

## RICHTER SCHOLAR PROJECTS – 2008

### BIOLOGY

***Professor Shubhik DebBurman***  
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#### **Discovering Molecules That Combat Protein Misfolding Linked to Neurodegeneration (1-2 students)**

During summer 2008, the DebBurman lab seeks up to two highly motivated hardworking undergraduates to join a diverse group of four other peers, who collaboratively study how certain disease-linked proteins misfold and if such folding errors can be suppressed or reversed. Proteins are the most diverse class of molecules in our cells and their unique functions hold the secret to life. To fold correctly, most proteins require chaperones, which are proteins that help other proteins fold into their proper shapes and maintain their shape. If proteins still misfold, they are targeted for destruction by the ubiquitin-proteasome complex. But some misfolded proteins that such escape quality control, build up in tissues and cause tragic incurable diseases.

With the aid of national grants, we have focused on the protein folding mysteries underlying one such illness: Parkinson Disease (PD), which is caused by the misfolding of the protein,  $\alpha$ -synuclein. This misfolding somehow selectively kills nerve cells, which then lead to PD symptoms. We hypothesize that specific proteins, including chaperones and enzymes of the ubiquitin-proteasome pathway, lysosomal degradation pathway, and oxidative damage pathway can regulate mechanisms underlying the misfolding of  $\alpha$ -synuclein. To test each of these hypotheses, we have chosen to work with two types of yeasts as model systems and we utilize techniques in molecular genetics, cell biology, and biochemistry. Students choose from several ongoing hypothesis-driven projects and enjoy significant control over experimental aims and design. In addition to their research project, Richter students will attend a prestigious scientific summer conference in Chicago in mid-May, will learn to present scientific journal clubs, and will lead data discussions at weekly lab meetings. Many past Richters have continued working additional years in these projects, with some expanding it into a senior thesis, which they presented at national conferences. Recently, nine students, including two past Richter Scholars, became published co-authors in research articles published in a major scientific journal. All lab graduates have gone on to pursue PhD, MD, or master degrees in other health professions.

Pre-requisite: BIOL120, Bio Core Seminar, and CHEM110 & 111

***Professor Caleb Gordon***  
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#### **Stopover Ecology of Migrating Woodland Birds (1-2 students)**

The notion that a 10-gram bird would make a thousand mile journey twice a year seems unbelievable, and yet *most* of the bird species that breed in North America engage in such seasonal migratory activities. Understanding the ecology of migrating birds *during* their migration is critical for understanding the life histories of these birds, and for their conservation. As a Richter Scholar under this project, students will participate in an intensive bird-banding study that I initiated in 2002, targeted at 1) monitoring long-term and continent-wide population trends in North American migratory birds; and 2) understanding the “stopover ecology” of migrating birds as they pass through Lake Forest during spring migration. Students selecting this project should enjoy working outdoors in moderately strenuous and very muddy conditions, and be willing to wake up very early most days during the second half of May. Students will learn how to operate mist-nets and handle live birds in the field, including identification, weighing, banding, and physiological and reproductive condition assessment. This project involves many volunteer banders from the local community as well, and so an interest in working with the public, and helping to train and coordinate volunteers is also desirable. This project will involve two weeks of intensive field work at a Lake Forest nature preserve in the second half of May, followed by data entry, analysis, and research. The precise topic for research is flexible depending on students’ interests, and will represent an opportunity for students to become involved in publications, presentations and/or continued research on migratory bird ecology.

***Professor Anne Houde***  
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### **Sex, Mate Choice, and Evolution (1 student)**

Research in my laboratory focuses on the evolution of sexual behavior and mate choice. Our study organism is the guppy, a common, easy-to-breed tropical fish. I have been able to show that the bright colors that male guppies exhibit evolve through mate choice by females. Beyond this, there are many questions to be asked, addressed and answered about sex in guppies. A Richter Scholar will have the opportunity to observe the sexual antics of guppies, to come up with some fascinating questions, and to try to answer those questions through an original research project that you design. This is your opportunity to experience the full process of scientific research. Your project may yield insights that are new to science and can be published in a professional journal. You will get the chance to develop a real feel for how we do science and you will come away with a deeper insight into what it means to be a scientist.

In addition, or as an alternative, to the laboratory project, the Richter Scholar could also be involved in a book project on the role of sexual behavior in the evolution of new species. Charles Darwin shook up the world in 1859 when he published his book, *On the Origin of Species*. Yet nearly 150 years later, there is widespread lack of understanding and even skepticism about the idea of evolution, especially in this country. In particular, the mechanisms by which new species of organisms arise have received very little attention in popular media although great advances have been made, just in the last 10 years. The Richter Scholar would be involved in gathering, reading and summarizing scientific literature, and then beginning work on one or more chapters.

**Professor Karen E. Kirk**  
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**Telomeres: Harbingers of Age and Immortality (1-2 students)**

In order to understand the process of cellular immortalization, many cancer biologists study telomeres, the protein/DNA complexes that protect the very tips of eukaryotic chromosomes. Telomere structure is altered in cancer cells, and it has been hypothesized that this change is part of the tumorigenic process. Evidence for this potential role stems from the finding that telomeres are shorter in cells with limited replication potential (most normal human cells) and longer in those that can divide for numerous generations or indefinitely (germ, stem, or cancer cells). Although shortened telomeres and reduced replication potential is a normal part of the aging process in humans, aberrant telomere lengthening may be part of the molecular mechanism needed for cells to turn cancerous.

In my lab, we seek to learn more about telomere function by using a genetic model organism called *Aspergillus*. We are using molecular biology and comparative genomics to identify in *Aspergillus* the RNA component of telomerase, the enzyme that synthesizes telomeres. We also have started to study telomere length in *Aspergillus* using PCR, a unique approach that allows us to assess length with a great deal of accuracy. Using this assay, we have determined that a telomerase “knockout” has extremely short telomeres. We are now addressing when telomeres might be lengthened in *Aspergillus*. Specifically, we are investigating whether the telomeres are lengthened in cells during sexual development, similar to the lengthening of telomeres seen in the germ cells of humans.

Students in my lab learn how to design and execute experiments utilizing state-of-the-art molecular, cell biology, and genomics techniques, and often present their findings at national scientific conferences and in co-authored manuscripts. Candidates must have completed at least one semester of biology and one year of basic chemistry.

**Professor Pliny A. Smith**  
**Johnson Science Building-A 209**  
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**Genetic Determination of Pharynx Muscle Identity (1-2 students)**

The research that I would like to share with my students concerns one of the fundamental processes of biology, the changes required for an embryonic cell to become specialized. We will investigate the genes that result in abnormal development of an organ called the pharynx. The *C. elegans* pharynx is the equivalent of our esophagus and stomach; it is a neuro-muscular organ responsible for the first stages of digestion of this microscopic nematode. Specifically, we will study the genetics of cell fate decisions, i.e., the genetic program that is activated when a generic cell transitions to a muscle cell in the pharynx.

