

Lesley Blair

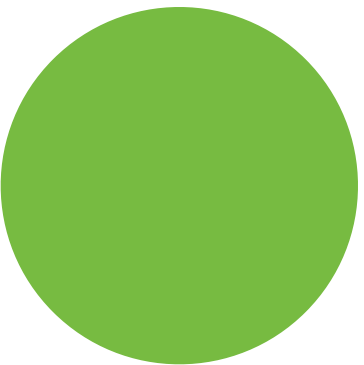
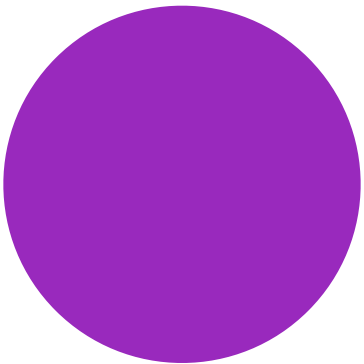
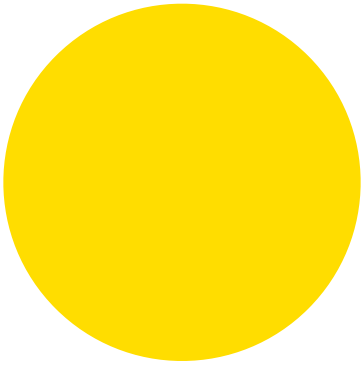
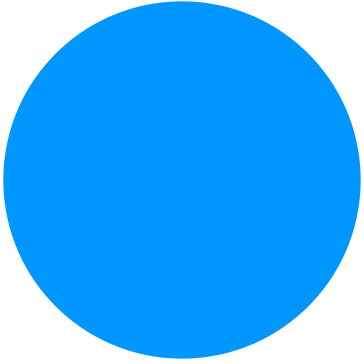
Nature Of Science

Art of Nature

Biology Beyond the Classroom

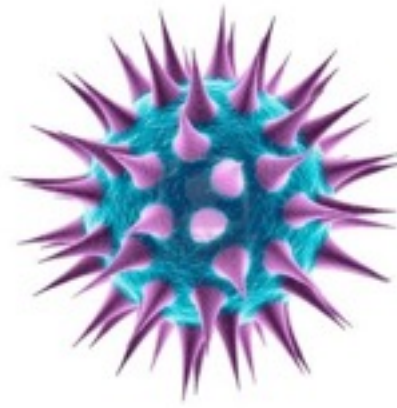
Field Guide to Learning

Natural History of Teaching



Curriculum Vitae 2016

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Education & Employment

Science Teaching and Curriculum Design

Education

PhD. 2002

Science Education
Oregon State University
Corvallis, Oregon

Faculty, Teaching Assistant, and Student Learning in the Introductory Biology Classroom

Graduate Studies in Aquatic Ecology

University of Notre Dame
Notre Dame, Indiana

Impact of Nutrients on Benthic Invertebrate Populations in Pacific Northwest Streams

M.S. 1989

Biology
University of Illinois
Champaign-Urbana, Illinois

Selenium and High Fat Diet: Correlation with Breast Carcinoma Occurrence in Laboratory Rats

B.S. 1987

Biology
University of Illinois
Champaign-Urbana, Illinois



Employment

Senior Instructor II (7/15 - current)



Senior Instructor I (7/09 - 7/15)

Instructor (7/02 - 7/09)

General Biology 101, 102, 103
Department of Integrative Biology
(formerly the *Biology Program*)
Oregon State University

Instructor (Fall Term 99, 01, 04)

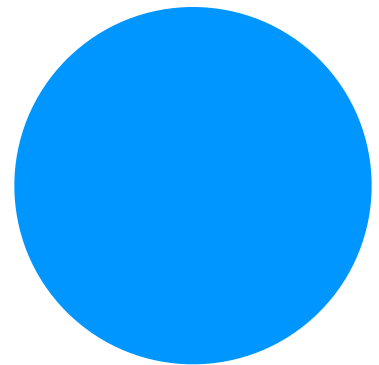
Science for Elementary Teachers (SED 599), Methods of College Science Teaching (SED 596)
Department of Science and Mathematics Education
Oregon State University

