



# **Undergraduate Symposium for Scholarly and Creative Work**

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**Arts  
Humanities  
Life Sciences  
Physical Sciences, Mathematics & Engineering  
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Social Sciences**

**April 18, 2001**



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Dear Members of the USC Community:

It is my pleasure to welcome you to the third annual USC Undergraduate Symposium for Scholarly and Creative Work. The Symposium is designed to provide USC undergraduates with the unique opportunity to exhibit and share examples of their significant research, scholarly, and creative work with the university community. Although the Symposium is modeled on a professional conference poster session, students can exhibit their work in a variety of ways, such as posters, art exhibits, and electronic media. All undergraduates are encouraged to participate. An award ceremony recognizing the most outstanding works will take place at the end of the symposium and includes First Prize awards of \$500 and Second Prize awards of \$250 in each of the following six categories.

- Arts
- Humanities
- Social Sciences
- Life Sciences
- Professional & Applied Disciplines
- Physical Sciences, Mathematics & Engineering

A panel of distinguished faculty will judge submissions in each category. After the judging, everyone is invited to attend the Awards Ceremony in Newman Recital Hall at 3:00 p.m. where the winners will be announced.

We hope you enjoy USC's Undergraduate Symposium, which promises to be a highlight of the semester this year and in many years to come.

Sincerely,

Lloyd Armstrong, Jr.  
Provost

# Undergraduate Symposium for Scholarly and Creative Work

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## ARTS

**Name:** Erin Bilovsky  
**Academic Unit:** Fine Arts  
**Department:** Fine Arts  
**Faculty Sponsor:** David Bunn  
**Title:** *Perfection Explained - Women throughout the 20th Century*  
**Category:** Arts  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #10A  
**Description:** The photographic series "Perfection Explained - Women throughout the 20th Century" shows simple scenes of women performing a mundane activity from a decade in the 20th century. Nine scenes are depicted in the series and each are presented in a before and after format, comprising two photographs each. The primary image in each diptych shows a woman in a stereotypically "perfect" role, pose, and look from a decade in the 20th century. Describing the failure of the "perfection", the second image is an instance a few moments later, which we are fortunately able to see. Hinting at the time in which the scene takes place, the photographic technique as well as the costume and make-up are the most essential aspects of each pair of photos. The photographs are intended to alter the viewer's notion of a past that is known, while humorously playing with societal stereotypes and ideas of female identity throughout recent history.



**Name:** Nathan Breitling  
**Academic Unit:** Thornton School of Music  
**Department:** Composition  
**Faculty Sponsor:** Prof. Erica Muhl  
**Title:** *Zero Tolerance*  
**Category:** Arts  
**Submission:** individual  
**Format:** Performing Artistic Work  
**Location:** Exhibit #AV6  
**Description:** This piece of music concrete is based entirely on the sound of a voice giving

readings of a short poem entitled "ZERO TOLERANCE," by Bruce Andrews. Adam's readings of the poem were recorded into my computer and digitally altered to create a tapestries of organic sound which, while often recognizably "human," are stripped of traditional concepts of voice, music, words, and meaning. In some ways, it takes the "Language" poets a step further in semantic abstraction, while the jagged text serves to provide sonic material appropriate to the atmosphere of the poem. At a more scientific level, this piece deals with spectral theories of sound (i.e. that all sounds are made of a spectrum of sinusoids). Each of Adam's readings underwent spectral analysis, the data of which was filtered through various algorithms and resynthesized into the basic sonic material from which I composed. Programs used in the creation of this piece include Sound Hack (by Tom Erbe), C-Sound (MIT), Cecilia (Piché/Burton), Open Music (Ircam), Peak, and Cubase. A special thanks to the Ircam (Paris) and to Adam Dattis, whose enthusiasm in this project served as continuous inspiration. nathan e breitling, composer adam j dattis, voice



**Name:** Chris Browne, Jon M. Chu - Director of Photography/Editor  
**Academic Unit:** School of Cinema-Television  
**Department:** Production  
**Faculty Sponsor:** Everett Lewis  
**Title:** *When Darkness Falls...*  
**Category:** Arts  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #AV7  
**Description:** "When Darkness Falls" is a short film depicting the last five minutes of a radio mystery in 1945. Shot in a neo-noir style with low angles and intense shadows, the film hopes to express the power of radio and the unlimited realm of the harrowing ether.



