Name: Vivek Fellner

Department: Animal Science

e-mail: Vivek_Fellner@ncsu.edu

Web site: http://www.cals.ncsu.edu/an_sci/faculty/v...

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Jan 8, 2012 3:58 PM

<table>
<thead>
<tr>
<th>Research area:</th>
<th>Research/Project description:</th>
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</thead>
<tbody>
<tr>
<td>Nutritional Microbiology, Microbial Fermentation, Methane energetics, Microbial Lipid Synthesis, Gut Fermentation Dynamics.</td>
<td>Research expertise is ruminant nutrition with emphasis on microbial physiology and fermentation metabolism. Focus on understanding aspects of microbial growth and gas production, particularly methane, in guts of various species. Better understand links between metabolic pathways involved in microbial fermentation energetics of substrate and end product generation.</td>
</tr>
</tbody>
</table>

Looking for (#) undergraduates: 3

Enthusiasm for undergraduate researchers: Enthusiastic - 4

Prerequisites:
- Junior status
- Enthusiasm to pursue a project in microbiology.

How to contact/Info to provide:
Email me directly.
<table>
<thead>
<tr>
<th><strong>Name</strong></th>
<th>John Classen</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department</strong></td>
<td>Bio &amp; Ag Engineering</td>
</tr>
<tr>
<td><strong>email</strong></td>
<td>work <a href="mailto:john_classen@ncsu.edu">john_classen@ncsu.edu</a></td>
</tr>
<tr>
<td><strong>Web site</strong></td>
<td>home page <a href="http://www.bae.ncsu.edu/people/faculty...">http://www.bae.ncsu.edu/people/faculty...</a></td>
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### Picture
![Picture](image)

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<td><strong>Enthusiasm for undergraduate researchers</strong></td>
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<tr>
<td><strong>Prerequisites</strong></td>
<td></td>
</tr>
<tr>
<td><strong>How to contact/Info to provide</strong></td>
<td></td>
</tr>
</tbody>
</table>
Name: Mari Chinn

Department: Bio & Ag Engineering

Email: mari_chinn@ncsu.edu

Web site: http://www.bae.ncsu.edu/people/faculty...

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Nov 17, 2011 7:22 PM

Research area:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Prerequisites:

How to contact/Info to provide:

Enthusiasm for undergraduate researchers:
Name: Otto Simmons

Department: Bio & Ag Engineering

email:
  work: odsimmon@ncsu.edu

Web site:
  home page: http://www.bae.ncsu.edu/people/faculty/

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Nov 17, 2011 7:23 PM

Picture:

Research area:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Prerequisites:

How to contact/Info to provide:

Website: Microbiology Undergraduate Research Pipeline Database
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<td>Department</td>
<td>Bio &amp; Ag Engineering</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:ratna_sharma@ncsu.edu">ratna_sharma@ncsu.edu</a></td>
</tr>
<tr>
<td>Website</td>
<td><a href="http://www.bae.ncsu.edu/people/faculty">http://www.bae.ncsu.edu/people/faculty</a>...</td>
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<tr>
<td>Picture</td>
<td>[Picture of Ratna Sharma-Shivappa]</td>
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<td>Date Modified</td>
<td>Nov 17, 2011 7:23 PM</td>
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</table>

**Research area:**

**Research/Project description:**

**Looking for (#) undergraduates:**

**Enthusiasm for undergraduate researchers:**

**Prerequisites:**

**How to contact/Info to provide:**
Name: Cynthia L. Hemenway

Email:
- Work: cindy_hemenway@ncsu.edu

Research area:
- Plant virology, molecular virology, RNA replication, RNA/protein interactions, RNA structure

Prerequisites:
- MB351, minimum GPA 3.0
- BCH451 and both organic courses

Research/Project description:
Students will work on various aspects of our ongoing replication project—-isolation of virus from infected plant tissue, generation of viral cDNA subclones using PCR and subsequent DNA transformation and isolation.

Enthusiasm for undergraduate researchers:
Very enthusiastic - 5

How to contact/Info to provide:
They can email me.

Department:
Biochemistry

Website:
- Home page: http://biochem.ncsu.edu/faculty/hemenway...

Date Created:
Nov 17, 2011 5:05 PM

Date Modified:
Dec 7, 2011 11:06 PM
Name: Dennis Brown

Department: Biochemistry

email: work dennis_brown@ncsu.edu

Web site: Home page http://biochem.ncsu.edu/faculty/brown/

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Nov 17, 2011 7:24 PM

Research area:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Prerequisites:

How to contact/Info to provide:

Enthusiasm for undergraduate researchers:

Prerequisites:

How to contact/Info to provide:
E. Stuart Maxwell

Email:
Work: stu_maxwell@ncsu.edu

Department:
Biochemistry

Web site:
Home page: http://biochem.ncsu.edu/faculty/maxwell...

Date Created:
Nov 17, 2011 5:05 PM

Date Modified:
Nov 17, 2011 7:25 PM

Research area:

Research/Project description:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Prerequisites:

How to contact/Info to provide:
Name: Linda K. Hanley-Bowdoin

Department: Biochemistry

email: linda_hanley-bowdoin@ncsu.edu

Web site: [home page](http://biochem.ncsu.edu/faculty/hanley-bowdoin/)

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Jan 7, 2012 9:37 PM

**Research area:**
- Geminiviruses/host interactions and disease resistance
- Geminiviruses and regulation of the plant cell division cycle
- Plant DNA replication

