Spuds for You

They feed millions of people around the world every day and their failure as a crop initiated one of the greatest migrations in American history. Vice President Dan Quayle famously misspelled their name in the 1992 election, cementing an image of him in voters’ minds at the polls. We alternately call them spuds, tubers, or taters, and it’s hard to think of a fast food restaurant that doesn’t serve them. Can you say p-o-t-a-t-o? Knowledge encoded in the 12 chromosomes comprising their genome is important enough that 13 nations are combining efforts to sequence them. 2008 was even designated the International Year of the Potato. All of this is chronicled nicely at the Potato Genome Sequencing Consortium (PGSC) web site where visitors can also track the progress of the sequencing effort. Perhaps a rethinking of the phrase “small potatoes” to connote something insignificant is in order.

Getting to Know You

The interaction between two proteins can be compared to a courtship, but there is an important difference. Romantic pairs find numerous things that bring them together, but interacting proteins are programmed for their fates, often through simple structural motifs, such as the common binding elements spanning multiple polypeptides. Examples include the SH2 domains that recognize phosphorylated tyrosines and BRCT domains found mainly in proteins involved in cell cycle checkpoint functions. The PepCyber database of human protein-protein interactions serves up all sorts of information about phosphoprotein binding domains. While it may not seem like a large collection, over 7000 interactions involving over 300 domains are compiled at the site.

Pervasive Invasives

Though one may quibble that the phrase “invasive alien species” is redundant, you surely won’t argue that organisms invading non-native habitats aren’t a global problem, especially after viewing the Global Invasive Species Database. Start your tour with the “100 of the World’s Worst Invasive Alien Species” list, where you’ll discover the plants and animals that are wreaking the most havoc upon their environments. If that doesn’t concern you, a search of the database by organism type will reveal a long list of invaders, spanning from viruses and bacteria to mammals. There’s a lot of work to do in order to effectively control invasive species, and the GISD is helping to make its visitors aware of the problem.

The Name Game

William Shakespeare’s rhetorical question, “What’s in a name?” actually has an answer, if you ask scientific moniker makers. An activity that is as second-nature as speech, walking upright, or complaining about the weather, naming usually falls to the discoverer of a new thing. When the items being named are small in number, like mountain ranges or rivers, common names suffice, but when the collection numbers over 25,000 and their discovery occurs in a very short time span (i.e., the genes in the human genome), a bit of attention to consistency is in order. Organic chemistry has the IUPAC serving this purpose and now the human genome has its own central naming group, the HUGO Gene Nomenclature Committee, which acts to approve human gene symbols and names, ensuring that each gene has only a single approved designator.

Genome on the Range

The National Animal Genome Research Program (NAGRP), an offshoot of the USDA, aims to coordinate the genomic sequencing efforts of common farm animals, including cattle, pigs, chickens, sheep, horses, and the rapidly expanding number of organisms used in aquaculture. There are benefits and downsides to these efforts, to be sure. Researchers hope that knowledge at the sequence level will lead to improved quality of these important foodstuffs. On the other hand, for example, horse breeders worry that the mystery, magic, and artistry of their profession may disappear. Serving these diverse communities is the NAGRP’s extensively hyperlinked web site, with pointers to virtually every significant connection to the projects available.

- Kevin Ahern - Please send web site recommendations to ahernk@orst.edu