



# Plant Science Says

March, 1999

## **Lab of the Month - Mark Young (510 LJH)**

My laboratory has a range of interests in virology than span both basic and applied topics. The two major research projects in my laboratory are 1) the understanding of the mechanism(s) of spherical virus assembly and disassembly in chemical and molecular detail, 2) and the characterization of thermophilic viruses isolated from Yellowstone National Park.

Our studies on spherical virus assembly and disassembly have allowed us to understand the precise details of this process. We utilize a combination of approaches that include X-ray crystallography, high-resolution electron microscopy and the tools of molecular biology. As a result of these studies we have provided information required for the design of novel anti-viral strategies based on interference with virion assembly and disassembly. We have also provided new insights into the process of macromolecular assembly in cells. One unexpected consequence of these studies has been the development of the use of assembled viral protein cages (devoid of their genetic material) as containers for nanophase material synthesis and entrapment. This discovery has had important practical applications in both the biomedical and material sciences.

A relatively new research thrust in my laboratory has been to isolate and characterize thermophilic viruses from thermal aquatic and soil environments of Yellowstone National Park. This project is very exciting because it is a completely unexplored research area which will likely lead to new insights into the unique biochemical features of life at high temperatures. It is also likely to have significant practical applications for the biotechnology industry.

I also view it as a responsibility of my program to enhance our understanding of plant virus disease that are of concern to Montana's agricultural. These efforts

include development of new diagnostic methods for viruses of small grains, providing virus diagnostic support for Jack Riesselman's Plant Disease Clinic, and the in-depth study of WSMV disease in Montana.

I am fortunate to have a group of nine talented students, technicians, and postdocs working in my laboratory. The research in my laboratory is supported by multiple NSF grants, NASA, USDA, the Murdock Foundation, the Montana Wheat & Barley Committee, and MAES.

## **Employee of the Month - Sue Brumfield (514 LJH)**

Sue grew up in Minnesota and went to Augusta College in Sioux Falls, SD. She received her Masters in Microbiology under Dr. Gordan McFeters. Sue started working in the EM Lab for Tom Carroll in 1975 and is now in charge of the Lab. She trains people in how to use the electron microscope and then charges them for the expendables and time they use. This is a transmission electron microscope so you have to be interested in looking inside an object such as a cell that can be sliced very thinly and fit on a 3mm grid. It has to be fixed with glutaraldehyde and OsO<sub>4</sub> (osmium tetroxide), dehydrate in ethanol and placed in an epoxy resin. Also it has to be sliced very thin - 90 millimicrons - with an ultra microtome and then stained with heavy metals. Electrons go all the way through the specimen except for those which are deflected by the heavy metal stain that sticks to such things as the cell wall or DNA. These electrons are lost where others that go through cytoplasm are not so you end up with light and dark areas making up a picture.

If you are interested in using the microscope, call Sue and she will let you know if it will be useful for the project you have in mind.

Sue's husband Phil works in road construction. Their

alarm clock is a chocolate lab named Bubba. Their hobbies include snowmobiling, golf, and jet skiing. Sue also plays the piano.

### **Department Head Search Update**

L. Knapp has invited two more candidates in for an on-campus visit and interview. The two candidates are Vance Baird and Norm Weeden. Dr. Baird is an Associate Professor in the Dept of Horticulture at Clemson University and Dr. Weeden is a Professor in the Dept of Horticulture in the NY State Agr Exp Station of Cornell Univ at Geneva. They both have websites, and their vitaes are in your mailboxes.

The plans are for Dr. Baird to visit here March 25 and 26 and Dr. Weeden, April 22 and 23. The search committee is continuing to meet regularly and discuss possible candidates. At this time no other candidates have been invited to visit.

### **March Birthdays:**

Erica Miller	16
Vladimir Kanazin	24
Elaine Nichols	31

***Happy Birthday!***