**Prerequisites:**
I typically have more undergrads who want to work in my lab than I can have space for.

**Research/Project description:**
N/A

**Enthusiasm for undergraduate researchers:**
Not interested

**Looking for (#) undergraduates:**
0

**How to contact/Info to provide:**
N/A
**Name:** Paul Wollenzien  
**Department:** Biochemistry  
**email:** paul_wollenzien@ncsu.edu  
**Web site:** http://biochem.ncsu.edu/faculty/wollenzi...  
**Date Created:** Nov 17, 2011 5:05 PM  
**Date Modified:** Nov 17, 2011 7:25 PM
Name: Michael Flickinger  
Department: Chemical Engineering  
email: michael_flickinger@ncsu.edu  
Web site:  
  Home page: http://www.chem.ncsu.edu/people/faculty…  
Date Created: Nov 17, 2011 5:05 PM  
Date Modified: Nov 17, 2011 7:25 PM  

<p>| Research area: |  |
| Research/Project description: |  |
| Looking for (#) undergraduates: |  |
| Enthusiasm for undergraduate researchers: |  |
| Prerequisites: |  |
| How to contact/Info to provide: |  |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Robert Kelly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>email</td>
<td><a href="mailto:rmkelly@ncsu.edu">rmkelly@ncsu.edu</a></td>
</tr>
<tr>
<td>Web site</td>
<td><a href="http://www.che.ncsu.edu/people/faculty/robert_kelly">http://www.che.ncsu.edu/people/faculty/robert_kelly</a></td>
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</table>

**Research area:**

biology and biotechnology of extreme thermophiles

**Looking for (#) undergraduates:**

1

**Enthusiasm for undergraduate researchers:**

Enthusiastic - 4

**Prerequisites:**

BIT 410

**Research/Project description:**

We are interested in the genomics, physiology, enzymology and biotechnological potential of microorganisms that thrive in extreme environments, i.e., extremes in temperature, pressure, pH, ionic strength, etc. Our primary focus is on extremely thermophilic microorganisms, which are isolated from geothermal sites and volcanic regions and typically have optimal growth temperatures above 70°C. Because of the high temperatures at which these bacteria and archaea can be cultured, they produce highly thermostable enzymes that hold promise as biocatalysts. Metabolic pathways encoded in the genomes of extreme thermophiles have great potential for technologically important biotransformations. Molecular genetics systems have recently become available for several extreme thermophiles, thereby creating opportunities for metabolic engineering and synthetic biology at high temperatures.

Our research efforts are aimed at the interface between biology and engineering. We have addressed issues of fundamental importance in understanding the bioenergetics, biochemistry, physiology and genomics of extreme thermophiles. These studies have given rise to a number of technologically important developments related to bioenergy and biofuels, recovery of base, precious and strategic metals from ores, and industrial biocatalysis. Students involved in this research should expect to develop expertise in biochemistry, biophysics, microbiology, molecular biology, and genomics to complement their training in biomolecular engineering.

**How to contact/Info to provide:**

They can look at our website for more info.
Name: Steven Peretti

email: peretti@ncsu.edu

Department: Chemical Engineering

Web site: http://www.che.ncsu.edu/people/faculty...

How to contact/Info to provide:

Prerequisites:

Research/Project description:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Department: Chemical Engineering
Name: Alexander Deiters

Department: Chemistry

Email: Alex_Deiters@ncsu.edu

Web site: http://www.ncsu.edu/chemistry/people/

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Nov 17, 2011 7:26 PM

Research area:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Prerequisites:

How to contact/Info to provide:

Enthusiasm for undergaduate researchers:
Name: Francis De Los Reyes
Department: Civil Engineering
Email: work: fidelosr@ncsu.edu
Web site: home page: http://www.ce.ncsu.edu/faculty/francis-d...
Prerequisites:
Enthusiasm for undergraduate researchers:
Looking for (#) undergraduates:
Research/Project description:
Emphasis for undergraduates:
Department:
Civil Engineering
MURP Db: Microbiology Undergraduate Research Pipeline Database
Date Created: Nov 17, 2011 5:05 PM
Date Modified: Nov 17, 2011 7:27 PM
<table>
<thead>
<tr>
<th><strong>Name</strong></th>
<th>Edward Breitschwerdt</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department</strong></td>
<td>Clinical Sciences</td>
</tr>
<tr>
<td><strong>email</strong></td>
<td><a href="mailto:ed_breitschwerdt@ncsu.edu">ed_breitschwerdt@ncsu.edu</a></td>
</tr>
<tr>
<td><strong>Web site</strong></td>
<td><a href="http://www.cvm.ncsu.edu/docs/personn...">http://www.cvm.ncsu.edu/docs/personn...</a></td>
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| **Research area** | |
| **Looking for (#) undergraduates** | |
| **Enthusiasm for undergraduate researchers** | |
| **Prerequisites** | |
| **How to contact/Info to provide** | |
Name: Jody L. Gookin

Department: Clinical Sciences

Email: jody_gookin@ncsu.edu

Web site: http://www.cvm.ncsu.edu/docs/personnel/

Research area:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Prerequisites:

How to contact/Info to provide:

