

FACULTY

- Professor Grayson S. Davis George Washington University (B.S., 1970); University of Virginia (Ph.D., 1981) *Research interest:* Adhesive controls of self assembly in amphibian gastrulation. *References:* Davis, G. S., Phillips, H. M., and Steinberg, M. S. (1997) Germ-layer surface tensions and "tissue affinities" in *Rana pipiens* gastrulae: quantitative measurements. *Developmental Biology* 192: 630-644. Please see also this web reference keyed to Gilbert's [Developmental Biology](#) textbook.
- Associate Professor Laurie S. Eberhardt
- Earlham College (B.A., 1985); University of Florida (M.S., 1990; Ph.D., 1994) *Research interest:* Laurie Eberhardt studies the behavior and ecology of woodpeckers, especially sap feeding behavior. Sap feeding poses intriguing problems because the birds must overcome a tree's defenses and also may experience nutritional limitations to feed on sap. Recent student projects in her lab group have included studies on tree species preference, variations in sucrose content and flow rate of sap, changes in sap feeding behavior with weather conditions, and microscopic examination of sap hole structure. *References:* Eberhardt, L.S. (2000) Use and selection of sap trees by yellow-bellied sapsuckers. *The Auk* 117 (1): 41-51.

Eberhardt, L.S. (1997) A test of an environmental advertisement hypothesis for the function of drumming in yellow-bellied sapsuckers. *Condor* 99: 798-803.

Eberhardt, L.S. (1996) Energy expenditure during singing: A reply to Gaunt et al. *The Auk* 113 (3): 721-723.
- Associate Professor Gene H. Evans
- Valparaiso University (B.S. in H.E., 1963); State University of Iowa (M.S., 1966); Purdue University (Ph.D., 1986) *Research interest:* Nutrient consumption of migrant farm workers. *Reference:* Evans, G.H. and Fields, R.A. (1998) Nutrient consumption of migrant farm workers in the Midwest. *Journal of the American Dietetic Association, Supplement 1*, 98 (9): A-71.
- Associate Professor Garland F. Hicks
- St. Lawrence University (B.S., 1967); Michigan State University (Ph.D., 1975) *Research interest:* Investigations in conjunction with students on the pathogenic characteristics of the *Castanea* parasite *Cryphonectria parasitica*. Further work is done with the American Chestnut Foundation in developing resistant strains of the host tree.
- Associate Professor David W. Scupham, (Chair)
- The University of Chicago (A.B., 1975); Indiana University (Ph.D., 1985) *Research interest:* David Scupham and his students have been studying the effects of naturally-occurring suppressors of immune responsiveness *in vitro*. Since proliferation of murine lymphocytes is inhibited by the molecules under study, research in this laboratory is now focused on the molecular mechanism by which suppression occurs. Some of the techniques used in these studies include cell culture, agarose gel electrophoresis, and reverse transcription-polymerase chain reaction (RT-PCR). In addition, he is interested in pedagogical research for the teaching laboratory. *References:* Foelber, J.R., H.S. Moebis, and D.W. Scupham (2001) Life after expiration: Effective Long

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Term Use of Biotech Reagents in the Teaching Laboratory. Indiana Academy of Science Programs and Abstracts, 117: 100.

Scupham, D.W. (1993) Differential effects of oxysterols on interleukin-2 receptor expression and proliferation of murine splenic lymphocytes. The FASEB Journal 7 (4), A682.

- Associate Professor Beth Scaglione Sewell
- Simpson College (B.A., 1985); Kansas State University (Ph.D., 1992)
Research interest: Beth Scaglione Sewell's research investigates the regulation of growth and differentiation of cells. Specifically she has been interested in regulators of the mammalian cell cycle that are adversely affected in colon cancer cell culture models. Techniques utilized in the laboratory include, Western Blotting, Northern Blotting, cell culture, enzyme assays and some electron microscopy. *References:* Scaglione-Sewell, B. A., M. Bissonnette, S. Skarosi, C. Abraham, and T. A. Brasitus. (2000) A Vitamin D3 analog induces a G1-Phase arrest in CaCo-2 cells by inhibiting Cdk2 and Cdk6: Roles of Cyclin E, p21Waf1 and P27Kip1. *Endocrinology* 141:3931-3939.

Scaglione-Sewell, B., C. Abraham, M. Bissonnette, S.F. Skarosi, J. Hart, N.O. Davidson, R.K. Wali, B.H. Davis, M. Sitrin, and T.A. Brasitus. (1998) Decreased PKC-alpha expression increases cellular proliferation and enhances the transformed phenotype of CaCo-2 cells. *Cancer Research* 58:1074-1081.

- Assistant Professor Robert J. Swanson
- Purdue University (B.S., 1995); The University of Chicago (Ph.D., 2001)
Research Interest: Robert Swanson is interested in genomics and plant evolution. Specifically, in using quantitative genetics to track genes that change over evolutionary time that lead to new species. Recent studies in his lab concentrate on changes in mate choices made by geographically isolated strains of the flowering plant *Arabidopsis thaliana*. *References:* R. Swanson, A.F. Edlund and D. Preuss (2004) Species specificity in pollen-pistil interactions. *Annu Rev Genet* 38:793-818.

A.F. Edlund, R. Swanson and D. Preuss (2004) Pollen and Stigma Surfaces: The role of structural diversity in pollination. (2004) *Plant Cell* 16: S84-97.

- Associate Professor Michael K. Watters
- Washington University (B.A., 1986); University of Washington (Ph.D., 1993)
Research interest: Dr. Watters studies the genetics of the filamentous fungus *Neurospora crassa*. Recent work has been focused on examining the control of branching during growth. Another long-term interest is spontaneous mutation. Previous work has shown that spontaneous mutation in *Neurospora* varies during different phases in the life cycle. The basis for this variation remains to be determined. *References:* Watters, M. K. (2006) Control of Branch Initiation in *Neurospora*. *Proceedings of the Indiana Academy of Science*. 115(1): 7-12.

Watters, M. K., and A. J. F. Griffiths (2001) Tests of a cellular model for constant branch distribution in the filamentous fungus *Neurospora crassa*. *Applied and Environmental Microbiology*. 67: 1788-1792.

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Watters, M. K., A. Virag, J. Haynes and A. J. F. Griffiths (2000) Branch initiation in *Neurospora* is influenced by events at the previous branch. *Mycological Research 104*: 805-809.

In addition to the eight Ph.D.-level faculty members listed above, the department also has two M.S.-level instructors on staff, both of whom contribute greatly to the overall success of the department, and are expert teachers.

- Instructor Gary S. Dulin St. Olaf College (B.A., 1977); Central Michigan University (M.S., 1988)
- Assistant Professor Delphina H. Gillispie Berea College (B.A., 1973); Eastern Kentucky University (M.S., 1975) The following subdisciplines of biology are represented in the training and teaching of our faculty members:
 - anatomy/physiology;
 - fungal genetics & plant genetics
 - genomics
 - plant evolution
 - cellular and molecular biology;
 - developmental biology;
 - microbiology;
 - zoology/ecology;
 - and nutrition/physiology.

Our curriculum reflects this expertise.

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