**Name:** Anthony Bustos, Marissa Moreno, Mehcad Brooks, Chris Shane, Eric Vartanian  
**Academic Unit:** Religion  
**Department:** Annenburg  
**Faculty Sponsor:** Lynn Swartz-Dodd  
**Title:** *Egyptian Black Stela*  
**Category:** Arts  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #CC10  
**Description:** With our project we plan on showing what is involved with the recording, copying, and deciphering of an Egyptian Black Stela. We will be making hand and digital copies of the Stela. We will also be piecing it together so that we can then have it in its original form. In this way we will be able to decipher it. We hope to create a web site that will be educational and convey what is involved in the process of understanding ancient texts and artifacts. We will be explaining what is involved with the digitizing and hand copying of the stela. Throughout more than 3,000 years of history, there were three different types of writing used - hieroglyphic, hieratic and demotic. We will be using past Egyptian writings and symbols to help us decipher what is found on the Stela by the process of comparison. Because the Egyptian writing styles evolved and were constantly changing we will be able to use this information to determine a time period for when the Stela was created. Additionally, we will be using a new technology that will aid us in making a more comprehensive copy of the Stela. It involves a lighting computer technique that should "shed light" on the subject. We will also be providing background information about Egyptian Hieroglyphics and what is involved in the deciphering process which is both artistic and scientific. With this web page we will be showing the overall process and we hope to create a insightful, entertaining, and informative experience.



**Name:** Katherine Chiu  
**Academic Unit:** School of Engineering  
**Department:** Biomedical Engineering  
**Faculty Sponsor:** Louise Yates  
**Title:** *Die Nacht*  
**Category:** Arts  
**Submission:** individual  
**Format:** Performing Artistic Work  
**Location:** Exhibit #AV2  
**Description:** Die Nacht (The Night) is an original composition that I wrote to capture the many unique sounds of the piano. This piece draws on the dark mysterious atmosphere of German folk tales and fairy tales. There are five movements - Das Geheimnis des Mondes (the mystery of the moon), Die Waldgeisten (the forest spirits), Der Tanz der Engel (the angel's dance), Verbotene Schritte (forbidden footsteps), and Das Erwachen (the awakening). If you listen carefully and let your imagination run, you will hear the night beckon you to explore its depths.



**Name:** Jon Chu  
**Academic Unit:** School of Cinema-Television  
**Department:** Production  
**Faculty Sponsor:** Richard Krevolin  
**Title:** *Silent Beats*  
**Category:** Arts  
**Submission:** individual  
**Format:** Performing Artistic Work  
**Location:** Exhibit #AV4  
**Description:** Silent Beats, is a five minute short film shot on Digital Video. It is the short story of an African American boy who goes into a food mart but encounters an array of dirty looks by the people inside. Who is this boy, what is he up to and why is he here? In return, the boy makes his own judgements about their lives. It quickly becomes a psychological chess game that deals with prejudice on all levels and reveals that no one is safe from the assumptions the media has created. Along with black and

white still images, Silent Beats experiments with time, composition and color to reveal a glimpse of the exhausting encounters some people must deal with everyday of their life.



**Name:** Dulcinea Circelli  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Engl/Bisc  
**Faculty Sponsor:** James Kincaid  
**Title:** *Expressions of Freedom and Despair*  
**Category:** Arts  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #6  
**Description:** My work covers the polar opposites of the human psyche - exhilaration versus despondency, and poses the question of whether one can survive without the other. Can we truly know how wonderful joy is if we have not also known despair?



