Department News

Newsletter Launched

In an effort to keep our alumni and local scientific community informed about our activities, the Eastern Washington University Department of Biology launches Biology News with this inaugural issue. As a quarterly publication, each issue will contain news from around the department, faculty and student research accomplishments, and alumni updates.

Primarily web-based, you can access current and back issues of the newsletter at http://www.biology.ewu.edu/biosubsite/foldfile/depart/newsletter/bionews.htm.

If you have contributions you would like considered for future issues or have feedback to share, let us know. Contact information is on the last page of the newsletter.

Newly Redesigned Web Site

Thanks to Dr. Charles Herr, Cell and Molecular Biology Professor, the Biology Department has a newly-designed web site. Besides his scientific achievements, Dr. Herr is noted for pushing the envelope of computer technology. He uses 3-dimensional animation in his Genetics and Cellular Biology classes to provide students with a better understanding of the material … which allows Dr. Herr to cover more content.

Steaming from a passion for computer graphics, Dr. Herr developed the web site based on the four elements (water, fire, wind, and earth). He utilized unique graphics and rollover actions to create a site that is not only functional but visually exciting. Check it out at http://www.biology.ewu.edu.

Biology Department Gets DNA Sequencer

by Jessilyn Mathias

In July 2002 the Eastern Washington University Biology Department received a DNA Sequencer. The device was donated from a company called Darwin, a branch of Celltech that is located in Seattle, Washington. Celltech develops and distributes biological equipment to businesses and hospitals.

A DNA Sequencer reads genetic codes. Chemicals inside the machine can detect which base is present at each site within the sequence. Genetic sequences provide the basis for inheritance and physiologic functioning that enables life to exist. Although same species have similar DNA sequences, each individual has a unique “code” with particular chemical features that can be identified.

The DNA Sequencer provided to Eastern is worth $25,000 – something the Biology Department could not have afforded on its own. This device will enable students and professors to make greater advancements in their genetic research.

Eastern Washington University’s DNA Sequencer has many potential applications. Once fully functional, any professor or student can use the DNA Sequencer for projects. (continued on page 2)

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DNA Sequencer (cont. from page 1)

The DNA Sequencer is composed of several individual systems that function together to rapidly sequence DNA strands. In a process commonly known as electrophoresis, an acrylamide gel is placed between two thin glass plates inside the machine. Wedge-shaped indentations are then made in the gel where the DNA strands will be placed. When the machine’s high voltage is turned on, the negatively-charged bases are pulled through the gel because of the strong positive pull at the bottom of the gel. As DNA fragments pass the bottom of the gel a laser runs back and forth, reading each base letter as it moves through the gel. Recently, a color-code system was developed by Leroy Hood at the University of Washington. With this system, each base has a color that can be easily detected with the laser spectral-system inside the unit. Finally, all this information is directed to computers and bioinformatic analysis.

In order to use the DNA Sequencer, the Biology Department must bring in a specialized technician to set up and check the device and ensure it is running properly—a cost of approximately $5,000. Funds are not currently available for this purpose which means faculty and students cannot use the DNA Sequencer at this time. The department is accepting donations toward this expense—contact Dr. Flash Gibson, Biology Department Chair, at (509) 359-2348 or biology@mail.ewu.edu to make a contribution. Or if you want additional information about the DNA Sequencer or would like to arrange access for future projects, contact Dr. Donald Lightfoot, (509) 359-7082 or dlightfoot@mail.ewu.edu.

major one, according to Dr. Donald Lightfoot, an EWU genetics professor, is the ongoing Serratia proteamaculans bacteria project. Researchers are attempting to find the particular gene(s) that potentially codes for heavy metal resistance in this bacterium. Dr. Lightfoot is also making inquiries with outside groups needing a DNA Sequencer; Sacred Heart Medical Center, and diabetes / cancer organizations have been contacted.

How DNA Sequencing Works

Human genetic code is composed of long sequences of four bases: A (Adenine), T (Thymine), C (Cytosine), and G (Guanine). The bases pair up in A-T and C-G patterns. Pairs are strung together in huge sequences ranging from less than 5 million in a bacterium to over 3 billion in a human being.

As genetic sequences can be quite long, they are divided at certain points to create shorter chains that are easier for the machine to handle. This technology allows scientists to know the order of the genetic bases in any organism, therefore, possible positions of genes. According to Dr. Donald Lightfoot, sequencing genes gives “a better way to determine the relatedness between organisms and helps us understand human diseases.” DNA provides the key to understanding the genetic similarities and differences between humans and other life forms. Moreover, as this technology advances, researchers will know more about how genetic diseases originate and how to correct abnormalities.

This technology allows scientists to know the order of the genetic bases in any organism …
EWU Students Study Medicine in Central and South America

Three Eastern Washington University Biology students went to Central and South America last summer as part of medical exchange programs. Pete Rinaldi, post-baccalaureate student in the pre-med program, traveled to Nicaragua with the Amigos de Salud y Amistad volunteer effort. Taking all the equipment and supplies needed to provide clinical and surgical services to underserved residents in Nicaragua, the group consisted of physicians, nurses, and operating room technicians. Working 10-13 hour days, Pete observed and/or participated in a large number of the 400 pulmonary/pediatric treatments, 600 general/family examinations, and 180 surgeries. Calling the experience, “one of the most incredible things I’ve ever done,” Pete learned a lot over a short amount of time and had the opportunity to meet and work with skilled and dedicated professionals. Pete has been accepted at Touro University College of Osteopathic Medicine and hopes to have a private practice.

Tara Hulbert-Metcalf and Josie Becker, seniors majoring in Human Biology, traveled to Ecuador for one month through the Child Family Health International program. Promoting an exchange for pre-med and medical students, the group’s aim is education in areas like the health care system in Ecuador. Each week Tara and Josie did clinical rotations with one doctor in different towns and hospital settings. This included observation and/or assistance with physical examinations, delivery room procedures, pediatric internal medicine, emergency medicine, hematology, and surgical procedures. The trip also provided opportunities to travel around Ecuador and they even scaled a volcano. Tara says of her experience, “I have gained an understanding of how government can impact a country and healthcare systems in major ways” and plans to pursue her goal of becoming a doctor.

(continued on page 4)

ALUMNI UPDATE

Ken Yocom (BS, 1996, Zoology) worked for several federal and state agencies following graduation. His final wildlife assignment was aiding in the spartina eradication program in Willapa Bay, WA, an experience that sharpened his interest in spatial patterning and landscape architecture. This led to travels to Cuba, Mexico, and India designing and building community structures using local materials through sustainable methods. Returning to Seattle, Ken currently is working as a doctoral candidate with the Urban Ecology Program at the University of Washington.

Clay Malinak (BS/BA, 1990, Biotechnology) is Biotechnology Coordinator for Spokane Community College. Recently he launched a new enterprise designed to provide community college and high school students with practical biotechnology experience. The Biotechnology Academy opened its doors in January with a course in Scientific Investigational Techniques. The Academy shows local students how biotechnology has the ability to change the world … from learning to use organisms for cleaning polluted mining environments to making plants with more protein and a longer shelf life.
Students Study Medicine (cont. from pg 3)

Josie Dons Gown

The EWU Biology Department congratulates each of these students for participating in programs that enhance their formal education. They gained not only valuable hands-on medical experience, but also acquired unique cultural and environmental perspectives that will help them become more effective healthcare providers.

Contact Us

*Biology News* is a quarterly publication of the Eastern Washington University Department of Biology. To contribute items of interest – news, features, alumni updates – please contact:

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