Graduate Teaching Assistant (9/93 - 6/01)

General Biology 101, 102, 103, Honors Biology BI 199H, Undergraduate Teaching BI 405, General Chemistry
Oregon State University

Instructor (7/94-8/94)

Introductory Chemistry, Principles of Biology
Willamette University



Additional Interests

Object Studies

Using objects for science learning within individual and group settings. These objects include: science representations, natural specimens, classroom artifacts, educational toys, everyday objects, cultural pieces, art work, and craft/hobby items.



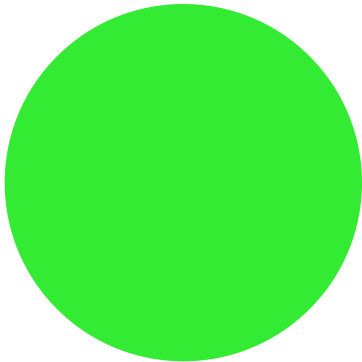
Human Histology

Cutting and staining tissues is a combination of art and science. Microscopy introduces students to hidden worlds

Rat Behavior

Rats primarily communicate beyond the human audible range. Bat detectors can be used to study social interactions.

Gen Bio at OSU



Putting It Together

Capstone Courses

Gen Bio courses offer a unique capstone experience; an exploration and organization of science themes developed in prior K-12 courses. An opportunity to develop a framework for a lifetime of science learning.



Storytelling Lectures

To complement bi-weekly activities and portfolios, story-based lectures have been inserted throughout the **Gen Bio** courses.

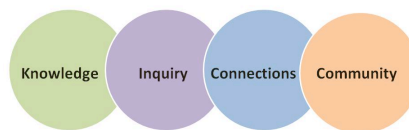
New Course Manuals

Course activities are updated each year. In 2013, three "Discovery" student manuals were produced and these were updated in 2014 to the new "KICC" edition.

General Biology at Oregon State University

Each year **Gen Bio** (101, 102, and 103) general biology courses serve over 2200 students representing all colleges at the university. I develop the curriculum, lecture, and assist students throughout each term.

KICC Learning Outcomes



Gen Bio courses have been developed around four general series outcomes. Outcomes are matched with specific weekly objectives and assessments. Upon successful completion of each course, students will:

- Recognize and apply concepts and theories of basic biological sciences. (**Knowledge**)
- Apply scientific methodology and demonstrate the ability to draw conclusions based on observation, analysis, and synthesis. (**Inquiry**)
- Demonstrate connections with other subject areas. (**Connections**)
- Describe the principles that guide scientists and the scientific enterprise. (**Community**)

Curriculum Redesign

During 2013, Mark Lavery and I concluded a two-year total redesign of the **Gen Bio** curriculum, as the initial phase of a six-year plan to develop and offer students a capstone



experience to their formal (and informal) science education. Most of our students are non-science majors taking their last formal science courses at the same time they are beginning their university experience. The curriculum redesign has focused on combining a rigorous and reflective science experience with basic learning skills that can be used beyond our courses.

Student Experience

Gen Bio courses are student-centered and self-paced, offering learners an opportunity to work independently and in small groups. Laboratories are artifact-rich, providing students with varied science representations and activities that link to their fields of study and future adventures.



Laboratory Discovery Stations

Student-Centered & Self-Paced Experiences

Each week, **Gen Bio** students rotate through 16 or more activity stations in two laboratory sessions. Stations vary in content and structure, and are done either individually or in groups. Each of the over 400 annual **Gen Bio** "discovery stations" are being updated to include more diverse representations of the concepts, with a combination of artifacts and investigations intended to provide unique learning opportunities. Ultimately the goal is to encourage students to continue their science discoveries well beyond the classroom.

New Discovery Stations

In 2012-13 I completed altering the 56 different BI 10x activities to artifact-rich stations (12 to 20 different assemblages each week) that students can explore individually and/or in small groups.