Last summer, our lab identified examined over 5000 mutated worms for pharynx defects and recovered over 150 unique strains. We were able to find such a large number of unusual

phenotypes because we designed the experiments to take advantage of worms genetically engineered to have fluorescent pharynxes. This year, we plan to conduct experiments to understand why some of these mutant worms have developed abnormally.

There are a many very intriguing phenotypes that a student could investigate this summer. In one phenotype, muscle cells that should be in the pharynx have instead been placed in other parts of the head. Some worms have a pharynx that is not attached to their mouth; these worms obviously have a problem eating. Another phenotype causes the pharynx to be extremely short compared to normal.

Students interested in conducting research in my lab should have a basic understanding of biology and have completed Biol 120. Students will learn molecular biology techniques as well as think about genetics when conducting experiments. The first goal of a summer project will be to determine the genetic lesion that causes the abnormal pharynx phenotype. We will use Polymerase Chain Reaction (PCR), endonuclease restriction digests, and agarose gel electrophoresis to generate a linkage map; a physical location on a chromosome. Once we know the location of the gene, we will attempt to fix the phenotype by microinjecting a new copy of the gene into the worm, a process called transgenic rescue. After verifying that we have identified the gene, we can create a hypothesis and a test to explain why the mutated form of the allele causes a developmental defect in the worm.

## **BUSINESS**

***Professor Les Dlabay***

***Young Hall 304***

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### **Project 1: Alternative Financial Services in Developing Economies (1 student)**

Credit cards, checking accounts, bank loans, and automatic teller machines are common in industrialized countries. However, in developing economies, rotating savings and credit associations (ROSCAs), hawalas, microloans, and informal currency exchange activities often provide needed financial services.

In Cameroon, *tontines* are a significant source of loans. These “credit circles” involve a small group of people (usually five) who pool funds on a regular basis with group members taking turns to borrow the money. *Hawalas* involve an informal system to transfer funds, often used by migrant workers. These financial intermediaries, primarily used in the Middle East, Africa and Asia, consist of a network of brokers in cities around the world.

The microfinance movement continues to grow in size and influence. Throughout the developing world, these small loans are making a difference for local economies. The lack of an adequate financial infrastructure in many poverty-stricken areas creates a strong demand for a variety of microcredit institutions. Informal currency exchange facilities often exist at airports,

hotels, and retail shops. Many unregistered currency exchange services may also operate in small, locally-owned shops that serve as a “front” for foreign exchange activities not sanctioned by the government. In an attempt to provide needed funds and to facilitate monetary transactions, local entrepreneurs in developing economies often implement various financial services in the shadows of the formal banking system.

### Research Questions

- What economic, cultural, and political factors influence alternative financial services?
- What benefits and costs are associated with alternative financial services?
- To what extent do alternative financial services serve as a transition to global business activities?

### Richter Activities

1. IDENTIFY KEY ISSUES TO CREATE A FRAMEWORK related to historic, economic, cultural, and political influences on alternative financial services in developing economies.
2. CONDUCT LIBRARY, WEB RESEARCH to prepare summaries of articles and research reports regarding alternative financial services in Africa countries and in other regions.
3. CONDUCT INTERVIEWS with people familiar with the culture and business environment in various African countries and other developing economies.
4. PLAN WEB SITE format and content with resources related to alternative financial services and monetary systems in developing economies.

### Expected Outcomes

- A. A framework of the key elements of alternative financial services.
- B. Summary of research articles and other reference sources.
- C. One or more research reports related to key issues.
- D. A PowerPoint presentation with a summary of research findings related to alternative financial services.

### **Project 2: Assisting The World’s Poor Through Social Entrepreneurship** (1 student)

Various sources estimate that four billion people in the world live on \$2 a day. These individuals often face difficulties with regard to water, food, health care, education, and other necessities. A social entrepreneur attempts to: (1) identify and apply practical solutions to social problems by combining innovation, resourcefulness and opportunity; (2) innovate by finding a new product, a new service, or a new approach to a social problem. Rather than leaving these concerns to government or business sectors, social entrepreneurs seek and implement innovative solutions.

An extensive number of NGOs (non-governmental organizations) and FBOs (faith-based organizations) provide funds and training for social entrepreneurs. Often these organizations work in cooperation with governments and business enterprises. Small loans (usually less than \$50) can provide opportunities for the development of business enterprises in Africa, Asia, Latin America, and Eastern Europe to enhance quality of life and to stimulate long-term economic development.

### Research Questions

- How is *social entrepreneurship* defined in various settings?
- What economic, political, and cultural factors influence social entrepreneurship activities?
- What strategies are commonly used by NGOs and companies related to social entrepreneurship?
- How might governments and others measure the success of social entrepreneurship?

### Richter Activities

1. CREATE AN ANALYTIC FRAMEWORK to identify the major elements of social entrepreneurship activities in Africa, Asia, Eastern Europe, and Latin America.
2. CONDUCT LIBRARY, WEB RESEARCH to obtain information regarding social entrepreneurship activities in Africa, Asia, Eastern Europe, and Latin America.
3. CONDUCT INTERVIEWS with people familiar with the culture, political situation, business environment, and microfinance activities in Africa, Asia, Eastern Europe, and Latin America.
4. PLAN WEB SITE format and content related to social entrepreneurship activities in Africa, Asia, Eastern Europe, and Latin America.

### Expected Outcomes

- A. A framework of the key elements of social entrepreneurship.
- B. Summary of research articles and other reference sources.
- C. One or more research reports related to key issues.
- D. A PowerPoint presentation with a summary of research findings related to social entrepreneurship.

### **Project 3: Global Cultural Images: Food Packaging, Banknotes, And Phone Cards (1 student)**

We are familiar with Frosted Flakes, Cheerios, and Trix. But what about Zucaritas, Basmati Flakes, Chocapic, Miel Pops, and Vendy? These are common names of breakfast cereals in Latin America, Europe, and Asia.

The currency of a country (banknotes and coins) reflects a wide variety of historic, cultural, political, and economic influences. The images portray country features ranging from workers and wildlife to past leaders and monuments.

In attempts to influence the sale of prepaid phone cards among various ethnic groups, cultural and geographic images are commonly used. Maps, flags, wildlife, and other visuals are used to create a national or regional connection with potential customers.

This project involves an analysis of cultural images presented in various forms in an attempt to better understand societies.

### Research Questions

- To what extent do various images accurately represent the nature of a culture?
- How can images be used to better understand the historic, cultural, economic, and political environment of a country?
- In what ways are cultural images misused in political and economic settings?

