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Illinois Wesleyan Students Conduct Summer Research

July 21, 2005

BLOOMINGTON, Ill. - More than 21 Illinois Wesleyan students are conducting research with University faculty this summer. Most of the projects concern the sciences and are based on campus, while some students are working in the fields of music and political science and others are crossing the nation and the globe. Following is a sample of this summer's student researchers and their respective projects.

-- Erin Anderson, a junior chemistry major from Freeburg, Ill., is investigating the efficiency and feasibility of replacing toxic or corrosive catalysts used in organic synthesis with bismuth triflate, a relatively non-toxic compound. Supervised by Ram Mohan, associate professor of chemistry, Anderson is working in the laboratory for environmentally friendly organic synthesis.

-- Aaron Bailey, a junior chemistry major from Peoria, also works in the laboratory for environmentally friendly organic synthesis under the supervision of Mohan. Bailey uses iodine catalysts to allow reactions that normally require acidic conditions to take place under neutral conditions instead, making the synthesis safer for all the organic compounds involved.

-- Brian Baxter, a junior music composition major from Geneva, Ill., is assisting David Vayo, professor of composition and theory and an award-winning composer. Using music writing software, Baxter is entering the score of Vayo's new piece, composed at the request of a newly-formed musical group in Canada, into a computer.

-- Chris Berg, a senior biology major from Rockford, Ill., is seeking to determine whether the contraction and dilation of capillaries in clamworms is controlled by the brain or by hormones. The blood vessel structure of clamworms resembles that of vertebrates and, as a result, Berg's findings will be applicable to human medical science. He is supervised by Robert Hippensteele, professor of biology.

-- Tina Brionez, a senior political science major from Harwood Heights, Ill., is continuing a project begun last fall with the Action Research Center (ARC): exploring the feasibility of supplying IWU with organic, locally grown food. She is also creating a Web site for the ARC, which was established in 2003 by James Simeone, associate professor of political science, and James Sikora, professor of sociology.

-- Steve Cherney, a junior biology major from Lansing, Ill., is attempting to expand upon the findings of a publication from a Japanese research group by improving the safety and ease of handling of the processes involved. Supervised by Mohan, Cherney conducts his research in the laboratory for environmentally friendly organic synthesis.

-- Chris Duncan, a senior biology major from Bristol, Ill., is studying the possibility of creating carbon-carbon bonds using relatively non-toxic bismuth-based compounds as catalysts instead of more typical toxic or corrosive catalysts. Duncan is supervised by Mohan in the environmentally

friendly organic synthesis laboratory.

-- Justin Ernat, a junior chemistry major from Oglesby, Ill., is also studying uses for bismuth triflate as a relatively non-toxic catalyst, but in a reaction with citronellal, the chemical found in citronella candles. Ernat is working in the environmentally friendly organic synthesis laboratory under the supervision of Mohan.

-- Kelly Feder, a junior biology major from Grantfork, Ill., is examining how a plant hormone, auxin, regulates the destruction of unnecessary proteins in moss cells. She is also testing for the presence of another hormone, gibberellin, in a different moss species. Feder is supervised by Loni Walker, assistant professor of biology, and Rebecca Roesner, associate professor of chemistry.

-- Matt Hackert, a junior biology major from Carol Stream, Ill., also supervised by Mohan in the environmentally friendly organic synthesis laboratory, is investigating the role of the non-toxic catalyst bismuth triflate in the rearrangement of a compound called geraniolene, which may prove useful in other organic syntheses.

-- Kate McCulloch, a senior biology major from Flossmoor, Ill., is working to isolate a protein found in *E. coli* bacteria in order to observe and understand its function. The protein uses an iron-sulfur molecule to sense the presence of oxygen and, when oxygen is not present, the protein activates certain genes in the bacteria. McCulloch is supervised by Laura Moore, assistant professor of chemistry.

-- Amy Slott, a junior biology major from Oswego, Ill., spent June 1-11 aboard the R/V (Research Vessel) *New Horizon* with Will Jaeckle, assistant professor of biology, and Susie Balser, associate professor of biology. She collected the larvae of several invertebrates in order to study their digestive systems and is now on campus, continuing her research with specimens from the trip.

-- Ryan Smith, a senior physics major from Decatur, is in Scotland at the University of St. Andrews. Under the supervision of Gabriel Spalding, associate professor of physics, Smith is exploring new laser technology and developing software to help scientists sort and track microscopic materials.

-- Nicholas Timme, a sophomore math and philosophy double major from Normal, is studying the interaction of light and magnetic fields under supervision of William Brandon, visiting assistant professor of physics.

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