

2004-2005 Undergraduate Research Award Scholars
Statements of "Specific Aim(s), Purpose, or Goal(s)"

A. J. Bachmann, *Mechanical Engineering*, "Multifunctional Hybrid Sandwich Panels",
(Faculty Mentor: **Dr. Marc Zupan**, *Mechanical Engineering*) **Contact:**
bach1@umbc.edu **Tentative Graduation Date:** Spring 2006

"Improvement of lightweight structures is a continuous challenge for scientists. Studies have lead to the evolution of a new class of energy absorbing sandwich panels with parameters capable of design lead optimization. Hybrid sandwich panels comprising of light-weight carbon composite face sheets and a low density core of metallic (titanium or stainless steel) pins integrated into a closed cell polymer foam show potential in weight and volume critical structural applications. Figure 1 displays a photograph and schematic of one such pin reinforced sandwich panel. To achieve the goal of a strong, stiff, ultra-light weight structural material, the proposed research is focused on these hybrid sandwich panels. This research will explore variations in pin angle, pin density, polymer foam, as well as face sheet thickness to measure their contribution to the effectiveness of these structures."

Nicole Ball, *Visual Arts – Photography*, [Title of Proposal] "Desire", (Faculty Mentor:
Professor Lynn Cazabon, *Visual Arts*) **Contact:** n3@umbc.edu **Tentative**
Graduation Date: Spring 2005

"I propose to create a series of photographic portraits that compare adolescents to their parents. I will conduct a brief interview with each person during which I will ask the participant to tell me about one thing that they most desire at this point in time, which money can buy. I will create a portrait of each person, and then, based upon what was revealed in the interview, produce a second photograph that represents the thing that they desire. The two images will then be presented together as a diptych. The diptych-portraits will be grouped into separate sections of adolescents and their parents. My goals for this project also include expanding upon my technical skills in digital photography, in PhotoShop, and in the color control and output of images via the large format Epson color inkjet printer currently in the Photography Area."

Cindy Claros, *Art History & Theory*, "The Immigrant Artist: Questions of Identity",
(Faculty Mentor: **Professor Preminda Jacob**, *Visual Arts*) **Contact:**
cindy_c17@hotmail.com **Tentative Graduation Date:** Spring 2005

"Paradoxically, rapid globalization appears to increase, rather than diminish, the importance of nationality and ethnicity as a significant factor of identity. I would like to examine the complexity of ethnic identity in contemporary society by analyzing the artwork and concerns of two groups of artists in relation to one another. The first group, Mexican-American artists, whose primary residence is in the United States; and the second group, contemporary Mexican artists, whose roots and permanent residence is in Mexico. By shedding insight on the shared concerns as well as mutual misunderstandings between the two groups, this research will, I believe, create a clearer picture of a growing phenomenon, the immigrant artist in the art world.

Although some Mexican-American artists, such as Guillermo Gomez-Peña and Judy Baca among others, have gained considerable recognition in the U.S., their work is often praised by some because of its [sic] exotic qualities, and branded by others as 'difficult.' Gomez-Peña's work reflects this "painful dynamic: Mexico-in-the-United States, the United States-in-Mexico, and us in between" (Gomez-Peña, 1993).

On the other hand, to my knowledge, there is a real dearth of comprehensive studies available in the U.S. about the work of contemporary Mexican Artists. This research project will help complete the picture by providing insight on Mexican artists, their artworks, and how they relate to Mexican-Americans residing in the States."

James Dorsey IV, *Music (Voice Performance and Recording)*, "Musical Album Production to Provoke Discussion of Social Marginalism, Stereotypism, and Prejudice",
(Faculty Mentor: **Professor William Kemp**, *Music*) **Contact:** jamesdorseyiv@msn.com
Tentative Graduation Date: Spring 2005