The intent has been to recreate the experience of informal learning in a manner that can be used beyond the classroom, while maintaining rigor in content breadth and depth. The process included acquiring models, specimens, and other materials to offer multiple representations of science concepts.



BI 101

BI 101 introduces biodiversity, ecology, and environmental science. Highlights include an *Art From Nature* project, garden activities, a campus tree walk, leech tank, and a science characteristics reflection."



BI 102

BI 102 provides an overview of genetics, evolution, and animal behavior. Highlights include a *Before & After* art project, dinosaur week, stromatolites, genetics issues, and a nature of science piece.

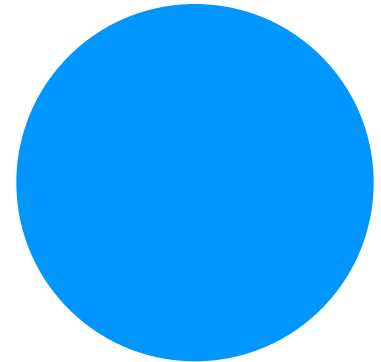


BI 103

BI 103 focuses on human anatomy, physiology, and disease. Highlights include an *Envisioning Science* project, body data collection, "facing cancer" activities, and a biology-physics exchange.



Biology at OSU and Beyond



Featured Stations

Exploring Evolution



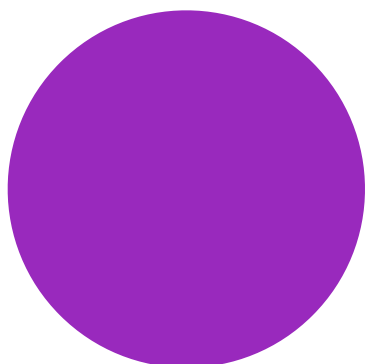
Microfossils, large specimens, maps, data sets, and phylogenetic trees are used to link students with regional evolutionary history.

Body Data Collection



Human anatomy and physiology are placed in the context of common disorders. Microcopy, models, experiments, and long-term data collection are joined to developed a rich and personal representation of the human

Exhibits & Displays



Extending Learning Beyond the Classroom

Featured Exhibits

Meet What Your Eat



Each **Gen Bio** course incorporates exhibits on the biology of

human foods. From agricultural issues to GMOs to nutrient absorption, the complexity and essential nature of food is linked with the human experience.

OSU in Bloom



Science is linked with the cultural and economic significance of flowering plants in this series of

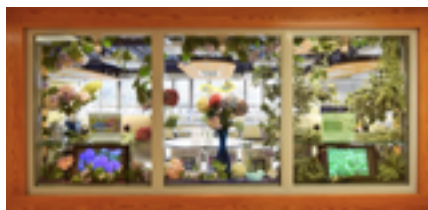
interactive exhibits.

Natural Histories

Cultures around the world have contributed rich perspectives of nature. Exhibits invite students to compare and contrast their own personal histories.

Educational Exhibits

Three gallery groupings: *Nature of Science*, *Art of Nature*, and *Biology Beyond the Classroom* are located in **OneNorth** Weniger Hall at OSU. Over 60 window displays rotate on a weekly basis, highlighting **Gen Bio** science concepts.



Seasonal Explorations

A traditional starting place for nature studies is a season by season series of lessons on easily observed changes in nature. Each term students explore how seasonal changes relate to course topics and daily life.



Making & Tinkering

In addition to accessing and critiquing online information, exhibits explore the next step in a connected world: generating content and retooling existing knowledge. Varied forms of creative expression are linked to research on innovation and design.

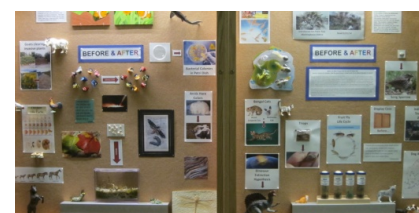
Public Science Displays

New in 2014 is a series of public science displays beyond **OneNorth** Weniger Hall. Each



display highlights a different science message, and in the recent tradition of "guerrilla art"

and "craft bombing," displays may sometimes pop up unexpectedly. The overall message is that science is relevant, interesting, and sometimes just fun.