Date Created: Nov 17, 2011 5:05 PM

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<table>
<thead>
<tr>
<th>Name: Frederick Breidt</th>
<th>Research area: Food microbiology, food fermentations, food safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department: Food Science</td>
<td>Looking for (#) undergraduates: 1</td>
</tr>
<tr>
<td>Email: work <a href="mailto:breidt@ncsu.edu">breidt@ncsu.edu</a></td>
<td>Enthusiasm for undergraduate researchers: Enthusiastic - 4</td>
</tr>
<tr>
<td>Website: home page <a href="http://ncsu.edu/foodscience/faculty/breid">http://ncsu.edu/foodscience/faculty/breid</a>...</td>
<td>Prerequisites: Junior or senior with some lab experience. Handling cultures, biochemistry, weak acids, pH, buffer capacity, etc. Interest in research and time to do it. A good work ethic helps.</td>
</tr>
<tr>
<td>Date Created: Nov 17, 2011 5:05 PM</td>
<td>Research/Project description: A variety of projects, working with lactic acid bacteria in vegetable fermentations. We are currently focused more on bacterial physiology than molecular biology.</td>
</tr>
<tr>
<td>Date Modified: Nov 29, 2011 5:06 PM</td>
<td>How to contact/Info to provide: Ask them stop by my office (322A Schaub Hall). An appointment can be arranged by email.</td>
</tr>
<tr>
<td>Name:</td>
<td>Ilenys Perez-Diaz</td>
</tr>
<tr>
<td>-------</td>
<td>------------------</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:idiazmu@unity.ncsu.edu">idiazmu@unity.ncsu.edu</a></td>
</tr>
<tr>
<td>Website:</td>
<td><a href="http://ncsu.edu/foodscience/faculty/pere">http://ncsu.edu/foodscience/faculty/pere</a>...</td>
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<td>Email (work)</td>
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<td>Web site</td>
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<td>Research area</td>
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<tr>
<td>Looking for (#) undergraduates</td>
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<tr>
<td>Enthusiasm for undergraduate researchers</td>
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</tbody>
</table>
| Prerequisites   | MB351 and interest for a two-semester commitment would be excellent; Honors thesis or research credit would be also welcomed  
A good background in general Micro; an interest in learning, enjoyment in research; willingness to focus on a specific project |
| How to contact/Info to provide | Students can contact me with their expression of interest; endorsement by you is always a big plus |

Disinfectant resistance in Listeria; survival and growth of Listeria on produce; antibiotic resistance in Campylobacter; host associated genes in Campylobacter.
Research area:
The use of genomic approaches to improve cultures for bioprocessing applications in food

Looking for (#) undergraduates:
1

Enthusiasm for undergraduate researchers:
Very enthusiastic - 5

Prerequisites:
(none given)

How to contact/info to provide:
(none given)

Research/Project description:
Our research activities have emphasized the development of genetic systems in gram positive lactic acid bacteria and the use of genomic approaches to improve cultures for bioprocessing applications in food. The overall goal of the program is to provide avenues for improvement and diversification of food bioprocessing and preservation systems through genetic investigation and modification of lactic acid bacteria.

Our major research contributions have been primarily in five areas:
1. Genomic and comparative genomic analysis of lactic acid bacteria and their bacteriophages.
2. Definition of gene directed mechanisms that protect the dairy lactococci from attack by bacteriophages.
4. Development of cloning and expression vectors (mobilization, expression, integration, secretion) for genetically ill-defined bacteria important in food bioprocessing or probiotic applications.
5. Genetic and physiological studies on intestinal Lactobacillus species to investigate and expand their potential beneficial roles in vivo.
Name: Mary H. Schweitzer
Department: Marine Earth Atmosph
email: work mary_schweitzer@ncsu.edu
Web site: home page http://www.meas.ncsu.edu/faculty/schw...
Date Created: Nov 17, 2011 5:05 PM
Date Modified: Nov 29, 2011 3:28 PM

Research area:

Research/Project description:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Prerequisites:

How to contact/Info to provide:
Name: Amy Grunden
Department: Microbiology
Email: amy_grunden@ncsu.edu
Web site: home page http://www.microbiology.ncsu.edu/peo...
Date Created: Nov 17, 2011 5:05 PM
Date Modified: Nov 17, 2011 7:32 PM

Research area:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Prerequisites:

How to contact/Info to provide:

Enthusiasm for undergraduate researchers: 
Name: Deborah Threadgill
Department: Microbiology
email:
work: deborah_threadgill@ncsu.edu
Web site:
home page: http://www.microbiology.ncsu.edu/peo…I

Research area:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Prerequisites:

Research/Project description:

How to contact/Info to provide:

Date Created: Nov 17, 2011 5:05 PM
Date Modified: Nov 17, 2011 7:35 PM
### MURP Db: Microbiology Undergraduate Research Pipeline Database

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<thead>
<tr>
<th>Name</th>
<th>Department</th>
<th>Email</th>
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<tbody>
<tr>
<td>Eric Miller</td>
<td>Microbiology</td>
<td><a href="mailto:eric.miller@ncsu.edu">eric.miller@ncsu.edu</a></td>
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<td>Nov 17, 2011 7:30 PM</td>
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**Prerequisites:**

- Looking for (#) undergraduates
- Enthusiasm for undergraduate researchers

**How to contact/Info to provide:**
<table>
<thead>
<tr>
<th>Name</th>
<th>Frank Scholle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>Microbiology</td>
</tr>
<tr>
<td>Email work</td>
<td><a href="mailto:frank_scholle@ncsu.edu">frank_scholle@ncsu.edu</a></td>
</tr>
<tr>
<td>Web site</td>
<td><a href="http://www.microbiology.ncsu.edu/peo">http://www.microbiology.ncsu.edu/peo</a>...</td>
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<tr>
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</tr>
<tr>
<td>Date Modified</td>
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</tr>
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</table>
Research area:
Oxidative Stress

Looking for (#) undergraduates:
0

Enthusiasm for undergraduate researchers:
Enthusiastic - 4

Prerequisites:
(none stated)

Research/Project description:
Oxygen free radicals are both toxic and mutagenic. Therefore, knowing how cells protect themselves from the many catastrophic effects of oxygen free radicals will have an impact on our understanding of aging, cancer, and cellular damages caused by oxidant stress.