### Richter Activities

1. SUMMARIZE LIBRARY AND WEB SOURCES related to global cultural images presented in various settings.
2. CREATE AN ANALYTIC FRAMEWORK to assess the elements and influences of cultural images presented on food packaging, banknotes, and phone cards.
3. ANALYZE IMAGES to identify historic, geographic, economic, cultural, and political influences of images portrayed on international food packaging, banknotes, and phone cards.
4. CONDUCT INTERVIEWS with people familiar with cultures and business activities in various cultures and ethnic groups.
5. CONDUCT FIELD OBSERVATIONS of ethnic retailing enterprises, food packaging, and cultural activities in the Chicago area.
6. PLAN WEB SITE format and content related to global cultural images.

### Expected Outcomes

- A. A framework of the key elements of global cultural images.
- B. Summary of research articles and other reference sources.
- C. One or more research reports related to key issues.

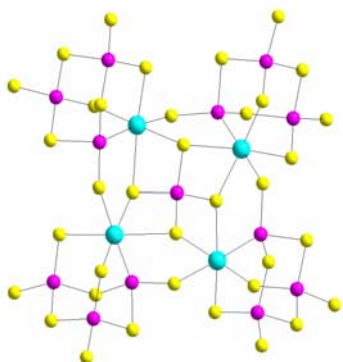
D. A PowerPoint presentation with a summary of research findings related to global cultural images.

## CHEMISTRY

Professor Jason Cody  
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### **Making New Molecules in Ionic Liquids** (1 student)

Building new molecules is the heart of chemistry. Before the properties of new materials can be measured and the first applications can be imagined, the molecules must be made. In my laboratory, we are investigating reactions of metal atoms with phosphorus, sulfur, and selenium.



The reactions will be carried out in low-melting salts known as ionic liquids as solvent. This relatively new area of chemistry has received much attention recently because these solvents don't boil, don't burn, and can substitute for other more hard to handle liquids. Because some of the materials decompose in air, precautions must be taken with these materials to work with them under conditions where oxygen and water are excluded. Thus, we will use special laboratory techniques for handling such air-sensitive materials. Subsequently, we will study the structure of the products using X-ray diffraction. With this technique, we can learn the exact molecular structure. The figure shows a never-before-seen ion,  $[\text{Ni}_4\text{P}_{13}\text{S}_{36}]^{7-}$ , that was recently prepared in my laboratory by a former Richter Scholar.

The incoming Richter Scholar will participate in every aspect of this project, working with me to formulate goals and experiments. Careful record keeping, enjoyment from working with one's hands, and imagination are keys to the success of this project. The project will conclude with a written summary of results and suggestions for future experiments. One year of college chemistry is a prerequisite.

**Professor Lori A. Del Negro**  
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### **Chicago Benzene and Air Toxics Sampling** (1 student)

The U.S. Clean Air Act currently regulates 188 hazardous air pollutants (HAPs) or "air toxics", volatile molecules with known adverse human health consequences. Of these 188, 18 were targeted in 2002 as the most important, including benzene, 1, 3-butadiene, formaldehyde, and a

variety of halocarbon gases. Recent work has assessed the contribution of background air toxic levels to the total population exposure. These studies demonstrate that background levels appear to be decreasing, but background concentrations are still worthy of concern. In the case of benzene, background levels contribute at least 13% of total benzene in most urban areas, and background levels are greater than or equal to the levels deemed to pose a one in a million risk of lung cancer for those exposed over a 70-year period. Levels of air toxics in the city of Chicago are estimated primarily from model results rather than empirical measurements and are worth verifying with direct measurements.

A Richter Scholar participating in this project will work on a combination of laboratory studies and fieldwork. Laboratory activities will focus on the preparation and measurement of calibration standards and blanks needed to validate the measurements of ambient concentrations made in the field. Fieldwork will build on sampling performed by Frank Pierri ('07) and Jerrica Krzywicki ('10). Students will be using a combination of techniques for the collection and analysis of air samples, including Solid-phase microextraction (SPME) and whole air sampling with cryogenic preconcentration, followed by gas chromatography/mass spectrometry. Students considering this project should have a majority of the following: interest in the chemistry of environmental issues, the ability to work outdoors in a range of weather conditions as well as in the laboratory, interest in electronics and programming, careful attention to detail, a *mastery* of the gas chromatography concepts presented in CHEM 111 in the spring semester, and the concept of calibration presented throughout the first year of chemistry.

***Professor Dawn Wisner***

***Johnson Science Building-A301***

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**Chemistry, Computers, Calculations: The Convergence of Science, Technology, and Math in Industrial Applications** (1 student)

My research uses computer modeling to understand how the structure of a catalyst can affect the outcome of a catalytic reaction. The reactions of interest are called asymmetric reactions and are important to the pharmaceutical and petrochemical industries.

The recent availability of powerful and affordable desktop computers makes computer modeling of molecules a powerful research tool for chemists in industry and academia. Although the insight gained by computer modeling is remarkable, the full utility of this tool is realized only when computational results are combined with appropriate laboratory data. The Richter Scholar participating in this project will be directed and closely supervised by me, and will work closely with my upper-level research students to gain valuable experience with the use of computer modeling here at Lake Forest College. Once appropriate data has been collected, students will have the opportunity to interact with my collaborators at the University of Chicago and the University of Wisconsin at Madison.

The goal of my research is to understand how to optimize the synthesis of metallocene and hydroformylation catalysts in order to increase their availability for use in the manufacture of specialty polymers and in pharmaceutical research. The project involves exploring the structural

and energetic aspects of a series of known catalysts and then using this information to guide the synthesis of new catalysts. The project also involves the development of new methods to model chemical structure and energy.

A student working on this project will perform molecular modeling calculations using a variety of computer programs running on Mac OS X, Linux, and Unix operating systems. Interested students will gain valuable experience in understanding chemical structure and in developing skills in the area of computer modeling. The project is suitable to students interested in the intersection of chemistry, computers, mathematics, and/or physics. Necessary prerequisite material includes introductory chemistry and a willingness to use Macintosh, UNIX, and PC computers. As with all research, there will also be a significant amount of literature research.

## COMMUNICATION

***Professor David Park***

***Young Hall 208***

***Ext. 5149; email: [park@lakeforest.edu](mailto:park@lakeforest.edu)***

### **Intellectuals and the media (1 student)**

Intellectuals are often discussed in terms of a controversy involving so-called ‘public intellectuals’. These discussions of the public intellectuals often rely on unexamined assumptions regarding the place of journalism and other media processes. I am beginning a book project on intellectuals and the media. The research for this book will involve a broad historical approach, using theoretical approaches that will find me applying political economy, ritual theory, journalism history, and network analysis to understand intellectuals.