"I am striving to be a recording artist, producer, teacher of voice, and promoter of social reform. As a child I was ridiculed and discriminated against for having so many differences from the predominating black stereotypes. These experiences have provoked a desire in me to use my life to affect change for mocked individuals. I have been engaged in the campus of UMBC, trying to plan events that help students feel self-worth and community inclusion, particularly with Welcome Week, Reaching IN, and Intervarsity Christian Fellowship. I seek to unify my social efforts with my musical background by producing an album that will provoke discussion of the social marginalism, stereotypism, and prejudice that affects personal wellness and identity. The music for the album will be an accessible, mainstream form designed to engage a large listening community. I will compose, perform, and record all of the music for the album with the guidance of my faculty mentor. Among others, I plan to specifically target my peers and younger audiences with the intent that the issues the project will raise will affect the development of these individuals as they approach adulthood. Having written at least 40 songs (musical and/or lyrical), this project will help me grow in my skills as a

singer, producer, and collaborator as well as broaden my investment in social issues and ability to communicate the need for change to large communities."

Steven E. Ellis, *Mathematics*, "Parallel Variable Distribution in Proximal Bundle Methods", (Faculty Mentor: **Professor Madhu V. Nayakkankuppam**, *Mathematics & Statistics*) **Contact:** ells1@umbc.edu **Tentative Graduation Date:** Spring 2006

"This project aims to devise and analyze new algorithms for minimizing convex functions. We propose to incorporate into the proximal bundle method (a classical method for minimizing nondifferentiable convex functions) the notion of parallel variable distribution, a technique which attempts to solve an optimization problem faster by breaking it down into smaller ones, which could be solved in parallel. Designing such a parallel variant of the proximal bundle method is nontrivial; the principal difficulty is that the convergence theory of algorithms based on parallel variable distribution require strong smoothness assumptions on the function being minimized, whereas convex functions are typically nonsmooth. The main goal of this project is to prove global convergence of such an algorithm using techniques from convex optimization."

Christina (Christie) M. Finn, *Music - Vocal Performance Concentration*, "A New Approach to Opera", (Faculty Mentor: **Professor David Smith**, *Music*) **Contact:** cfinn1@umbc.edu **Tentative Graduation Date:** Spring 2007

"With the Undergraduate Research Award, I plan on conducting my personal investigation in the field of vocal studies, with a focus on classical opera. While participating in a highly-acclaimed program at either the International Institute of Vocal Arts (IIVA) in Chiari, Italy or the Heifetz International Music Institute in Wolfboro, New Hampshire, I will receive top-notch instruction from the best vocal instructors and performers in the world, stretch and discover my own vocal abilities, study languages, and research opera, bringing new interpretations to an archaic genre of musical theatre. With the skills that I learn, I plan on helping restart the opera workshop program at UMBC and bring back the aesthetic and musical joy of opera to this academic community."

Corey Fleischer, *Mechanical Engineering*, "Microarchitected Egg-Box Cores for Sandwich Panels", (Faculty Mentor: **Dr. Marc Zupan**, *Mechanical Engineering*) **Contact:** cfleis1@umbc.edu **Tentative Graduation Date:** Spring 2005

"The goal of the proposed research is to experimentally study mechanical properties of microarchitected egg-box sandwich panels. Egg-box panels will be tested under a variety of loading conditions to measure both the in-plane and out of plane elastic and plastic deformation response. Material selection charts will then be used to arrive at new weight efficient core structures with low cost manufacturing and practical industrial

uses."

Lawrence Akebe Fomundam, CMPE/Mathematics & Statistics, "Modeling Uncertainty in Optical Communications Systems", (Faculty Mentor: Dr. John Zweck, Mathematics & Statistics) Contact: lfomu1@umbc.edu Tentative Graduation Date: Fall 2005

"The purpose of my project is to use mathematical modeling and statistics to investigate data transmission in optical fiber communications systems. This project will determine the feasibility of a future experiment at UMBC that will be designed to measure how well such a system transports binary data in the presence of polarization effects that can degrade the quality of the signal. In these systems the probability that a transmitted ZERO is received as a ONE, or vice versa, is extremely small. The purpose of the experiment is to develop a new technique to accurately measure the probability of these very rare errors. Specifically, the idea is to precisely control the way the light travels through the system, so as to artificially increase the probability that a bit will be in error at the receiver, and then use statistical techniques to infer the true probability of error. The purpose of my project is to use numerical simulations to evaluate how much uncertainties in the experimental measurement of the state of the light affect the accuracy of the final result. If I conclude that the experiment is not feasible, other researchers will avoid wasting resources in further pursuit of the problem. If, on the other hand, my conclusion is that the experiment should be feasible, my research will help to evaluate the accuracy of the experimental technique."