Project Space

New in 2014 is a renovated project space dedicated to improving activity stations and laboratory manuals, as well as to launch new educational exhibits and public science displays.

Visit Us

Our **Gen Bio** laboratories, rotating exhibits, and offices are located at **OneNorth** Weniger Hall, Monroe Street, Corvallis, Oregon

science.oregonstate.edu/genbio

Service & Outreach

Building a Larger Community of Learners

Service

A wide variety of learning resources and services are available to students taking **Gen Bio** courses. Since students come from diverse backgrounds, it is critical to share clear expectations and the tools that make success possible. Learning resources are intended to build science literacy, including conceptual knowledge and skills that can be used to continue learning about science into the future.

Website

The **Gen Bio** website provides current students with easy and thorough access to information and resources they can use to successfully navigate the courses. We are



expanding the website mission to:

- Provide information and resource access to former **Gen Bio** students, as they continue beyond the biology classroom.
- Offer future **Gen Bio** students and their families thorough information about what a course experience at OSU can offer.
- Reach a wider community both within OSU and on the web, by offering unique learning experiences that are currently only available to **Gen Bio** students.

Outreach

In addition to the 2200+ students served by the **Gen Bio** courses each year, a current goal is to widen the reach to include the broader OSU community, alumni, and friends and family of OSU.

Social Media



New in 2015 is **#VividScience** on **Twitter**, with over 1000 tweets of original content to keep students and

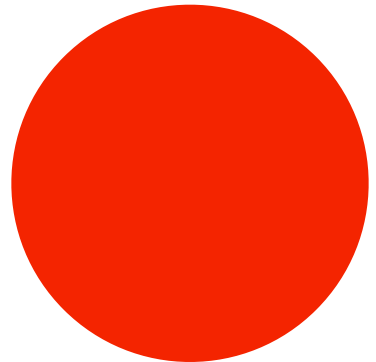
our extended community updated on course, university, and regional science events. This will supplement our current website, print, and email communication network.

Campus Connections

My service and outreach activities include typical committee and consultant work, including assisting other lecturers with curriculum development and classroom management strategies.



Gen Bio represents OSU's College of Science



Featured Displays

Science Art Cards

Share your science experiences through Artist Trading Cards (ATCs). Over 2000 OSU students have generated and trading cards (2 1/2 by 3 1/2 inches in size)



that represent their most enjoyable formal or informal science memories.

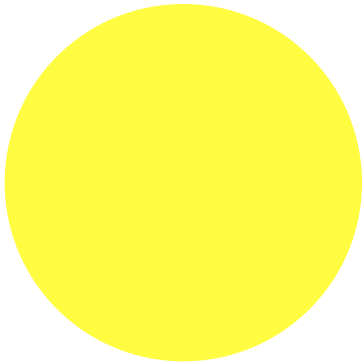
Can Science Be Pink?

Is there a uniformity of science culture and visual representations that excludes individuals? This exhibit



questions whether the aesthetics and language of science needs to be as tightly channeled, and whether this disengages some learners.

VividScience Overview



Representations of Nature for Diverse Learners

VividScience, a collaboration with Mark Lavery, links art and design with science teaching, including lively, distinctive, and rich representations for adult learners.

A Theory of Things

VividScience is based on a tapestry of historical and current object research from various fields of study, including: science representations (art history, information design); artifacts and objects (anthropology, museum studies); differentiated learning (K-12 educational research, neurobiology); and instructional design (science education, business).



Curating a Lifetime of Nature Objects

Most adults have gathered a lifetime of memories about nature, and many of these memories are linked to specific objects: educational toys, children's books, natural specimens, science representations, and classroom artifacts. **VividScience** includes activities that explore and expand on these mental constructs, so learners have the ability to experience science in everyday objects.



Linking Formal and Informal Science Education



Long after formal classroom experiences are completed, learners can

continue to explore science in a variety of ways, including: citizen science, hobbies, museum trips, ecotourism, and online news.