In the foreseeable future, this work will involve examining: the history of journalism in turn of the (20<sup>th</sup>) century France (when the word ‘intellectual’ was first coined), the history of U. S. journalism in the early 20<sup>th</sup> century, magazines and journals considered essential to 20<sup>th</sup> century intellectual expression, and processes of selecting intellectuals and/or experts for television appearances.

Activities here will include:

1. Gathering materials: going to libraries, finding books, finding videos and recordings, making lots of photocopies, and always keeping very close track of bibliographical information.
2. Organizing materials: preventing all of this from simply becoming a big pile of information. We will need to develop some kind of organizing system.
3. Summing up basic patterns in these materials.
4. Discussion of major themes with Professor Park.
5. Traveling to research libraries in the Chicago area, when necessary.

*Professor Rachel Whidden*  
*Young Hall 210*  
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**Project 1: The Controversy Over the Childhood Vaccination Program Recommendations**  
(1 student)

In this project I will be performing a critical analysis of current discussions of the childhood vaccination program in the United States. With the courts just beginning to hear cases seeking damages from Autism diagnoses thought to be caused by vaccines, the recent controversy over Gardasil, and the debate over the possibility of religious exemptions from vaccination requirements, this topic is getting a lot of media coverage.

What I am particularly interested in researching is the way in which risk is communicated to the public on both sides of the issue. Both sides—those who support vaccination programs, and those who oppose them—invoke a rhetoric of fear into their arguments through citing risk factors. One side downplays the risk of harm from vaccines and accentuates the risk of harm from diseases. The other side downplays the risk of harm from the diseases themselves and accentuates the risk of harm from the vaccines. This project will add to the scholarship on risk communication and shed light on how the public understanding of science is shaped in large part by assessments of risk discourses.

The texts that we will be analyzing include a variety of media outlets including pamphlets, websites, magazines, and pharmaceutical advertisements.

The student researcher will be expected to have extensive research skills and proficiency in using online databases. A background in science is not required.

**Project 2: The Rhetoric of Miracles** (1 student)

This project involves assisting me in crafting the last chapter of a book manuscript that deals with the concept of proof in debates about the existence of miracles. So far the book has traced the way in which standards of evidence have shaped what “counts” as a miracle in light of cultural changes in the role of science. I have already written chapters that deal with the 18<sup>th</sup>, 19<sup>th</sup>, and early 20<sup>th</sup> centuries. This final chapter will discuss the current state of the miracle in our culture.

I am looking for a careful reader with an interest in the topic who is willing to do a lot of outside reading. This student must have extensive research skills and proficiency using online databases. This project might require traveling to Northwestern to access some journals.

## ECONOMICS

*Professor Amanda J. Felkey*

*Young Hall 419*

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### **Project 1: Having Children? Does it Matter Who Wears the Pants in the Family? (1 student)**

Bargaining within a household matters to the allocation of resources within that household. This is trivial when it comes to the competing preferences of the two primary decision-making units (i.e., the parents). The more powerful individual gets more of what she wants. However, when it comes to choices about how to allocate resources to children the results are much more interesting. The amount of resources directed toward children depends on both the relative power of the decision-makers and their preferences. My previous research finds that the more important determinant in how much goes to children is the former rather than the latter.

This project is an extension of this work and focuses on the first decision the couple makes in this realm—whether or not to have children. Theoretically, there are two competing effects. (1) Couples that are more equal in power will redirect more resources toward household public goods and have more children as a result. (2) Couples that are more unequal will have either more children or no children as a result of the dominant partner's preferences being realized. With data these two effects can be put to empirical test.

This project requires a student who is organized, has knowledge about statistics and is competent with data management and Excel. It also requires a student who is comfortable with numbers, eager to learn new statistical software and willing to evaluate data. It is not a prerequisite that the student is an economics or business major.

### RICHTER ACTIVITIES:

1. Compile Data: From several sources the student will create a US data set containing information about fertility, household characteristics and decision-making power. The information about power will include individual data about education, income, age, etc.
2. Describe the Data: Using Stata the student will summarize, describe and find trends in this data.
3. Write a Paper: This paper will be the culmination of the project and will highlight the findings of the student. It will contain a brief literature review; definitions of the variables gathered and an explanation of why they matter to the question at hand; a summary of the data gathered including averages, standard deviations, etc.; and comments on trends seen in data gathered.

### **Project 2: How do we take our coffee? (1 student)**

This is a pretty pop-econ topic...something not far from what you would find in *Freakonomics*. But, I wonder why there are so few drive-thru coffee places around here? Where I grew up there was a drive-up “coffee hut” on every corner. So what matters to how firms distribute coffee?

A morning cup of joe comes in two basic forms—a “drive-up cup” or a “walk-in cup”. This project will explore these two as substitutes. First, the project will identify and locate all coffee distributors in two locations: the North Shore and Bozeman, Montana. These distributors include local coffee shops, Starbucks and the like as well as alternate coffee distributors (business that do not specialize in coffee but offer it as part of the menu). These coffee sellers will be categorized by whether or not coffee is their primary focus and whether or not a customer must walk in to make a purchase. Once located, one can analyze what types of characteristics determine where these different types of coffee sellers set up shop. Some possible location factors include: density of population; median income; availability of public transportation; availability of substitutes and space.

Once all coffee businesses are located and data about the surrounding area is gathered the location of these firms will be analyzed using ArcGIS and other mapping software. These are two pieces of Global information software that will combine the coffee shop spatial data with surrounding characteristics that can be obtained through census data.

This project will be an opportunity to learn ArcGIS and other mapping software, which continues to be in increasing demand. The project requires a student that is organized, detail-oriented, self-directed and comfortable working with large amounts of data. It also requires a student that is eager to learn global information software and willing to evaluate data. It is not a prerequisite that the student is an economics or business major.

#### Richter Activities:

1. Locate All “Drive-Up Cup” and “Walk-In Cup” Businesses. This will require a detailed search of the Yellow Pages in order to gather all addresses. It will result in an original data set that can be used for the purposes of analyzing these two substitutes.
2. Make Maps of Coffee Business in the North Shore and Bozeman. After converting all addresses to the correct format the information will be mapped in ArcGIS to identify the locations of these businesses.
3. Combine with Census Data. This will allow the student to enhance their maps with additional information about the areas and customers in question.
4. Write a Paper. This paper will include: the methodology of data acquisition, maps that show the relationship between community characteristics and coffee shops (density, type, location) and an analysis of where they two types of coffee sellers are located.