Hadi Gharabaghi, Art History & Theory, "'Where Is the Friend's House?': Postmodernism, Immigration experience and Iranian identity", (Faculty Mentor: Professor Preminda Jacob, Visual Arts) Contact: Gharabaghi@yahoo.com Tentative Graduation Date: Spring 2005

"In this research project I plan to investigate issues of identity that accompany the experience of immigration and cultural shift among Iranians living in the United States. I will survey the postmodern artistic expressions of Iranian immigrants in a variety of media (including film, video, photography, mix media, and installation) that communicate the complexity of cultural adjustment and problems of alienation within American Society.

A related objective of my project will be to introduce elements of the formal aesthetics of Iranian artistic expression to the dictionary of American visual arts.

I will present my findings in an installation format that includes written text, video, large format photography and mixed media. My project is not going to reflect a passive survey of Persian art but will be a critical study that will enhance my understanding of Iranian culture as well as empower my artistic creativity."

Kenneth Demire Gibbs, Jr., Biochemistry and Molecular Biology, "Improving Tumor Cell Based Vaccines for Treating Breast Cancer", (Faculty Mentor: Professor Suzanne Ostrand-Rosenberg, Biological Sciences) Contact: kgibbs1@umbc.edu Tentative Graduation Date: Fall 2005

"The aim of this work is to determine if Major Histocompatibility Complex (MHC) class II molecules can be better localized lipid rafts, detergent insoluble membrane microdomains, on the cell surface. If so, the work will focus on the effects of this increased localization on vaccine efficacy."

Elizabeth M. Humphries, Biological Sciences/Chemistry, "Parental Care in a Mexican bird species, the Altamira Oriole (*Icterus gularis*)", (Faculty Mentor: Professor Kevin Omland, Biological Sciences) Contact: ehumph1@umbc.edu Tentative Graduation Date: Fall 2004

*"Sexual dimorphism is a widely-studied topic in evolutionary biology. Dimorphism occurs in species where the male and female have different coloration. An example of this is the Baltimore Oriole (*Icterus galbula*) – the male is black, orange, and white, while the female is mostly brown. The male is considered bright and the female is considered cryptic or dull. In contrast, monomorphism occurs when adults from both sexes have similar appearance. For example, male and female Altamira Orioles (*I. gularis*) are virtually indistinguishable from each other and share the same bright orange and black plumage. It is not known why some organisms are dimorphic and others are monomorphic. In the New World orioles, the species that breed in North America (e.g. the Baltimore Oriole) are generally dimorphic whereas the species that breed in Central or South America are monomorphic (e.g., the Altamira Oriole).*

Dimorphism is often thought to occur when the two sexes of a species have different roles. For example, the male may be primarily responsible for raising the young. One accepted reason for sexual dimorphism in songbirds is precisely that – the female is cryptic because she has a greater role in parental care than the male. A cryptic bird is harder for a predator to spot and is able to make trips to and from the nest more safely. The oriole genus is ideal for testing the possibility of a link between parental care and plumage coloration. There are 25 recognized species in New World orioles, divided into three major lineages on the basis of their DNA. Two lineages contain monomorphic non-migratory species along with dimorphic migratory species. We will collect data on parental care in two different species that are closely related on the basis of their DNA but exhibit different plumage coloration. The Baltimore Oriole (a local species) will be compared with the Altamira Oriole, a Mexican species. This comparison will allow us to determine if plumage coloration is really linked with parental care.

This summer, I am traveling to Mexico to conduct preliminary observations on parental care in Altamira Orioles. The study will take place at the Los Tuxtlas Biological Field station in Veracruz, Mexico. The data collected in Mexico will be compared to data on Baltimore Orioles from both the 2003 and 2004 breeding season. I helped with

collection of the 2003 Baltimore Oriole data; other members of the Omland lab will collect the 2004 data."