VividScience provides a framework for, and examples of, continuing educational opportunities.

Science Artifacts

Specimens & Collections

For thousands of years, humans have been collecting and organizing natural specimens. Learners can explore the relevance of specimens to modern science.

Models & Dioramas



Models and dioramas enable people to experience natural phenomena in novel and

thought-provoking ways. Explorations of scale, time, and space are possible in the miniature and gargantuan replicas of nature.

Journals & Notes

As relevant today as they were for natural historians, journals and marginalia capture the scientist's reflections on the research process.



Varied Artifacts for Diverse Learners



Activities and Artifacts that Engage Learners

My recent work in **VividScience** includes five projects that generate materials for activity stations, educational exhibits, interactive manuals, and public science displays. These projects utilize varied science artifacts to assist learners in exploring relevant, interesting, and sometimes beautiful, science topics in and outside the classroom.

The Nature of Science

The Nature of Science project uses varied visualizations to explore four key areas of science: knowledge, inquiry, connections, and community. The introductory exhibit "Science Illuminations" uses classic font and sketches to depict 24 characteristics of scientific inquiry.



The Art of Nature

The Art of Nature project demonstrates the key role art has played historically and continues to play in the way we understand and interact with nature.



Biology Beyond the Classroom

The Biology Beyond the Classroom project emphasizes life science activities that can be done at home or on vacation to build on existing knowledge and skills.

Field Guide to Learning

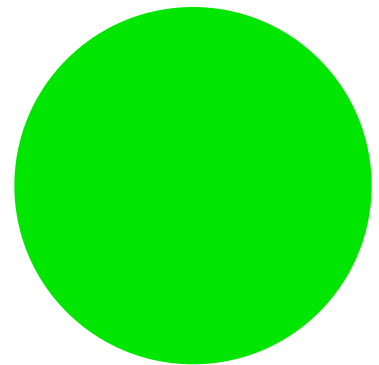
We are all supposed to be life-time learners, but where's the fun? This project represents various ways of learning by doing, making things while making memories. Learning theories and strategies are embedded in tangible forms of expression.

Natural History of Teaching

Teaching is often boiled down to a set of instructional choices: "flip the class," "promote inquiry," "set up collaborative groups." This project focuses more broadly on the nature of teaching itself, from personal histories to basic elements of design. These exhibits are an opportunity to reflect on the complex and sometimes wonderful, act of teaching.



Assemblages of Science Objects for the Classroom



In the Classroom

Interdisciplinary Studies

Various themes, including symbiosis, are explored with a variety of manipulatives; aquaria, specimens, literary excerpts, and historical journals.



