

## Calling All Frogs

Are declining worldwide populations of amphibians the tip of an environmental iceberg? Whichever side of the politico-ecological fence you're on, it's a fact that amphibians are disappearing rapidly, and while it is not clear in every case why this is happening, it is something that everyone should be aware of. Towards that end, the midwestfrog site, hosted by the Chicago Herpetological Society, provides an impressive hodge-podge of movies, showing frogs in action, as well as numerous prominent researchers discussing problems afflicting amphibians. One of the more damning and interesting studies described therein is the tedious examination of museum frogs collected from 1852 onwards, which revealed that intersex gonad frogs (ovaries and testes in same animal) were virtually nonexistent until 1930, the very time when PCBs and chlorinated chemicals began to appear.

[www.midwestfrogs.com](http://www.midwestfrogs.com)



## Comparative Virology

Analysis of orthologous clusters of proteins in complete genomes has provided insights to evolutionary relationships of proteins in prokaryotes, archaeans, and eukaryotes. Why not viruses too? After all, there are more viral genomes sequenced than all of the organisms combined. The Viral Informatics Resource Center at the University of Victoria aims to fill in just this gap of knowledge and, in doing so, hits a bullseye for researchers with its numerous Java-based applications for viral sequence analysis. Start with Viral Orthologous Clusters (VOCs) to retrieve genes from selected viral genomes. You can analyze genomes with VGO, align genomes with Base by Base, perform dotplots with Jdotter, map peptide mass fingerprints with GFS, and generate graphical representations of DNA sequences with GraphDNA. Mix those functions with hydrophobicity plots, BLAST searches, codon statistics, and other miscellaneous tools and you've got a "must" bookmark for virologists.

[athena.bioc.uvic.ca](http://athena.bioc.uvic.ca)

## Pix Pix Pix

A picture may be worth a thousand words, but sometimes it is hard to come up with even a hundred words to describe an entire collection of web images. Fortunately, there is lot to say about Steve Baskauf's Bioimages collection. One can start with the free availability provided to noncommercial use of the images. You can download the entire contents of the 400 Mb site and in it you'll find images that span the biological kingdom. Pix can be readily accessed by geographic location, and there's even a set of desktop images free for the taking. If you're looking for biological graphics for the classroom, this is a great place to find them.

[www.cas.vanderbilt.edu/bioimages/frame.htm](http://www.cas.vanderbilt.edu/bioimages/frame.htm)

## Spiraling Outwards



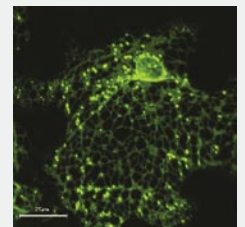
Posing the seemingly silly question, "Do plants know math?" the Phyllotaxis site goes a long ways towards addressing it, and the answer turns out to be a pleasant surprise. Consider the pinecone depicted here, with 13 visible spirals going one way and 8 going the other. Is it a coincidence that 8 and 13 are also successive numbers in the Fibonacci sequence? Turns out, it's not.

Visible spiral arrangements in plants are most often Fibonacci numbers, and mathematical models of spiral formation mechanisms support the observed phenomena. The site's Java-based online software employs mathematical models of plant patterning and illustrates the building of an incredible array of bio-spirals. The answer to the question above, therefore, it seems, is "No, but mathematicians certainly know plants."

[maven.smith.edu/~phyllo](http://maven.smith.edu/~phyllo)

## Green Fluorescent Plants

Fuse green fluorescent protein (GFP) with proteins targeted to specific plant organelles and what do you get? Well, not surprisingly, when viewed under a microscope, the result is a set of intricately detailed images that depict intracellular details of plant cells that can't be seen almost any other way. The research focus of Chris Hawes' informative site hosted at Oxford Brookes University is on the plant endomembrane, with emphasis on the nuclear envelope, endoplasmic reticulum/Golgi, and secretion. Movies depict cellular dynamics and have to be seen to be appreciated.



[www.brookes.ac.uk/schools/bms/research/molcell/hawes/gfp.htm](http://www.brookes.ac.uk/schools/bms/research/molcell/hawes/gfp.htm)

by Kevin Ahern

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