STUDENT APPLICATION

Genes, Biotechnology & the Environment

Hands-on Biotechnology Laboratory Experience for High School Students
Summer 2009

DATES: June 29 – July 15, 2009 (14 weekdays total)
TIME: 8:30 a.m. – 3:30 p.m.
LOCATION: Tucson High School (400 North Second Avenue, next to UA campus)
FEE: Free for all applicants who are selected
ELIGIBILITY: High school students entering sophomore, junior or senior year in fall 2009 with one year of high school biology (some exceptions may be made for honors students without previous high school biology)

COURSE DESCRIPTION: *Are you interested in Biology? Genetics? DNA? Evolution? Biomedical research? How genes help living things to survive stress? If so, this is a unique opportunity to learn the latest topics and methods in genomics and biology.*

You will learn – and use – the latest lab techniques for studying DNA and genes. You will discover how genes affect survival and reproduction. You will learn about the most basic processes that are found in all kinds of life on earth, using insects and bacteria as your study organisms. And all of these topics will be taught using hands-on approaches, with experiments that you will help to design and conduct.

The methods and concepts of this course are central to modern biomedical research and are the basis for the current scientific revolution that is known as genomics. If you are interested in science generally, medical research, evolutionary biology, environ-mental biology, or computers, this course will open your eyes to a huge range of possible interests and careers. DNA studies depend on computational methods—so even if you prefer computers to biology, you will find out how computers help us understand topics such as the human genome and the genetic basis of diseases.

State-of-the-art equipment and materials will be available for students to learn and apply basic molecular biology methods, in the context of research questions developed within the class. Students will collect their own materials (insects or bacteria), extract DNA, and perform the polymerase chain reaction (PCR) to amplify a particular gene region of choice. Samples will be submitted to the University of Arizona sequencing facility (under the Arizona Research Laboratories) for sequencing. The students will then analyze the sequences and use bioinformatics software available on the web to compare their sequences to related sequences in public databases.

The course has been led by an instructional team including

- ✓ Margaret Wilch, M.S., of Tucson Magnet High School, an award-winning high school teacher experienced in research-based teaching
- ✓ Gaelen Burke, Ph.D. candidate in Ecology and Evolutionary Biology
- ✓ Kevin Vogel, Ph.D candidate in Ecology and Evolutionary Biology

The exact configuration for 2009 is undecided but will include Margaret Wilch and a graduate student from Professor Moran's research lab.

The course is supported by a grant from the National Science Foundation and is a cooperative project of the University of Arizona and Tucson Magnet High School.

HOW TO APPLY: Student participants will be selected from a pool of applicants. Selections will be made by May, 15, 2009, when students will be contacted. **Application must be postmarked by May 4, 2009.** Applications can be downloaded from the course web site, **http://eebweb.arizona.edu/faculty/moran/hsbiotech.htm**, or **contact Margaret Wilch at margaret.wilch@tusd1.org** or Becky Nankivell at bjn@email.arizona.edu or 626-8355 to have one sent to you.

For more information: Contact Ellie Warder, 520-621-5903, warder@email.arizona.edu

APPLICATION CHECKLIST INCLUDES:

- ☐ Personal, Family, and Education Information form
- ☐ Student's Narrative (one typed page)
- ☐ Teacher Reference Form

THE UNIVERSITY OF ARIZONA.
Arizona's First University.

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Please Print Clearly

I. Personal Information

Last Name	First Name	Middle Initial
Street Address		
City	State	ZIP Code

II. Family Information

Parent or Guardian Last Name	Parent or Guardian First Name	Middle Initial
Street Address		
City	State	ZIP Code
Home Phone	Work or Cell Phone	E-mail address

III. Education

Name and Address of High School	Grade in Fall 2009 (circle one): Sophomore Junior Senior

List all courses taken thus far in high school and current or final grades

IV. Narrative

Attach a one-page (typed) statement, written independently by yourself, describing why you are interested in taking this course. This might include future career plans, basic interest in biology or science, or any other reasons. You might relate your reasons to past experiences in classes or elsewhere.

V. Other Documentation

Provide a letter of recommendation from a high-school teacher of a course you took in the 2008-09 school year. Provide the teacher with the attached form to complete and return to you in a sealed, signed envelope. Send this along with your other application materials.

VI. Certification

I certify that all information supplied by me in this application is accurate and complete. I also agree to abide by the rules and regulations of the University of Arizona and Tucson High School.

Signature of Student	Date
Signature of Parent or Guardian	Date

TEACHER REFERENCE

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The following is to be completed by the student:

Waiver of access to applicant recommendation: The Family Educational Rights and Privacy Act of 1974, as amended (P.L. 93-380) allows a candidate for admission to waive his/her rights of access to confidential recommendations written on his/her behalf if used solely for admissions purposes. You are not required to waive access to the recommendation form as a condition for admission. You are required, however, to complete this waiver form and select one option.

I ☐ agree ☐ do not agree to waive access to the recommendation written by

_____ .
Teacher's name

Signature of Student	Date
Signature of Parent or Guardian	Date

The following is to be completed by the teacher providing this reference:

The student who provided you with this form is applying for the Genes, Biotechnology & the Environment hands-on laboratory experience for high school students. This course is an 14-day intensive class, taking place in July 2009. In this class, high school students and high school teachers will work in small groups using state-of-the-art equipment and methods to learn and apply basic molecular biology skills, in the context of research questions developed within the class. More information is available at http://eebweb.arizona.edu/courses/biotech/hs.

The selection committee seeks references from individuals who know the qualifications and qualities of the candidate. Your comments are greatly appreciated and will be considered carefully prior to selecting participants. If you have any questions, please feel free to contact Margaret Wilch at Margaret.wilch@tusd1.org. Please return this form to the applicant in a sealed envelope and sign your name across the seal. **The deadline for the student to submit completed applications is May 4, 2009.**

Teacher's Name	Teacher's Signature	
Name of School		Work Phone
How long have you known the student?	In what capacity have you known the student?	

On a separate page, please comment briefly on the following about the student:

- Motivation and ability to handle a biotechnology curriculum, including problem solving ability and critical thinking skills.
- Ability to cooperate with others, and degree of self-direction.
- Dependability and accountability, including regard for safety of self and others.