We have established that the expression of the sodA gene which encodes the Mn++-containing superoxide dismutase (MnSOD) in E. coli is tightly controlled by the level of superoxide radical, the concentration of iron in the cells, and the redox state. These observations lead us to postulate that the regulation of MnSOD biosynthesis is under negative control by an iron- containing regulatory protein where iron plays the role of a redox sensor. To identity the repressor gene(s) and product(s), we isolated anaerobically derepressed sodA mutants using strains containing sodA-lac Z gene fusions. We were able to obtain and characterize cis and trans-acting regulatory mutations. Also, by using site-directed mutagenesis we identified the operator site of the sodA gene. The data, thus far, support our model (i.e. negative control via an iron- containing repressor), but it shows that the regulatory circuit is much more complicated than originally thought. Thus, we found four trans-acting regulatory elements that act in concert to regulate the level of MnSOD in response to various environmental stimuli. The four regulatory elements are FUR (Ferric Uptake Regulation), ARC (Aerobic Regulatory Control), FNR (Fumarate-Nitrate Regulation), and IHF (Integration Host Factor). It is noteworthy that both Fur and Fnr are iron-containing proteins. We also demonstrated the role of iron and manganese in the maturation of MnSOD and will study the interactions of these repressors with the operator region of sodA and how the four repressors communicate with each other.

Future research goals are to see if the regulation of MnSOD in other prokaryotes and eukaryotes is similar to that of E. coli. We are also interested in studying the physiology and control(s) for the synthesis of hydroperoxidases and the iron-containing superoxide dismutase of E. coli and other prokaryotes.
| **Name** | James Brown |
| **Department** | Microbiology |
| **email** | work: james_brown@ncsu.edu |
| **Web site** | home page: [http://www.mbio.ncsu.edu/JWB/home.html](http://www.mbio.ncsu.edu/JWB/home.html) |

### Research area:
- RNA structure, microbial evolution, RNA bioinformatics

### Prerequisites:
- I don't have a wet lab, everything is computational. So an interest in sequence alignments, databases, and solving details of RNA structure is critical.
- Experience with perl is useful, but not required.
- Experience with web sites useful.

### Looking for (#) undergraduates:
- 1

### Enthusiasm for undergraduate researchers:
- Enthusiastic - 4

### How to contact/Info to provide:
- Email: james_brown@ncsu.edu

### Research/Project description:

#### The RNase P Database

The RNase P Database is a web resource compiling RNase P RNA and protein sequences, sequence alignments, secondary structures, 3-dimensional models, and links to taxonomic and sequence data at the NCBI. The data is organized phylogenetically, and secondary structures (the focus of the database) are available in a variety of machine and human readable forms. The RNase P Database has been available on the web since 1994, and before that was provided on paper as "The Book of P" beginning in 1991. The RNase P Database has served as a model for the now-common "cottage industry" databases in the world of RNA research. A student and I are currently updating the web site into a real mySQL database, linked to structural data and VARNA to display secondary structures.

#### The RNA Structure/alignment Ontology

Multiple sequence alignments are powerful tools for understanding the structures, functions, and evolutionary histories of biological macromolecules. Multiple sequence alignments are traditionally two-dimensional matrices, with rows representing individual sequences and columns identifying corresponding (usually homologous) residues from different sequences. This simple paradigm has proven very useful, but severely limits the the kind of information that can be represented in an alignment.

Large alignments of complex RNAs suffer from a variety of weaknesses, but perhaps the most fundamental is that the only element of structure that can be aligned are nucleotides, and every nucleotide must be aligned whether this is meaningful or not. Recognizing that an "alignment" is really the assignment of a relationship between parts of a molecule, we have defined a relationship "Corresponds to" as part of the RNA Ontology that can be assigned to any element of a collection of RNA structures. This relationship is assigned specifically and explicitly, rather than wholesale and implicitly as is the case in traditional alignments, and applies to nucleotides, basepairs, blocks (collections of nucleotides), and stems (collections of basepairs) in an RNA structure. We are currently implementing these terms in OWL, creating example alignments, and developing an ontology of RNA secondary structure as a basis for ontology-centric RNA structure alignments.
**Name:** Jennifer Miller  
**Department:** Microbiology  
**email:** jen_miller@ncsu.edu  
**Web site:** [home page](http://www.microbiology.ncsu.edu/peo...)  

**Research area:** Lyme Disease, Borrelia burgdorferi, innate immunity, mice, Leptospirosis

**Research/Project description:** Internalization of B. burgdorferi proteins by host cells - Effect of Leptospira strains on host cell cytokine production

**Prerequisites:** MB 351, minimum GPA 3.0, two semesters to commit to research, must be willing to train over the summer prior to start of Fall semester, must now how to pipette, do basic scientific calculations (dilutions, calculate concentrations needed to prepare solutions), must be willing to work 12 hours/week and present a poster at the NCSU Undergraduate Research Symposium. Experience with aseptic technique, interest in attending graduate school.

**How to contact/Info to provide:** have them email me with a letter and résumé

**Enthusiasm for undergraduate researchers:** Enthusiastic - 4

**Date Created:** Nov 17, 2011 5:05 PM  
**Date Modified:** Jan 8, 2012 3:47 PM
<table>
<thead>
<tr>
<th><strong>Name</strong></th>
<th>Jonathan Olson</th>
</tr>
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<tbody>
<tr>
<td><strong>Department</strong></td>
<td>Microbiology</td>
</tr>
<tr>
<td><strong>email</strong></td>
<td><a href="mailto:jonathanolson@ncsu.edu">jonathanolson@ncsu.edu</a></td>
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**Prerequisites:**

**Looking for (#) undergraduates:**

**Enthusiasm for undergraduate researchers:**

**How to contact/Info to provide:**

**Research area:**

**Research/Project description:**

**Date Created:** Nov 17, 2011 5:05 PM

**Date Modified:** Nov 17, 2011 7:34 PM
Name: José M. Bruno-Bárcena

Email: jbbarcen@ncsu.edu

Department: Microbiology

Prerequisites:

Research area:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Research/Project description:

How to contact/Info to provide:

Web site:

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Nov 17, 2011 7:31 PM
Research area:
- Bioremediation, biodegradation, genomics, proteomics, enzymology, hydrocarbons

Looking for (#) undergraduates:
2

Enthusiasm for undergraduate researchers:
Very enthusiastic - 5

Prerequisites:
- An organic chemistry class. A basic lab skills course (yours), MB 351/352, 3.0 GPA. I am not keen on hosting Seniors with plans to apply to med/dental school...like minded Juniors are OK, Sophomores with 351/352 under their belts are also OK.
- Knowing how to pipette and be safe in a lab (online chemical hazard training might be a good requirement). How to make media, buffers etc. How to plate and stain. PCR and SDS-PAGE would be great but not vital.

How to contact/Info to provide:
Have them come and talk to me and I will then follow up with their adviser

Research/Project description:

Characterization of alkene and alkyne-oxidizing activity of alkane-oxidizing bacteria: This project focuses on quantifying the rates, products and kinetics of C2-C4 alkene and alkyne transformation by Pseudomonads strains capable of growth on n-octane. Project will involve maintenance and growth of pure cultures, quantification of organics by gas chromatography.

Use of Click chemistry for identifying metabolically active microorganisms in environmental samples: This project will focus on using Click chemistry probes and proteomics to identify functional oxygenase enzymes in complex microbial communities. The project will also explore Click chemistry probes for identifying metabolically active microorganisms based on de novo RNA synthesis. Project will involve microcosms studies, SDS-PAGE analysis and tryptic digestion of protein extracts and substrate consumption analysis using gas chromatography.

Purification and characterization of an epoxide-transforming enzyme from a Mycobacterium strain: This project aims to purify and characterize a highly active epoxidase from a Mycobacterium strain capable of growth on branched hydrocarbons. The project will involve large scale growth of bacteria in pure culture, protein fractionation and purification, as well as gas chromatography/mass spectrometry for identifying and quantifying epoxide-derived metabolites. (BCH 35/451 would be advantageous for this project).

Characterization of microbial isobutane-dependent tertiary butyl alcohol production in natural gas-impacted environments: This project aims to quantify rates of tertiary butyl alcohol production in soil samples impacted by either natural gas or gasoline. The project will involve microcosms studies using various environmental samples, gas chromatography to quantify alcohol production and PCR/DGGE to identify organisms responsible for isobutane oxidation.
Name: Michael Sikes
Department: Microbiology
Email: mike_sikes@ncsu.edu
Web site: http://www.microbiology.ncsu.edu/ped...

Research area:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Prerequisites:

How to contact/Info to provide:

Date Created: Nov 17, 2011 5:05 PM
Date Modified: Nov 17, 2011 7:35 PM
Name: Paul Hamilton

Department: Microbiology

Email: work paul_hamilton@ncsu.edu

Web site: Home page http://www.microbiology.ncsu.edu/research/

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Nov 17, 2011 7:32 PM

Research area:

Research/Project description:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Prerequisites:

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<th><strong>Name</strong></th>
<th>Scott M. Laster</th>
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<tr>
<td><strong>Department</strong></td>
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<tr>
<td><strong>Email</strong></td>
<td><a href="mailto:scott_laster@ncsu.edu">scott_laster@ncsu.edu</a></td>
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<td><strong>Web site</strong></td>
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**Research area:**

**Looking for (#) undergraduates:**

**Enthusiasm for undergraduate researchers:**

**Prerequisites:**

**How to contact/Info to provide:**

**Date Created**
Nov 17, 2011 5:05 PM

**Date Modified**
Nov 17, 2011 7:34 PM
Modified vaccinia Ankara virus (MVA) is a highly attenuated orthopoxvirus that is being evaluated as a replacement for the current smallpox vaccine, as well as for other applications in antiviral prophylaxis and anti-cancer therapy. MVA appears not to infect model animals or humans productively, and displays a highly restricted host range in cell culture. Despite being unable to infect humans, MVA nevertheless gives rise to an appreciable immune response. As a vaccine, it has been shown to have excellent safety characteristics in humans and animals, and to provide adequate protection against virulent poxviruses in animal models. MVA was generated from the wild-type Ankara strain of vaccinia virus (VAC) by 500+ sequential passages in chicken embryo fibroblasts. During the adaptation of MVA to cell culture, its genome accumulated numerous point mutations and deletions relative to wild-type VAC. The sheer number of sequence alterations has rendered comparative genomics approaches largely ineffective for analyzing the genetic determinants of MVA phenotypes. As a result, the location of these genetic determinants, and the mechanisms by which they contribute to the host range, avirulence, and immunogenicity of MVA, are also largely unknown. My lab, in collaboration with research groups at Duke University and elsewhere, is developing new approaches for the genetic analysis of MVA and other poxviruses. The results of these studies are expected to provide important information for the further development of MVA, and related orthopoxviruses, as vaccine vectors for protection against smallpox and for other applications.
We study the mammalian cell response to viral infection. Students would likely infect cultured cells with reovirus (not a human pathogen, but an excellent model for study), and monitor the cell response by techniques that might include qRT-PCR and SDS-PAGE and Western Blot.

I am involved in an NCSU NIH-funded program (IMSD) that has me hosting undergrads for research in my lab, so that's been pretty much my commitment lately and doesn't leave room for much else. Given that commitment, my availability for micro students is pretty limited (unfortunately!).