### **Project 3: Variation in Pill Use. Do Abortion Laws Matter? (1 student)**

This research is a collaborative work with Dr. K Lybecker of Colorado College. We are interested in exploring the possibility that variation in state abortion laws may generate variation in the use of oral contraceptives. It seems reasonable that restriction on abortion availability

would induce women to be more careful in terms of getting pregnant. Without the option of terminating a pregnancy women may seek a regular form of birth control.

For this project a student will help in the gathering and description of data that will be used to determine a possible effect. There are two types of data the student will gather, state abortion law data and control data. This control data will include variables like age, religion, income, education, marriage rates, etc.

This project requires a student that is organized, has knowledge about statistics and is competent with data management and Excel. It also requires a student that is comfortable researching on the web (with databases like Lexis-Nexis), eager to learn new statistical software and willing to evaluate data. It is not a prerequisite that the student is an economics or business major.

#### RICHTER ACTIVITIES:

1. Compile Data: First the student will explore state abortion legislation and create a data set that can be used to analyze whether or not abortion laws significantly affect pill use. This will entail reading legislation and creating variables that can be used to describe the attributes of the different laws. Second the student will gather control data. From several sources the student will create a state level data set containing information about demographics and the characteristics of the female population.
2. Summarize and Describe the Data: Using Stata the student will summarize, describe and observe trends in this data.
3. Write a Paper: This paper will be the culmination of the project and will highlight the findings of the student. It will contain a brief literature review; definitions of the variables gathered and an explanation of why they matter to the question at hand; a summary of the data gathered including averages, standard deviations, etc., and comments on trends seen in data gathered.

***Professor Robert J. Lemke***

***Young Hall 418***

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#### **Do Salary Caps Facilitate Competition? (1 to 3 students)**

Labor markets work best when workers are matched to jobs according to skills and preferences. Consequently, labor markets are more efficient the less costly job searches are and the more frequently and quickly high-quality job matches occur. Although some labor laws and regulations are necessary to protect workers, the U.S. economy has long supported the free mobility of workers and jobs. For the most part, U.S. workers are allowed to search for jobs and to change jobs when an attractive opportunity arises. Similarly, firms are allowed to create, move, and destroy jobs in search of maximal profits. The competitive forces in the private sector of the U.S. economy are probably stronger than anywhere else. Doctors, lawyers, actors, and even professors, for example, compete in the U.S. labor market, with many earning extremely large sums of money. Although professional athletes also have extraordinary salaries, the labor markets for professional athletes are somewhat unique as the athletes are employed by teams that

compete with one another but are also partners in a sports league. This arrangement – that the teams compete with one another on the field but that the teams are associated with one another off the field – has provided fertile ground for unique labor negotiations, rules, and practices. The onset of free agency was the most important change in labor practices for American sports leagues in the 1970s and 1980s. Since then, however, the biggest labor issue confronting sports leagues is the salary cap.

What are the pros and cons of installing a salary cap in a professional sports league? Athletes, in general, object to salary caps because of their supposed limiting effect on salaries. Some team owners are equally outspoken against salary caps, arguing that free market forces encourage them to field a better and more entertaining team. Others (owners, league commissioners, fans, etc.) support salary caps largely on the grounds that salary caps supposedly make sports leagues more competitive by allowing all teams (especially “small market teams”) to compete for the best athletes.

The effect of a salary cap, however, is theoretically unclear. There are three fundamental questions to ask. (1) How does a salary cap affect the distribution of players (and their skills) across teams? (2) How does this distribution affect the competitiveness of teams? (3) How do these distributional changes affect the profitability of teams?

My research agenda focuses on two areas – one theoretical and one empirical. I use probability models to quantify theoretically how salary caps and other labor market rules such as free agency affect the distribution of players and their skills across teams. Complementing the theoretical analysis is an empirical investigation. Using data over time on many professional sports leagues, in the United States and abroad, I plan on investigating the empirical patterns regarding team revenues, team victories, and playoff appearances to determine the role salary caps play in the profitability of teams and the parity of leagues.

The Richter project will be carried out in four stages.

1. Literature Review. A thorough literature review of salary caps will be conducted. The student researchers will be expected to become knowledgeable enough in this area to be able to intelligently discuss relevant issues concerning labor laws and salary caps for various sports leagues.
2. Data Collection. Collecting data on sports leagues, their teams, and games is fairly straightforward, though somewhat tedious. Data concerning revenue and attendance is also available. We will find, download, and integrate the data into a usable format. In so doing, the student researchers will develop stronger computer skills and improve their resourcefulness when using library archives.
3. Statistical Analysis and Estimation. We will analyze the data for general patterns and subject the data to rigorous statistical testing. We will also employ an econometric bounding technique to best determine the effect of a salary cap on wins and playoff appearances. The student researchers will be expected to come to understand the statistical tests and econometric procedures as completely as possible.

4. Writing Up Results. The final stage of the project will be to write up the results for the Richter symposium and for the student symposium in the spring of 2009. The student researchers will play an integral role in writing and editing a research paper, constructing a PowerPoint presentation, and delivering that presentation.

The ideal student researcher is interested in economic policy, reads well, is computer literate, is organized, works well with a team, stays on task, and manages time well. It is not necessary to have an interest in or even knowledge of professional sports leagues. It would be useful, though not necessary, for the student researchers to have taken Econ 110 and/or Econ 180. We will meet everyday to discuss the status of the project and to assign tasks. The project will begin on May 12 and continue through July 18.

*Lecturer Jill Terzakis*

*Young Hall 305*

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### **Privatization for Capital and Revenue Generation: Toward a Deconstructed Valuation Model (1 student)**

In October I presented “Privatization for Revenue and Capital Generation: Toward a Deconstructed Valuation Framework” to the 17<sup>th</sup> Annual Association of Bond and Financial Management Conference. I am still researching asset valuation methodologies and working toward developing a generalized financial valuation model.

The prospect of public-private partnerships as a means of generating capital and ongoing revenue is receiving growing interest in the United States, especially with respect to public infrastructure and state lotteries. At the same time, there is a great deal of demand on the part of investors for U.S. public infrastructure and other governmental assets. As the need for funds collides with the supply of investable capital, the risk of undervaluation of governmental assets is brought into sharper relief.

The working paper presented at the ABFM conference focuses upon public-private partnerships in connection with governmentally owned assets and enterprises for which private investors would be willing to provide upfront proceeds and/or ongoing revenues in exchange for a transfer of risks and benefits associated with some combination of ownership and operating rights. The papers surveys the literature and suggests that a deconstructed comprehensive financial model might facilitate government officials’ ability to increase the value of these assets to the government as well as evaluate the financial impact of individual policy constraints on potential contracts, allowing public administration official to make more informed policy choices and potentially reduce the risk of undervaluation.