Sarah Husain, History, "The American Mosque: A History of the Mosque in the Baltimore-Washington Metropolitan Region", (Faculty Mentor: **Professor John Birkenmeier, History**) **Contact:** shusain1@umbc.edu **Tentative Graduation Date:** Spring 2005

"The purpose of my project is to study and research the history of mosques in the Baltimore-Washington area. The first and main focus will be the actual history: when these mosques were founded, who founded each one, if they were built specifically as a mosque or acquired and converted into a mosque, etc. There will be several smaller aspects that will be included as well – purpose, role in the Muslim community, culture, leadership, and architecture. I intend to compare this new world to the traditional model of the mosque in Cairo, Egypt, focusing mostly in function and role, but also including information about the actual structure and location as well. Because the United States is a much different place from the Islamic societies where most Muslim immigrants hail from, the Muslim community has made adjustments to this important institution in Islam when relocating to the diverse United States; conducting a comparison will help demonstrate what aspects of the mosques are "American" and what aspects are older traditions.

Today, very little academic research has been done involving the history of the mosque in the United States. The Council on American-Islamic Relations has conducted a study on North American mosques, researching current ethnicity, programs, participants, and leadership. As far as the field of history, their study is limited to asking you what year the mosques were founded."

Jeffrey A. Jordan, Visual Arts – Video/Film, "Short Film in the Genre of Suspense", (Faculty Mentor: **Professor Mark Street, Visual Arts**) **Contact:** jeff2@umbc.edu **Tentative Graduation Date:** Spring 2005

"[My statement of specific aim(s), purpose, or goal(s) is] to create a successful short film in the suspense genre. The content, form, and execution of this film will be based on research drawn from the filmmakers and the films of the suspense genre, as they exist both in short and feature length. The film's aim will be to tell a compelling story through the successful executions of the conventions of suspense. While I would like to focus on the following story ideas and themes: lone protagonist, crime, the workplace, technology, and unhealthy lifestyles; I would allow room for my research to influence my creative processes, as well as the content I choose for the piece."

Isaac A. Kinde, *Biological Sciences*, "Antiviral Inhibition of the HIV-1 Capsid Protein", (Faculty Mentor: **Professor Michael Summers**, *HHMI and Chemistry & Biochemistry*)
Contact: ikinde1@umbc.edu **Tentative Graduation Date:** Spring 2005

"Fellow lab members and I, in Dr. Michael Summers's Laboratory, are embarking on identifying a new class of HIV-1 inhibitors. The target that we are focusing on is the HIV-1 capsid protein (CA). The first step in the formation of a HIV-1 virus is its budding from a host cell's membrane. When it buds, the virus is in its immature form. In this form, the CAs are arranged in a spherical conformation. Subsequent to budding, the encoded viral protease causes the virus to undergo major conformational changes, causing the CAs to arrange into a conical core. Previous mutagenesis studies have shown that this conical core is necessary for viral infectivity. Our hypothesis is that identifying a ligand that binds to immature CA might disrupt proper CA-CA interactions, interfering with the formation of the conical core and thereby reducing viral infectivity. This ligand could then be screened in clinical trials and eventually be placed on the market as a new class of HIV-1 inhibitors."

Chad McCormick, *Biochemistry/Molecular Biology and Philosophy*, "Rapid Identification of HIV Drug-Resistant Strains by Electrospray Ionization Fourier Transform Mass Spectrometry (ESI-FTMS)", (Faculty Mentor: **Professor Daniele Fabris**, *Chemistry & Biochemistry*) **Contact:** cmcc1@umbc.edu **Tentative Graduation Date:** Spring 2005

"The goal of the project is to develop a novel analytical approach for early detection and screening of the different strains of HIV by electrospray ionization Fourier transform mass spectrometry (ESI-FTMS). Our strategy is based on the hypothesis that ESI-FTMS can unambiguously differentiate very small mass variations in DNA samples larger than 25 kDa, when isotopically labeled dNTPs are incorporated in single stranded PCR products."