How to contact/Info to provide:
EMAIL ME WITH RESUME
<table>
<thead>
<tr>
<th><strong>Name</strong></th>
<th>Jeffrey A Yoder</th>
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<tbody>
<tr>
<td><strong>Department</strong></td>
<td>Molecular Biomedical Sciences</td>
</tr>
<tr>
<td><strong>Email</strong></td>
<td><a href="mailto:Jeff_Yoder@ncsu.edu">Jeff_Yoder@ncsu.edu</a></td>
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</table>
Name: Becky Boston

Department: Plant Biology

email: work Boston@unity.ncsu.edu

Web site: home page http://cals.ncsu.edu/plantbiology/Faculty/…

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Feb 3, 2012 1:19 PM

Research area:
- Plant molecular and developmental biology

Looking for (#) undergraduates:
- 0

Enthusiasm for undergraduate researchers:
- Not interested -1

Prerequisites:
- N/A

How to contact/Info to provide:
- N/A

Research/Project description:
Our lab studies the coordination of protein synthesis and phospholipid metabolism during seed maturation with particular focus on common signaling pathways between molecular chaperones and phospholipid biosynthetic enzymes. We also work with maize ribosome-inactivating proteins to characterize their fungicidal and insecticidal properties. Current projects are directed at determining both the means by which cytosolic RIPs from maize gain access to fungal ribosomes and the form (proenzyme or active enzyme) that enters the fungal cell.
Name: Heike Winter-Sederoff

Department: Plant Biology

Email:

work: heike_winter@ncsu.edu

Web site:

Home page: http://cats.ncsu.edu/plantbiology/Faculty/

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Nov 17, 2011 7:38 PM

Picture:

Research area:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Prerequisites:

How to contact/Info to provide:

Research/Project description:
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<th><strong>Name</strong></th>
<th>Larry Blanton</th>
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<tr>
<td><strong>Department</strong></td>
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<tr>
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Fungal pathogens of plants; fungal molecular biology, toxins and active oxygen toxicity

Looking for (#) undergraduates:
0

Enthusiasm for undergraduate researchers:
Enthusiastic - 4

Prerequisites:
An interest in research; not just doing it as a requirement
I would like to work with students who want to go to graduate school

How to contact/Info to provide:
I would prefer to hear from you first

Research/Project description:
My research addresses the characterization of genes from fungal plant pathogens that have potential usefulness in genetic engineering disease-resistant plants. Our current work is focused in several areas. We are developing strategies for engineering resistance to Cercospora fungi that parasitize plants by producing photoactivated, active-oxygen-producing toxins. We are also characterizing toxins produced by damaging tropical pathogens of banana. Finally, we have broad interests in active oxygen species, their varied roles in plant-pathogen interactions, and antioxidant defenses in plants.
Name: Niki Robertson
Email: work niki_robertson@ncsu.edu
Research area: Genetics of plant virus-mediated RNA
Prerequisites: Winding down lab - no opportunities.
Enthusiasm for undergraduate researchers: Not interested -1
How to contact/Info to provide: N/A

Research/Project description:
My lab has active areas of research in virus-induced gene silencing, geminivirus-host interactions, and in abiotic stress. Long-term goals are to understand how geminiviruses, which are DNA viruses that transcribe their genes in plant nuclei, interact with plant gene silencing pathways, and to be able to harness these viruses for use in the functional genomics of crop plants. A second long-term goal is to understand how modulation of intracellular levels of calcium in the endoplasmic reticulum affects root growth and stress tolerance.
Name: Gary A. Payne
Department: Plant Pathology
email: work gary_payne@ncsu.edu
Web site: home page http://www.cals.ncsu.edu/plantpath/peo...

**Picture:** [Image]

**Research area:**

**Looking for (#) undergraduates:**

**Enthusiasm for undergraduate researchers:**

**Prerequisites:**

**Date Created:** Nov 17, 2011 5:05 PM
**Date Modified:** Nov 17, 2011 7:39 PM

**Research/Project description:**

**How to contact/Info to provide:**
Name: Ignazio Carbone
Department: Plant Pathology
Email: ignazio_carbone@ncsu.edu
Web site: http://www.cals.ncsu.edu/plantpath/peo...

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<tr>
<th>Name</th>
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<td>Department</td>
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<tr>
<td>Email</td>
<td><a href="mailto:james_moyer@ncsu.edu">james_moyer@ncsu.edu</a></td>
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</tr>
<tr>
<td>Name</td>
<td>Jean Beagle Ristaino</td>
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<tr>
<td>Department</td>
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<tr>
<td>Email</td>
<td><a href="mailto:jean_ristaino@ncsu.edu">jean_ristaino@ncsu.edu</a></td>
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<td>How to contact/Info to provide</td>
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**Department:** Plant Pathology

**Web site:** http://www.cals.ncsu.edu/plantpath/peo…

**Date Created:** Nov 17, 2011 5:05 PM

**Date Modified:** Nov 29, 2011 3:29 PM
In spring 2012 the student would aid a graduate student in collecting samples of blueberry leaves and berries infected with the fungus Monilinia vaccinii-corymbosi from fields in eastern NC. Travel and work over the weekend may be necessary a few times during the spring to collect the samples. The student will be responsible for preparing sterile plates of nutrient media and growing pure cultures of the fungus by isolating from the samples. Proper aseptic technique and attention to detail are required to grow pure cultures of the fungus and keep them organized. The student will extract DNA from fungal cultures and prepare cultures for long-term storage in a -80°C freezer. These samples will be used to examine the population biology and genetics of the fungus from blueberry fields in North Carolina and across the country using PCR-based genetic techniques.

In fall 2012 the student will evaluate cultures of the fungus for insensitivity to fungicides commonly used by growers to manage mummy berry disease in the field. Nutrient media with different concentrations of fungicide will be prepared and inoculating with the fungus. Growth rate will be assessed for two weeks and compared to a non-amended control medium to determine the effective concentration that reduces radial growth 50%.