A database of approximately 150 contemplated and completed transactions has been compiled. The next phase of the research would involve updating and maintaining the database as well as extracting information from the data collected. A large part of the student’s role in this project will be developing analytical tools for this extensive database of U.S. potential privatization

projects. Estimated values, actual contract values and other quantitative measurements in the database will be analyzed by the student and will inform and direct further research. Potential analyses would also involve statistics about the subject assets, surveys of regulatory frameworks and legislative authorization models, as well as assessment of financial structures and valuation models used in completed transactions.

As a result, the ideal student will be Excel proficient, familiar with finance and data analysis, and have outstanding research skills. Qualified candidates will have taken Introduction to Finance. Students who have also taken Investment Analysis are preferred.

## ENGLISH

*Professor Carla Arnell*

*Carnegie 109*

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### **Medievalism, Mysticism, and the Modern Convent Novel** (1-2 students)

This project would enable a Richter Scholar to assist me in forging ahead with a book-length study of the contemporary “convent novel” as a genre. I have already written the first installment of that project—an essay on Ron Hansen’s novel *Mariette in Ecstasy*, but the project will also include essays on Mark Salzman’s *Lying Awake*, Marele Day’s *Lambs of God*, Iris Murdoch’s *The Bell*, and Edna O’Brien’s *The Country Girls*. As such, the project as a whole will explore novels about the aesthetic and theological significance of suffering, the relation among mystical experience, health and illness, and the analogous sacramental function of eating and storytelling, as well as other issues at the intersection of medieval and modern experience. It is the novels by Day and Murdoch that my research will focus on next summer. A related summer project, which a student could also assist with, will involve launching research for an article on Evelyn Underhill’s use of medieval mystical texts in her three novels *The Grey World* (1904), *The Lost Word* (1907), and *The Column of Dust* (1909). Underhill was an early twentieth-century “amateur” theologian and practicing mystic, who also wrote fiction on the side; it is her interest in and use of medieval mystical texts within her novels that I am especially interested in studying.

Because my work on Day and Murdoch is still in its initial stages, I would benefit from student research assistance locating interviews, book reviews, and literary criticism related to those two contemporary novelists and their novels. The Underhill project would entail similar assistance, but requires, in addition, research into literary critical and theological commentary on the medieval mystical texts that shaped Underhill’s fictions. Ideally, I would like to work with a student who is interested in the study of English literature and religion, especially because the Underhill project requires some shuttling between contemporary literary texts and medieval theological ones. At the very least, though, interested students should have some background in the study of English literature. The student does not need knowledge of any foreign language, but should have some basic proficiency searching databases central to research in the modern

languages (e.g., the MLA database). The student should also have solid writing skills insofar as I hope the student will be able to contribute entries to annotated bibliographies for each of the projects described above.

***Professor Davis Schneiderman***

***Carnegie Hall 206***

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**Project 1: Virtual Burnham Initiative (1-4 students)**

The Chicagoland area comprises 230 neighborhoods and suburban communities, spans over 7,000 square miles, and boasts a collective estimated population of over 9.5 million. To mark the centennial of Daniel H. Burnham and Edward H. Bennett's *Plan of Chicago*, a 1909 urban planning document that continues to shape the region's development, Lake Forest College is leading a Chicago-area coalition of cultural institutions to transform the flat images, maps, and text of the *Plan* (or *Burnham's Plan* as it is often called) into virtual models, accessible through 1) an organized project host website, 2) Google Earth, and 3) a social networking program such as Second Life.

Interested students will have the opportunity to work in any or all of the following areas: virtual design, historical scholarship, grant writing, project development, community outreach, and viral marketing. Students need not have any particular technical expertise or scholarly focus, but should be interested in the radical use of new technology to re-define the way we think, study, and reflect upon the past. I am looking for Richter Scholars finely attuned to the nuances of the current media-landscape (video games included!), and, those who are willing to think well outside the box.

Current VBI partners include the Newberry Library, the Chaddick Institute for Metropolitan Development (DePaul University), the Chicago Metropolitan Agency for Planning, Columbia College, an archaeological dig of the site of the 1893 Columbian Exposition, and numerous regional secondary schools. Students might think of this as an opportunity to act as a "co-producer," for 10 weeks, on a project that promises, in the tradition of Chicago boosterism, to potentially involve hundreds if not thousands of people in a collaborative vision of the future.

**Project 2: Memorials to Future Catastrophes (1-2 students)**

Along with Professors Don Meyer (Music) and Tom Denlinger (Art), I am preparing a multimedia project to be realized on the web and with physical materials. The project will ultimately consist of a multimedia DVD and seed packet; the DVD will allow users to view 6 audio-visual "catastrophes" over a 12-month period, and two years hence, harvest the fast-growing plants (from the seed packet) to make their own paper.

At that time, users will be given access to a website with further text to be printed on the specially made paper, and this text will be viewable only in hard copy. This hard-copy story will provide electronic codes to unlock further audio-visual catastrophes from the website, which can be viewed with further self-made paper over a total period of 32 years.

This collaboration merges time-extended art with the an audio/visual/tactile experience—serving as a “Catastrophe” occurring in the present, representative of a socio-political climate increasingly cordoned off by the representative fears of terrorism, bio-disease outbreaks, and natural disasters.

The ideal student will have some familiarity with web-design (not an absolute requirement), along with interest/experience in sound recording, film editing, and multimedia production (to help generate the DVD packaging and procure raw visual materials). This project will extend in many directions, and an ambitious student can help move it forward through research, production, and promotional initiatives. The project will also provide opportunity for the student to directly collaborate in the creative aspects of the work.

## **DONNELLEY AND LEE LIBRARY**

*College Archivist Arthur Miller*  
*Donnelley and Lee Library 016*  
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### **Research In Archives Photographs To Select (And Perhaps Do Some Processing Of) Significant And Uncommon Images For Web Access**

#### **Project 1: Images of Persons** (1 student)

In the Archives and Special Collections in the library we are working developing an online visual resource of significant photos from our Archival holdings, probably about 80,000 in total, essentially all from the film photo era. We may have the subject files part of this in hand, but we need to work on the photos of persons relating to the college (1) who are significant beyond the campus and (2) images which are not readily available from, say, Google images, etc. The people can be alumni (such as the image of Steve Goodman playing a guitar for a group on campus that appeared on the poster recently), faculty (dating back to the 1880s, several going on to become major players in their emerging disciplines, trustees, speakers and performers on campus. Also, we may have a few significant (not otherwise available) images of local residents who were informal friends of the College. Some of these may also be in yearbooks, and will need a little photoshopping to make them presentable.

The project then would involve a series of processes of determining who were significant people, checking Google, etc., to see if our images are uncommon, and then either also engaging in some of the scanning and photo restoration where appropriate, or perhaps coordinating with Archives student assistants who might also work on this. Other products or outcomes beyond the web project would be a small publication or book of some most interesting images, with stories about the individuals, and also an exhibit of images, either in our exhibit cases or in Durand gallery space.