Tyi McCray, *Chemistry*, "Investigation of Epoxide Synthesis in Biphasic Reaction Conditions", (Faculty Mentor: **Professor Dale Whalen**, *Chemistry & Biochemistry*)
Contact: tmccray1@umbc.edu **Tentative Graduation Date:** May 2005

"The primary goal of this research is to investigate the epoxidation of unsaturated compounds by m-chloroperoxybenzoic acid (m-CPBA) in biphasic methylene chloride (CH₂ Cl₂)/water mixtures. These reactions are typically carried out in nonpolar, aprotic solvents such as CH₂ Cl₂ where the peroxyacid is added to the olefin. In particular we would like to establish the cis to trans ratio of the epoxides formed from a single isomer. We will study the epoxidation of cis stilbene (1) and trans stilbene (2), and determine the ratio of the cis-stilbene oxide (3) and trans-stilbene (4) formed under the biphasic conditions. Epoxidation reactions under monophasic conditions are stereospecific; cis-olefins form cis-stilbene under biphasic conditions yield mostly trans epoxides. We would like to understand the mechanism of this significant reaction."

James McIlhargey, *Physics*, "Maxwell's Equations in a Rotational Inertial Frame and Application to Modern Day Experiments", (Faculty Mentor: **Dr. Mortin H. Rubin**, *Physics*) **Contact:** Jmcil@umbc.edu **Tentative Graduation Date:** Spring 2005

"The purpose of this research is to develop a working theory of Maxwell's equations for a rotating reference theme. Once a working model has been developed, it will be applied to Dr. Shih's current project, investigating light propagation in a rotating frame, to yield predictions under non-quantum conditions. If time permits, the theory will then be applied to modern experiments to see if the model can help to account for inaccuracies in measurement due to the rotation of the earth, and other such situations."

Laura Marshallsay, *History*, "German Immigration and the Port of Baltimore: 1865-1914", (Faculty Mentor: **Professor Michelle Scott**, *History*) **Contact:** lmarsh2@umbc.edu **Tentative Graduation Date:** Spring 2006

"My goal for this project is to write and publish a journal article about German Immigration through the Port of Baltimore from 1865-1914. I began this project in History 201 as a study of the establishment of the Baltimore Immigration Station. I plan to expand this research to examine the immigrant experience as it relates to Maryland for the Undergraduate Research Award. I will research materials located in the Immigration and Naturalization Service Records held at the National Archives and Records Administration in College Park, and examine records housed at the Ellis Island Museum and Archives in New York. This will include researching the Castle Island immigration station which opened in New York in 1862. Like Baltimore's port, it was a state run facility. Ellis Island opened as a federal immigration station in 1892. Immigrants and their families have also left records of their experiences. I will spend much of this expanded project looking at these records in Maryland and New York."

Elina Mavashev, *Dance/Political Science*, "Bates Dance Festival", (Faculty Mentor: **Professor Doug Hamby**, *Dance*) **Contact:** eli3@umbc.edu **Tentative Graduation Date:** Spring 2005

"I have a dual goal for my research. First, my goal is to improve as a dancer and choreographer by attending the Bates Dance Festival, a three-week professional dance program, taking place in Lewiston, Maine, this summer. Second, in order to apply the information I will gain during this intensive program, I plan to choreograph a dance using UMBC dancers upon my return to UMBC in the fall."

Seth M. Miller, *Biological Sciences*, "Stat6-Deficiency Enhances Immunity to Mammary Carcinoma in HER2/Neu Transgenic Mice", (Faculty Mentor: **Professor Suzanne Ostrand-Rosenberg**, *Biological Sciences*) **Contact:** smille1@umbc.edu
Tentative Graduation Date: Spring 2005

"Breast Cancer accounts for greater than 40,000 deaths each year, making it the most common malignancy among women in the United States ¹. This startling number could likely be reduced if the mechanism of breast cancer progression was better understood. While this mechanism cannot be solved by one experiment or project, understanding portions of the entire process will hopefully lead to improved treatment and diagnosis. In this particular study, we are focused on understanding the mechanism by which Signal Transducer and Activator of Transcription 6 (STAT6) inhibits an immune response to spontaneous mammary carcinoma in a transgenic NeuT mouse model."