**Name:** Bryant Davis  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Slavic Languages & Literature  
**Faculty Sponsor:** Dr. John Bowlit  
**Title:** *Russian Art in Southern California*  
**Category:** Arts  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #AV9  
**Description:** When we think of classical music, we remember the contributions of Tchaikovsky, Stravinsky, and Rachmoninoff. When we consider great literary works, the names Tolstoi and Dostoevsky are among some of the first we call to mind. In the case of ballet--Baryshnikov and Nureyev automatically pop into focus. And so, when we go to catalogue the fine artists of culture and thought, we find ourselves writing down a lot of Russian names. In these postmodern times of our, however, we have a tendency to lump Russian artists in with all artists. Still, these men and women have something

that makes them special, and I believe it is important to discover what this "something" is all about. But who is keeping a catalogue of Russian Artists these days? Since the end of the Cold War, Russia has played less of a role in our lives. We are not as aware of the contributions Russians continue to make to the world of thought, culture, and art. And yet, the unique, Russian personality exists still today. Over the last 6 months I have conducted a series of interviews with Russian Artists and Intellectuals. I have asked them questions about both culture and art, and the ideas which have been revealed to me are exciting. What is Universal Energy? How can visual art be non-retinal? Why is Batch Art the art of the future? As I talk and show footage from my interviews, these are some of the questions I will explore.

**Name:** Samantha Florio  
**Academic Unit:** School of Fine Arts  
**Department:** Fine Arts  
**Faculty Sponsor:** Margaret Lazzari  
**Title:** *Sophomoric Art*  
**Category:** Arts  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #10  
**Description:** Visual art and poetry are often deeply segregated as two art forms. The trend of Sophomoric Art is an attempt to create a forum where these two arts might combine and reflect upon one another's beauty. Simple paintings set as a background for both original and quoted poetry delve into modern visuals and two classic arts.



**Name:** Charlotte Lalita Gopinath  
**Academic Unit:** Classics & School of Music  
**Department:** English Literature & Music Performance  
**Faculty Sponsor:** Professor David St. John

**Title:** *Poems*

**Category:** Arts

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #9

**Description:** This series of poems traces a young woman's coming of age amid cross-cultural currents. Each poem explores a particular element of her journey. I wanted to unite seemingly disparate experiences under an overarching theme, in part, to illustrate the necessity of forming a whole from incomplete pieces of a puzzle.



**Name:** Janna Kuntz

**Academic Unit:** Advanced Sculpture

**Department:** English (Creative Writing)

**Faculty Sponsor:** Jud Fine

**Title:** *Water Bottle Fountain*

**Category:** Arts

**Submission:** individual

**Format:** Artistic Entry

**Location:** Fountain

**Description:** The sculpture is a site-specific public work that explores issues of making a natural material into a commodity and the consequent burden placed on our environment. The plastic bottles have all been collected on USC campus, the excess of the student body, faculty and workers. As a sculpture this work strives to perfect the original form of the familiar fountain across from Tommy Trojan. Its attempt parallels that of bottling companies as they strive to perfect the commodity sold within their plastic bottles, pure, unadulterated water. The purity becomes a promise conveyed to consumers by the clear, sterile containers seen here. While the sculpture has its own aesthetic value and may succeed in replicating the shape and look of the fountain that was once in its place, now plasticized it loses all the wetness, movement, sound and humidity of the water that once fell in droplets upon a viewer's skin. Essentially, this replication lacks the unique elements that made the original fountain intriguing in the first place. Thus,

the anomalous water fountain--a human attempt to aestheticize, control and replicate the power of running water in nature--an already artificial construct, becomes even more so. At the same time this towering multitude of bottles hints at the burden placed upon our society to now find a place for another superfluous excess.



**Name:** Rosalynn Lu

**Academic Unit:** School of Architecture

**Department:** Architecture

**Faculty Sponsor:** Karen Koblitz

**Title:** *untitled*

**Category:** Arts

**Submission:** individual

**Format:** Artistic Entry

**Location:** Exhibit #8

**Description:** This is a delicate set of green porcelain dinner ware. It includes a bowl and a plate with detail leaves carved into them that seem to form the shape of it. The transparent green glaze gives them depth as well as a certain quality of life.