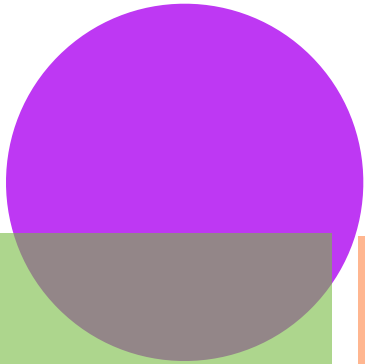
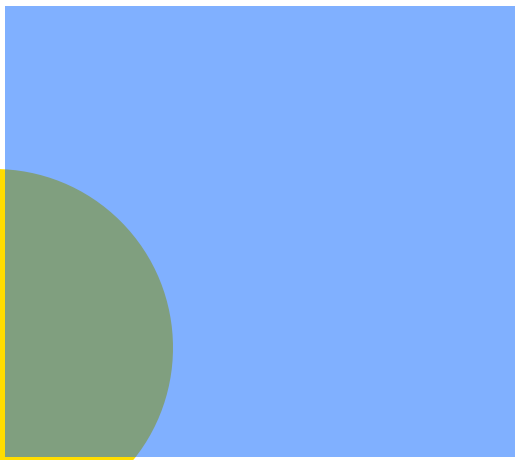
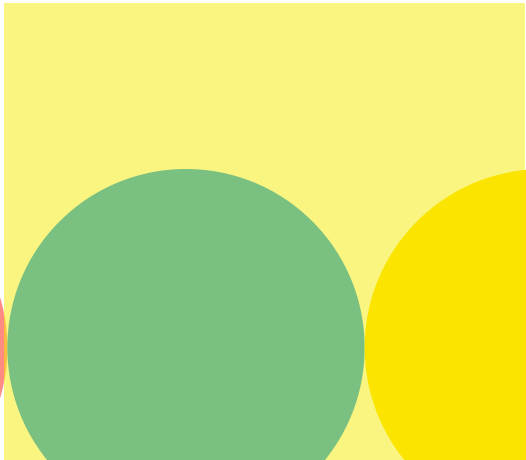
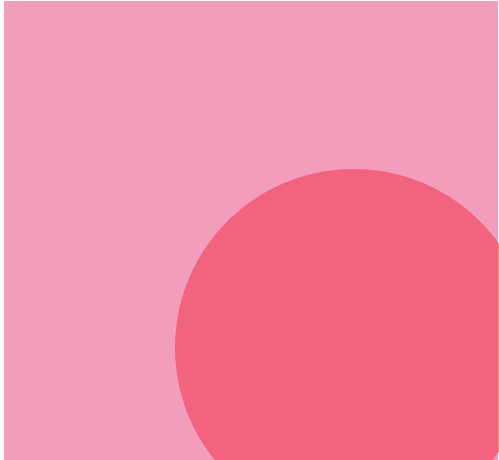
Learning Skills



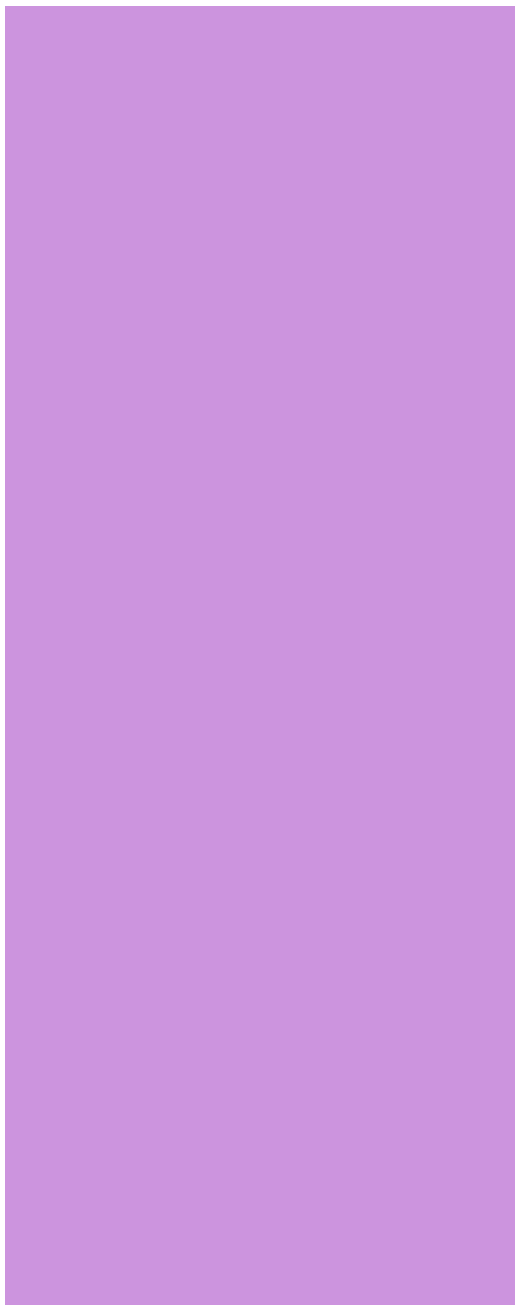
Gen Bio courses incorporate assignments that develop and improve basic learning skills

including note-taking, studying, and test-taking. Memory programs, reflective assignments, and real-world scenarios are used to develop lasting learning strategies.

#VividScience



additional information at
science.oregonstate.edu/genbio



Lesley Blair



VividScience