Rachele Sills, *Music Education*, "Becoming an Inspiring Violinist and Teacher", (Faculty Mentor: **Professor Airi Yoshioka**, *Music*) **Contact:** rachele2@umbc.edu
Tentative Graduation Date: Spring 2007

"It is only by introducing the young to great literature, drama and music and to the excitement of great science that we open to them the possibilities that lie within the human spirit – enable them to see visions and dream dreams." - Eric Anderson

"This quote is one of the reasons why I want to teach music and better myself as a violinist. I want children to understand that music is a wonderful world to explore and I want to help them to discover that world, but in order to teach music, I must be 'well-versed' in music myself. My goal is to attend either the Encore School for Strings (Cleveland, Ohio), Meadowmount School of Music (upstate New York), or the Aspen Music Festival (in Colorado) in the summer of 2004. Being immersed in music, for the summer, will be a tremendous growth experience for me. I will be able to interact with other people from various regions of the world in my chosen profession, and I will be able to make lifelong connections with them. Furthermore, this trip will also enhance my playing abilities and it will help me in my ultimate goal of being a teacher and a violinist."

Ashina Deepika Singh, *Biochemistry and Molecular Biology*, "Crystal Structure Determination of the Leucine-Rich Region Domain CIITA", (Faculty Mentor: **Dr. Colin Garvie**, *Chemistry and Biochemistry*) **Contact:** ashina1@umbc.edu
Tentative Graduation Date: Spring 2005

¹ Al-Hajj, M., Wicha, M.S., Benito-Hernandez, A., Morrison, S.J. & Clarke, M.F. (2003) Proc. Natl. Acad. Sci. USA 100. 3983-3988.

"We aim to determine the three-dimensional structure of domains of CIITA, a class II transactivator protein. CIITA regulates expression of genes that code for essential components of the mammalian immune system. CIITA is comprised of three major domains, a histone acetyltransferase domain, a GTP binding domain, and a leucine-rich region (LRR) domain². I will be using biophysical and X-ray crystallographic techniques to focus on studying the LRR domain. Knowledge of the structure of CIITA will give significant insight into how it functions and interacts with other proteins involved in regulating gene expression. It may also serve as a target for rational drug design in order to develop immunosuppressant drugs."

Arthur Soontornsaratool, *Visual Arts*, "Bigger is Better: A Visual Examination of Male Body Image", (Faculty Mentor: **Professor Calla Thompson**, *Visual Arts*) **Contact:** asoont1@umbc.edu **Tentative Graduation Date:** Spring 2005

"For this project I will create a series of ten 30" x 30" photographic images that will examine the awkward relationship that many men have with their own bodies. Specifically, this series of photographs will examine the heightened awareness and sensitivity that many men experience when they confront their own so-called imperfections. These images will also serve as a catalyst for further dialogue about what drives people to view certain portions of their body in such a negative way."

² Linhoff, M., Harton, J., Cressman, D., Martin, B., Ting, J: **Two Distinct Domains within CIITA mediate Self-Association: Involvement of the GTP-Binding and Leucine-Rich Repeat Domains.** *Molecular and Cell Biology* 2001, 21:3001-3011.

Aaron F. Stucky, *English/Modern Languages & Linguistics (German)*, "From Sage to Mystic", (Faculty Mentor: **Professor Raphael Falco**, *English*) **Contact:** aarol@umbc.edu **Tentative Graduation Date:** Spring 2005

"I intend to study the works of William Butler Yeats and the mystical texts that influenced him in order to examine the profound, though often underestimated, significance mysticism has in his poetry. My work will take the form of a long essay between 35 and 50 pages, which I will submit as my Honors Thesis for the English Honors Program. I have already begun working with my advisor, Professor Raphael Falco, to develop a strong argument and establish a working definition of mysticism. I plan to demonstrate that Yeats' poem "Lapis Lazuli" is his most mystical – and also most revealing – work; as the literary culmination of Yeats's attempt to unite poetry and spirituality, "Lapis Lazuli" articulates an understanding that he did not find in either politics or his flirtation with the occult."

Eric Valentine, *Financial Economics/Mathematics*, "Models of Stock Price Dynamics and their Effects on Option Prices", (Faculty Mentor: **Professor Muruhan Rathinam**, *Mathematics & Statistics*) **Contact:** evalen3@umbc.edu **Tentative Graduation Date:** Spring 2005

"I plan to undertake a comparative study of various volatility models for stock price movements. The main focus will be to evaluate the effects of variable volatility on options prices."