We are interested in mentoring an enthusiastic, responsible, and reliable student that would work well with others and closely follow directions. The student will be expected to work approximately 10 hours per week and need to travel to our lab on Centennial campus.

How to contact/Info to provide:
Please have their advisor or yourself email student’s information (letter and resume) to marc_cubeta@ncsu.edu. Any personal comments on the potential of the student to perform in a research laboratory environment would be appreciated.

Enthusiasm for undergraduate researchers:
Very enthusiastic - 5

Prerequisites:
We would require the student to have already taken or be currently taking MB351 (General Microbiology) with lab MB352. The student must currently be either a sophomore or junior and willing to work during the spring and fall 2012 semesters.

We prefer a student with a minimum GPA of 3.0.

Looking for (#) undergraduates:
1

Research area:
Fungal ecology, population genetics and biology, mycology.

Web site:
http://www.cals.ncsu.edu/plantpath/peo...
<table>
<thead>
<tr>
<th>Name</th>
<th>Michael Benson</th>
</tr>
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<tbody>
<tr>
<td>Department</td>
<td>Plant Pathology</td>
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<tr>
<td>Email</td>
<td><a href="mailto:mike_benson@ncsu.edu">mike_benson@ncsu.edu</a></td>
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</tr>
<tr>
<td>Name</td>
<td>Ralph A. Dean</td>
</tr>
<tr>
<td>Department</td>
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<tr>
<td>Email work</td>
<td><a href="mailto:ralph_dean@ncsu.edu">ralph_dean@ncsu.edu</a></td>
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### Prerequisites

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

How to contact/Info to provide:

Research area:

Research/Project description:
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<thead>
<tr>
<th>Name</th>
<th>Robert G. Upchurch</th>
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**Research area:**

**Looking for (#) undergraduates:**

**Enthusiasm for undergraduate researchers:**

**Prerequisites:**

**How to contact/Info to provide:**
Name: Shuijin Hu

Department: Plant Pathology

email: shuijin_hu@ncsu.edu

Web site: http://www.cals.ncsu.edu/plantpath/peo...

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Nov 17, 2011 7:39 PM
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**Research area:**
- Plant virology, molecular plant virus pathogenesis, virus structure, virus based nanotechnology

**Looking for (#) undergraduates:**
- 1

**Enthusiasm for undergraduate researchers:**
- Enthusiastic - 4

**Prerequisites:**
- Probably junior status
- Some molecular genetic knowledge, biochemistry and general chemistry. Know how to use a pipettor.

**Research/Project description:**
- Virus X-ray structure analysis. This can be both experimental or analysis.
- Virus pathogenesis and genetics. Create site-directed mutagenesis followed by inoculating mutants to plants and observing phenotypes.
- Creating virus based nano-particles and testing their target and release properties in mammalian cell lines or in murine models.

**How to contact/Info to provide:**
- E-mail me with their interest, and time availability
Name: Edward Havell
Department: Population Health & Pathobiology
Email: Ed_Havell@ncsu.edu
Web site: http://www.cvm.ncsu.edu/dphp/personnel/

Date Created: Nov 17, 2011 5:05 PM
Date Modified: Nov 17, 2011 7:43 PM

Picture:

Research area:
Looking for (#) undergraduates:
Enthusiasm for undergraduate researchers:
Prerequisites:
How to contact/Info to provide:

Research/Project description:
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<thead>
<tr>
<th>Name</th>
<th>Fred Fuller</th>
</tr>
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<tbody>
<tr>
<td>Department</td>
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</tr>
<tr>
<td>Email</td>
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| Research area          | |
| Looking for (#) undergraduates | |
| Enthusiasm for undergraduate researchers | |
| Prerequisites          | |
| How to contact/Info to provide | |
Name: James S. Guy
Email: jim_guy@ncsu.edu
Research area:
Looking for (#) undergraduates:
Enthusiasm for undergraduate researchers:
Prerequisites:
How to contact/Info to provide:
Department: Population Health & Pathobiology
Web site: http://www.cvm.ncsu.edu/dphp/phm/gu...
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<td>Email: work <a href="mailto:Jay_Levine@ncsu.edu">Jay_Levine@ncsu.edu</a></td>
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<tr>
<td>Epidemiology, aquatic ecosystem ecology, microbiology</td>
<td>Our laboratory focuses its efforts on furthering our understanding of the basic biology of freshwater bivalves and snails, freshwater ecosystem food web dynamics, and microbial communities</td>
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<th>Looking for (#) undergraduates:</th>
<th>2</th>
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<table>
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<tr>
<th>Enthusiasm for undergraduate researchers:</th>
<th>Very enthusiastic - 5</th>
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<td>prior basic microbiology experience (preparing media, plating, pipetting skills, understanding of PCR and preferably other molecular technologies)</td>
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<table>
<thead>
<tr>
<th>How to contact/Info to provide:</th>
<th>Note from you or advisor with comments</th>
</tr>
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</tr>
</tbody>
</table>
Name: Luke B. Borst

Department: Population Health & Pathobiology

e-mail: luke_borst@ncsu.edu

Web site: http://www.cvm.ncsu.edu/dphp/personnel/

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Nov 17, 2011 7:42 PM

Prerequisites: 

Looking for (#) undergraduates: 

Enthusiasm for undergraduate researchers: 

Enthusiasm for undergraduate researchers: 

How to contact/Info to provide: 

Research area: 

Research/Project description: 