This type of project could appeal to students interested in history, in photography (a number of processes from the 1860s to the present are on hand), and in web projects' IT aspects.

**Project 2: Subject Images** (1 student)

Another student also could be involved in selecting significant, uncommon views from our subject files. Buildings will be easy, since many images have been employed for 150th projects. But we also have many interesting sports, students groups (Garrick, Outing Club, etc.), events, and academic-related photos from which to choose some hundreds of the most important and potentially broadly interesting.

Both students would work directly with me, though I might be out a week during the process for a tour locally for the Society of Architectural Historians.

## HISTORY

*Lecturer Voula Saridakis*

*Young Hall 406*

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**Margaret Bryan and the Popularization of Science** (1 student)

I am starting work on an article on astronomer and natural philosopher, Margaret Bryan (b. ca. 1760) whose image (along with her two daughters) appears on the frontispiece of her *A Compendious System of Astronomy* (1797). She taught astronomy and natural philosophy to girls at her school in Blackheath, London from 1795 to 1806, and opened another school in central London in 1815, the same year she published her *An Astronomical and Geographical Class Book for Schools*. These elementary, yet practical books, gave a general grounding in astronomy and physics to young women interested in the sciences, and my interest is in looking at how her works fit within the general context of women's education in the sciences throughout Europe in the late eighteenth and early nineteenth centuries.

The Richter Scholar would have the opportunity of assisting me with the preliminary research on this article by exploring both primary (archival and manuscript research) and secondary sources using the internet and materials from local libraries. The student would also accompany me to these libraries if necessary. The student would meet with me weekly to discuss work done since our last meeting – this involves searching for sources on the internet, requesting materials through interlibrary loan (or borrowing materials directly from the library), and researching these materials. There are no language requirements, although some coursework in history is highly desirable. Moreover, the ideal student would have an interest and willingness to immerse herself or himself in historical research. I hope that by assisting me with this research, the Richter Scholar might expand on her or his own knowledge and interest in topics that include the history of science, women in science, or the popularization of the sciences in the late eighteenth and early nineteenth centuries.

## MUSIC

***Professor David Amrein***

***Reid Hall 104***

***Ext. 6024; email: [amrein@lakeforest.edu](mailto:amrein@lakeforest.edu)***

### **Compose Large-Scale work for Performance (1-2 students)**

I would like to lead a team of one to two Richter Scholars in composing a large scale work for performance next academic year by the Chamber Orchestra. I am already in discussion with the Theater Department about a possible collaboration. Tentatively, the idea is that we would compose new incidental music to accompany a Shakespeare play that would then be performed live in a campus production. It is hard to nail down a final plan at this time because next year's season is still being worked out for both Music and Theater. However, I am optimistic that either a project very much like the one I've described or something of equal scope and student involvement can be achieved.

It is absolutely critical that any student(s) working with me on this project have completed at least Music 151 and 250. He/she should also be ready and willing to offer substantial creative work and revision to the project.

***Professor Don Meyer***

***Reid Hall 106***

***Ext. 5171; email: [meyer@lakeforest.edu](mailto:meyer@lakeforest.edu)***

### **Film Scoring (1-2 students)**

I would like to request either one or two Richter Scholars to work with me in the summer of 2008 on a new film scoring project, similar to the recently-performed *Lodger* project I composed with Dave Amrein and Meg Golembiewski '10, my Richter Scholar this past summer.

The Richter Scholar (or Scholars) would ideally be a part of the project all the way through, from the selection of the film itself to the performance of the piece in the Fall. The Scholar would create a cue sheet for the film, help compose leitmotifs, score particular sections of the film, and help create a final finished version for our Chamber Orchestra. Knowledge of music theory is necessary; ideally the student will have completed Music 250 by the start of the summer. Experience with music software programs a plus, as is composing experience—but neither is required at this point.

## POLITICS

*Professor James Marquardt*

*Young Hall 412*

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### **Woodrow Wilson and Openness (1 student)**

This summer I will be researching and writing the first draft of a book chapter on Woodrow Wilson's vision of "openness" in America and its impact on foreign policy. I am exploring several hypotheses. First, Wilson's call for openness in American life is rooted in the Progressive era and reflective of that movement's understanding of popular sovereignty (e.g., the people have a "right to know" what government and other powerful actors in society are doing and why). Second, Wilson's advocacy of greater openness in the nation's political institutions and processes *and* his efforts to require businesses to disclose information – and therefore be accountable – to their investors capture a distinctly American aversion to unchecked (and unbalanced) power. Third, I hypothesize that Wilson's call at the Versailles peace conference after World War I for an end to secret diplomacy and his rejection of European-style power politics is borrowed from his progressive reform agenda. Moreover, they also reflect Wilson's belief that America had come of age and could indeed change the world. Though he rejected power politics, I also hypothesize that Wilson's support for a more open world is part and parcel of America's rise on to the world stage and therefore cannot be separated from power politics. "Woodrow Wilson's Vision of an Open World" is the fourth chapter of a book I am writing – and hope to complete this fall – called *Transparency and Primacy in American Foreign Policy*.

Students interested in this project should have a love of American history and politics. They should also be comfortable doing a fair bit of reading and writing (of short essays based on questions I will provide) on Wilson's life as an intellectual, governor of New Jersey, reform-minded president, and American statesman. A political scientist who enjoys archival research, I would expect the student working with me to study Wilson's presidential papers and speeches on matters having to do with openness, as well as secondary literature by scholars on Wilson's rich, complex, controversial political career. It is my expectation that the student and I will make important and useful observations about the legacy of Wilson's support for openness and contribute to a richer understanding of America's commitment to greater openness at home and abroad over the past 100 years.

## PSYCHOLOGY

*Professor Robert B Glassman*

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### **Memory, Brain Waves, And Human Evolution**

Our long-term memories are vast, so why can immediate memory hold only about seven independent items – the so-called “magical number  $7\pm 2$ ”? Are we so “narrow-minded” because of limitations of brain function? Or did working memory capacity *have* to evolve small because of something fundamental in the logic of thought? Is short-term memory the same in people as in other animals? What are our brainwaves doing while we are remembering? Two big steps further: How does small conscious working memory impact growth as a person? Do such fine analytical considerations about a human mind help us understand the evolution of humanity?

### **Project 1: Graphical computer programming for examining human brain waves. (1 student)**

(“Only nerds like me need apply.”) It is easy to learn to program with icons. And then it starts getting challenging when you build something interesting. Help develop programs written in LabVIEW, a pictorial programming language. Record EEG activity during memory tasks. Analyze brain waves ~~~. During 2005-2007 Chris Hartley has made great progress. Talk to Chris!