Stefanie Watson, *Music (Piano Performance)*, "Collaborative Piano within the Context of Instrumental Chamber Music", (Faculty Mentor: **Professor Rachel Franklin**, *Music*) **Contact:** swatson1@umbc.edu **Tentative Graduation Date:** Spring 2005

"My main goal in this research is to expand my skills as a musician, specifically as a collaborative pianist. By attending one of three summer chamber music programs (the Colorado College Summer Music Festival, the Summit Music Festival, or the Chautauqua School of Music Piano Program), I would be able to learn more about the process involved in working jointly with other musicians on a piece of chamber music. These programs would permit me to explore chamber ensemble repertoire written for piano and strings, a very important part of the literature with which I have not yet had much opportunity to work but hope to explore."

Scott White, *English*, "Margaret Fuller's Conversation: The Dialogic Nature of Margaret Fuller's Writing", (Faculty Mentor: **Professor Christoph Irmscher**, *English*) **Contact:** swhite4@umbc.edu **Tentative Graduation Date:** Spring 2005

"SARAH MARGARET FULLER, MARCHESA OSSOLI, writer, conversationalist, feminist, and Transcendentalist (1810-1850), was one of the most important American writers of the 19th century. She became America's first female correspondent when she reported to Americans on the Italian revolution of 1848-49. One of the many unique characteristics of Fuller is her writing style, and indeed, she once described the chief task she faced as a writer is a stylistic one: a woman 'of tact and brilliancy' like herself, she felt her voice lost its power when she transferred to paper. 'My voice excites me, my pen never' (journal, 1840). I would argue that Fuller found non-traditional ways of writing down her thoughts which, indeed, approximate the power of her conversation, and I would like to write a long essay (which will double as my senior thesis) analyzing her unique writing style, with special emphasis on how it was influenced by her upbringing and her perception of gender. Particularly, I am interested in how her idealistic view of the world early in her life, and its subsequent breakdown, influenced her style. Relating to this is her love of classic literature, and her inability to fully identify with the traditional roles of either the male or the female sex. Ultimately, I want to show that Margaret Fuller is a modern day Socrates, in her emphasis on conversation and its power, and her twisting of traditional thought in the search for truth."

Olusegun Williams, Biochemistry, "Early fibrilization events of the beta-amyloid (A β) peptide", (Faculty Mentor: **Professor Veronika Szalai, Chemistry & Biochemistry**)
Contact: olusegu1@umbc.edu **Tentative Graduation Date:** Spring 2005

"The goal of this research is to further elucidate the kinetics and structural characteristics of the initial stages of fibrilization of beta-amyloid proteins."

Aye T. Win, Biochemistry and Molecular Biology, "Kinetic Studies on Conformational Change of Gene 32 Protein", (Faculty Mentor: **Dr. Richard L. Karpel, Chemistry and Biochemistry**) **Contact:** ayewin1@umbc.edu **Tentative Graduation Date:** Fall 2004

"[The specific aim(s), purpose, or goal(s) is] to study the kinetics and mechanism of the association of various truncates of Bacteriophage T4 gene 32 protein under different salt concentrations and pHs in order to be able to answer the question of the autoregulation of the protein's various interactions."

Thomas Andrew Windsor, Interdisciplinary Studies (Neuroscience), "The Effect of Reward and Motivation on Cognitive Processes, as Modeled by the Paced Auditory Serial Addition Task (PASAT)", (Faculty Mentors: **Dr. Julie Schweitzer, Department of**

Psychiatry, Maryland Psychiatric Research Center and **Professor Rachel Brewster,**
Biological Sciences) **Contact:** windsor1@umbc.edu **Tentative Graduation Date:**
Spring 2005

"To study the effect of reward and motivation on cognitive performance as modeled by the Paced Auditory Serial Addition Task (PASAT). In this test, the subject hears a series of numbers, and after each subsequent pair of numbers, the subject supplies the sum. The task can be presented at variable interstimulus intervals from 4.0s to 1.2s. I hypothesize that greater positive reinforcement will be associated with an improved overall cognitive performance between experimental groups."