MURP Db : Microbiology Undergraduate Research Pipeline Database
Name: Maria Teresa Correa
Email: maria_correa@ncsu.edu
Research area:
Research/Project description:
Looking for (#) undergraduates:
Enthusiasm for undergraduate researchers:
Prerequisites:
How to contact/Info to provide:
Department: Population Health & Pathobiology
Web site: http://www.cvm.ncsu.edu/dphp/personnel...
Date Created: Nov 17, 2011 5:05 PM
Date Modified: Nov 17, 2011 7:42 PM

MURP Db: Microbiology Undergraduate Research Pipeline Database
<table>
<thead>
<tr>
<th>Name</th>
<th>Mary Tompkins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>Population Health &amp; Pathobiology</td>
</tr>
<tr>
<td>Email</td>
<td>work: <a href="mailto:Mary_Tompkins@ncsu.edu">Mary_Tompkins@ncsu.edu</a></td>
</tr>
<tr>
<td>Web site</td>
<td><a href="http://www.cvm.ncsu.edu/dphp/personn">http://www.cvm.ncsu.edu/dphp/personn</a>...</td>
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<tr>
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</table>

| Looking for (#) undergraduates |   |
| Enthusiasm for undergraduate researchers |   |

<p>| Research area |                                     |
| Research/Project description |   |</p>
<table>
<thead>
<tr>
<th><strong>Name</strong>: Megan Jacob</th>
<th><strong>Research area</strong>:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department</strong>: Population Health &amp; Pathobiology</td>
<td><strong>Research/Project description</strong>:</td>
</tr>
<tr>
<td><strong>Email</strong>:</td>
<td></td>
</tr>
<tr>
<td>Work: <a href="mailto:megan_jacob@ncsu.edu">megan_jacob@ncsu.edu</a></td>
<td></td>
</tr>
<tr>
<td><strong>Web site</strong>:</td>
<td><strong>Looking for (#) undergraduates</strong>:</td>
</tr>
<tr>
<td>Home page: <a href="http://www.cvm.ncsu.edu/dphp/micro/ja">http://www.cvm.ncsu.edu/dphp/micro/ja</a>...</td>
<td></td>
</tr>
<tr>
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<td><strong>Prerequisites</strong>:</td>
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<td><strong>Date Created</strong>: Nov 17, 2011 5:05 PM</td>
<td><strong>How to contact/Info to provide</strong>:</td>
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<tr>
<td><strong>Date Modified</strong>: Nov 17, 2011 7:43 PM</td>
<td></td>
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</tbody>
</table>
Name: Paul E. Orndorff

email: paul_orndorff@ncsu.edu

Research area: Bacteriology

Prerequisites: No active lab

Enthusiasm for undergraduate researchers: Not interested -1

Looking for (#) undergraduates: 0

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Nov 30, 2011 7:58 AM

Selected Publications:


Orndorff PE, Harrisk TS, Smoak IW, Havell EA (Apr 2006). Host and bacterial factors in listeriosis pathogenesis. Veterinary microbiology, 114(1-2)1-15


Research Project description:

Selected Publications:


Orndorff PE, Harrisk TS, Smoak IW, Havell EA (Apr 2006). Host and bacterial factors in listeriosis pathogenesis. Veterinary microbiology, 114(1-2)1-15


How to contact/Info to provide: N/A
Name: Peter Cowen

Department: Population Health & Pathobiology

email: peter_cowen@ncsu.edu

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Prerequisites:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Research/Project description:

How to contact/Info to provide:

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Nov 17, 2011 7:42 PM
Name: Susan Tonkonogy

Department: Population Health & Pathobiology

email: sue_tonkonogy@ncsu.edu

Web site: http://www.cvm.ncsu.edu/dphp/personnel/

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Nov 17, 2011 7:43 PM

Prerequisites: 

Looking for (#) undergraduates: 

Enthusiasm for undergraduate researchers: 

Research/Project description: 

How to contact/Info to provide: 

Department: Population Health & Pathobiology

Prerequisites: 

Looking for (#) undergraduates: 

Enthusiasm for undergraduate researchers: 

Research/Project description: 

How to contact/Info to provide: 

Department: Population Health & Pathobiology

Prerequisites: 

Looking for (#) undergraduates: 

Enthusiasm for undergraduate researchers: 

Research/Project description: 

How to contact/Info to provide: 

Department: Population Health & Pathobiology

Prerequisites: 

Looking for (#) undergraduates: 

Enthusiasm for undergraduate researchers: 

Research/Project description: 

How to contact/Info to provide: 

Department: Population Health & Pathobiology

Prerequisites: 

Looking for (#) undergraduates: 

Enthusiasm for undergraduate researchers: 

Research/Project description: 

How to contact/Info to provide: 
Name: Alexandria K. Graves
Department: Soil Science
Email:
work: alexandria_graves@ncsu.edu
Web site: http://www.soil.ncsu.edu/people/detail...
Prerequisites:
Looking for (#) undergraduates:
Enthusiasm for undergraduate researchers:
How to contact/Info to provide:
Enthusiasm for undergraduate researchers:
Department: Soil Science
Prerequisites:
Looking for (#) undergraduates:
Enthusiasm for undergraduate researchers:
How to contact/Info to provide:
Name: Wei Shi

Department: Soil Science

Email: work: wei_shi@ncsu.edu

Website: Home page: http://www.soil.ncsu.edu/people/detail...

Date Created: Nov 17, 2011 5:05 PM

Date Modified: Nov 17, 2011 7:44 PM
Name: Sam M. Hudson
Email: sam_hudson@ncsu.edu
Department: Textiles
Website: http://www.tx.ncsu.edu/about/find-people/

Prerequisites:

Research area:

Looking for (#) undergraduates:

Enthusiasm for undergraduate researchers:

Research/Project description:

How to contact/Info to provide:

Date Created: Nov 17, 2011 5:05 PM
Date Modified: Nov 17, 2011 7:44 PM