### **Project 2: Crayfish: Memory? Brainwaves? (1 student)**

For several years we have studied how crayfish learn, but we still have a ways to go in understanding “how to think like a mudbug.” This past fall some of us summarized research to date in a poster presentation at the Society for Neuroscience meeting. Check out our abstract, with its picture of a crayfish “begging” for food. Go to SfN.org or to: <http://www.abstractsonline.com/viewer/SearchResults.asp> and do a search using Marina Pinayeva or Stephanie Levin (or me) as author, or look up Program Number 26.12. If you are interested in recording brain waves from crayfish, you may put in extra time learning the fine art of invertebrate microsurgery.

### **Project 3: Evolving human attributes, and humanity. (1 student)**

How are we different from other organisms? How are we the same? In science we try to find simplicity within complexity - without oversimplifying! Is a man who accomplishes something *merely* the sum of his instrumental learned responses? Is a woman who helps others *merely*, in some indirect way serving her own “selfish genes”? We’ll read important sources in Learning, Memory, and Evolution and discuss each others notes. Let’s take a leap in understanding human evolution. We’ll begin with the insightful book *Nature: An Economic History*, by Geerat J. Vermeij (Princeton University Press, 2004).

*Professor David Krantz*  
*Hotchkiss Hall 12*  
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**What is the “True” Narrative of the Armenian Genocide?** (1 student)

Recently, the United States Congress tried once again to pass a resolution recognizing the Armenian genocide that was committed by the Turks in the early part of the 20<sup>th</sup> century. With its failure to pass, the United States remains one of the few Western nations that have to publicly recognize this mass killing. There are two dominant versions or narratives regarding these events: the Armenians claim that the Turks purposely set out to destroy them as a people; the Turks maintain that the Armenian deaths occurred as part of a war situation. We will investigate the two narratives in depth by considering such issues as: how are narratives to be evaluated; why is it important, for both the Turks and the Armenians, to have their version recognized as the “true” one; how does the Turkish rejection of the Armenian version relate to other similar reformulations of historical genocides, particularly the Holocaust. Students interested in history, political science and psychology should find this topic of particular interest.

## RELIGION

*Professor Ron Miller*  
*Reid Hall 207*  
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**Edit William James *The Varieties of Religious Experience*** (1-2 students)

William James is our most important American philosopher, and at the turn of the 20<sup>th</sup> century he was teaching in three departments at Harvard: philosophy, psychology, and anatomy. And yet, even though he never taught religion, his classic, *The Varieties of Religious Experience*, (1902) is arguably the most important book written on religion in the 20<sup>th</sup> century.

The book is difficult to read in its entirety and my goal is to edit the book, choose the most important passages, and publish them with a facing page commentary. I could use one or two Richter Scholars to help me both in the selection of the passages and in researching the material needed to write the commentary.

## THEATER

*Director of Theater D. Ohlandt*

*Buchanan Hall 211*

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### **Project 1: Signed Languages on Stage** (1 student)

This research project will analyze how American Sign Language (ASL) is adapted for use in bilingual (ASL/English) theatrical performances such as those produced by the National Theatre of the Deaf in Washington, D. C. The first phase of this project will involve identifying and gaining access to existing videorecordings of ASL/English performance, which we will put in context by reviewing critical articles on ASL, forms of MSE (manually-signed English), and theatrical sign.

The primary work of this project will involve “reading” the video recordings we find in order to chart the usage of formal ASL and various forms of MSE. It is essential that the Richter Scholar for this project have enough fluency in American Sign Language that she or he can recognize the difference between ASL and other usage of signs. Ideally, she or he will also be able to provide rough translations of both ASL and other common signs in American usage.

*I would be willing to sponsor one Richter Scholar on this project, although if two or more students are fluent in ASL and interested in this work, I would be willing to take them on and would love to know about it in any case!*

### **Project 2: Science & Math in Contemporary Drama** (2 students)

This research project will consist of collecting examples of plays that prominently use principles of science or math and beginning to compare the ways those principles get used in plays against the actual applications of them in scientific or mathematical research.

I have already compiled a preliminary list of plays that fall into this category, including David Auburn’s Proof, Michael Frayn’s Copenhagen, Tom Stoppard’s Arcadia, Friedrich Durrenmatt’s The Physicists, Margaret Edson’s Wit, and Bertolt Brecht’s Galileo, but the first phase of the summer project will consist of surveying 19<sup>th</sup> and 20<sup>th</sup> century plays for additional examples. In the main phase of the summer project, the Richter Scholar will work closely with 3-6 of the plays on the compiled list (depending on her/his interests) to identify clearly the principles of science or math that the playwright is attempting to use, and put together a packet of resources detailing the “hard science” involved in those particular principles.

A primary background in any field of science or math with a secondary interest in literature or the arts would be ideal for this research project, although any student who is interested and willing to think across the “science/art” boundary would be welcomed. Students from science/math fields should understand that I will expect them to engage with the plays in productive ways, while students from literature/art fields should be aware that I will be looking for the Richter Scholar to deal in “hard science” resources and take a scientific perspective.

*I would be willing to sponsor two Richter Scholars on this project from different backgrounds (i.e., one from biology, one from math; or one from chemistry, one from theater, etc.).*

***Professor Dennis Mae***

***Hixon Hall 202***

***Ext. 5141; email: [mae@lakeforest.edu](mailto:mae@lakeforest.edu)***

**Project 1: Visual Research** (1-2 students)

This scholar would research the historical, political and cultural influences as well as the visual elements as background for one of the 2008-2009 Garrick Players productions. The student would serve as an assistant to the designer. The objective of this project is to generate research documentation and analysis for one or more of the major productions each of which is set in a different time period. The student may also assist in the creation of set renderings and costume plates for the production. A short paper may be presented by the student at the panel discussion after the final performance. Research materials will also be part of a lobby display on the historical period of the play. No special skills are required but an interest or ability in illustration could be a plus.

**Project 2: Making a Musical** (1 student)

This project consists of research on, and adaptation of, an accepted classic stage work into a contemporary musical theater work. Titles under consideration include: "Loves Labours Lost" by Shakespeare, "She Would if She Could" by Etheredge, and others, including student suggestions.

Research includes standard dramaturgical inquiry into the literary and production history of the work(s) chosen. Period versus contemporary production options are to be explored. Selection of music, songs, and overall musical styles/adaptation from contemporary "popular" music genres including rock, alternative, dance, hip-hop, rap, country, metal, grunge, house/club, etc.

Student(s) will assist in the selection of songs, song placement in the text, text editing, lyric writing/adaptation, etc.

Performance and/or publication is an expected outcome of this project.