to aid researchers who use live cells to make movies is provided by Bioptechs (http://www.Bioptechs.com), an optical engineering company, where you will find extensive information on the best methods for controlling the environment of cells for such studies. In fact, numerous companies specialise in the equipment needed for making movies in research. The Instrutech website (http://www.Instrutech.com) includes a product listing, and product manuals can be downloaded in pdf format. The homepage of Princeton Instruments (http://www.prinst.com/topics.htm), includes a very detailed description of state-of-the art cameras and video equipment for use in a variety of applications from cell calcium imaging to electron microscopy and soft X-ray imaging.

If your interests lie in molecular structure, a site worth looking at is the Rasmol page (http://www.umass.edu/microbio/rasmol/); Rasmol, a free software package, allows you to rotate molecules of your choice, using the mouse, in order to obtain three-dimensional structural information. All you need to provide are the atomic coordinate files of the molecule of interest and it 'comes to life' in a movie.

The recent advent, in the last five years, of the green fluorescent protein (GFP) as a cellular marker in heterologous systems was a significant advance for optical microscopy of living cells. It enables real-time visualisation of numerous proteins that have been tagged with GFP; the intracellular movements of these proteins can therefore be followed. For background information on the use of GFP, its wavelength specificities, protein sequence, and so on, a website worth a visit is that of the Cellular Development Laboratory in the Plant Sciences Department of the University of Cambridge (http://brindabella.mrc-lmb.cam.ac.uk). Although the site concentrates on the use of GFP in plants, it still has general information about GFP. CloneTech's homepage also provides useful technical information on GFP, including a questions and answers section (http://www.clontech.com/clontech/TechTips/GFPTechTip.html). For specific questions a hypermail site can be found at http://www.bio.net/hypermail/FLUORESCENT-PROTEINS.

If you want to start making movies with GFP-tagged proteins you would do well to visit a website at Yale University (http://pantheon.cis.yale.edu/~wfm5/gfp_gateway.html). Here you will find, for example, movies on mitochondrial matrix dynamics, but the site also has an extensive list of applications of GFP, with numerous links to labs that carry out the research. A few good examples of movies in which GFP has been used to tag proteins and follow their subcellular location can be seen on the Lippincott-Schwartz laboratory homepage (http://dir.nichd.nih.gov/CBMB/pb1labob.html), a group that studies ER to Golgi trafficking. There are numerous homepages of researchers who use movies to illustrate their data. For example, the Borisy laboratory group has set up a site for publishing material that cannot be printed, such as movies, and here you can view movies on cell cytoskeleton dynamics (http://borisy.bocklabs.wisc.edu/). (*Chemistry & Biology* may also publish movies on the web that are associated with accepted papers.)

Gene transcription and protein trafficking can be seen as time-lapse movies on Jeremy Tavare's homepage where luciferase or GFP are tagged to proteins to aid visualisation (http://www.bch.bris.ac.uk/staff/tavare/welcome.html).

These are just a few of the numerous examples of researchers' homepages in which movies are used in the cell and molecular biology field, but the possibilities don't stop there. At the University of Toledo homepage, for example, we find movies used to show electron deformation calculations from X-ray crystallography data (http://www.icenter.utoledo.edu/icenter/).

Although this is by no means an exhaustive list of sites in which movies are shown, it gives an idea of the extent to which they are used in different fields within biology and chemistry, and, hopefully, a few useful hints can be found for researchers interested in making movies.

Julie Greenfield, School of Biological Sciences, University of Manchester, 2.205 Stopford Building, Oxford Road, Manchester M139PT, UK; J.Greenfield@man.ac.uk