**Name:** Matthew McBane

**Academic Unit:** Thornton School of Music

**Department:** Composition

**Faculty Sponsor:** Dr. Donald Crockett

**Title:** *Turn On. Turn Off.*

**Category:** Arts

**Submission:** individual

**Format:** Performing Artistic Work

**Location:** Exhibit #AV8

**Description:** Turn On. Turn Off. is a four movement, fifteen minute piece for a sextet of flute, clarinet/ bass clarinet, violin, cello, piano/ celesta, and percussion. Written from December 2000 to March 2001, this piece was first performed on April 1, 2001. It is my most ambitious composition to date both in its length and diversity of musical materials, and its premiere marked my conducting debut. The title, Turn On. Turn Off. , describes the way textures and

materials in the piece appear and disappear. The individual movements each have their own unique tempo and character, with dramatic contrasts from one to the next. But, all share a sense pacing that comes from turning on and off different parameters, and use musical materials that grow from an initial chord cell.



**Name:** Bear McCreary  
**Academic Unit:** Thornton School of Music  
**Department:** Composition  
**Faculty Sponsor:** Dr. Lesemann  
**Title:** *The Collapse of Saint Francis*  
**Category:** Arts  
**Submission:** individual  
**Format:** Performing Artistic Work  
**Location:** Exhibit #AV5  
**Description:** "The Collapse of Saint Francis" music and text by Bear McCreary William Mulholland (1855 - 1935) was Chief Water Engineer for the city of Los Angeles when he oversaw the design and construction of the Saint Francis Dam. On the evening of March 12, 1928, the dam fell. A wall of water ten stories high charged through the canyon, stripping away everything in its path. The tremendous wave took nearly six hours to reach the Pacific Ocean, a distant 65 miles away. The death toll of this tragedy finally reached a stunning 450 persons. The Saint Francis Dam disaster marked the greatest engineering failure in State history. Politically and spiritually, Mulholland was crushed. Even though the official inquest found against prosecution, Mulholland took the brunt of the blame and anger, virtually alone. He died, seven years later, a broken man. However, recent studies of the San Francisquito canyon by geologists revealed that neither Mulholland nor the scientists of his time could have detected the causes of the dam's collapse. History has forgiven Mulholland, although he never had the chance to forgive himself. In writing my piece for full orchestra and mezzo-soprano, "The Collapse of Saint Francis," I did not attempt to portray the life

and times of William Mulholland. Instead, I set out to paint only this singular moment, which would forever darken his lifetime and legacy.



**Name:** Mateo Nelson, Viviana Martinez  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Cinema  
**Faculty Sponsor:** Ms. Cynthia Mata-Flores  
**Title:** *eyemaneerman dream*  
**Category:** Arts  
**Submission:** group  
**Format:** Artistic Entry  
**Location:** Exhibit #7  
**Description:** Nelson and Martinez have identified a hunger for imaginative stimulus in every day interaction within society. They have composed a book, with words by Martinez, and illustrations by Nelson, to challenge the mind of all readers young and old. If you think you have lost the creativity that we so value in children, this project will prove that it is inherent in you and longs for expression. This project draws from the novel "A Midsummer Night's Dream" by Shakespeare, and has been composed with words that will startle you into thought and images that provoke wonder.



**Name:** Andrew Norman  
**Academic Unit:** Thornton School of Music  
**Department:** Keyboard Studies  
**Faculty Sponsor:** Dr. Stewart Gordon  
**Title:** *Serenade*  
**Category:** Arts  
**Submission:** individual  
**Format:** Performing Artistic Work  
**Location:** Exhibit #AV1  
**Description:** My Serenade is an excursion in musical nostalgia; it is music that looks back, in a very conscious and sentimental way, to many different kinds of music from the distant and not-so-distant past. The 18th century serenade, with its tunefulness, formal clarity and pleasing character, was

the stylistic point of departure for my work. To this lightweight aesthetic foundation I added elements from many of my favorite kinds of vernacular music; Gershwin-esque cocktail piano, vintage noir film music, pop ballads, show tunes, and New Age all creep into the musical language at one point or another. Also present are large doses of Minimalist diatonic harmony and good old-fashioned 19th century Romanticism. This cross-generational amalgam of light and tuneful music is wedded to some rigorous compositional techniques. Continual motivic variation in the tradition of Schoenberg and Brahms and rhythmic asymmetry in the manner of Stravinsky are featured prominently in the unfolding of the music. I mention all these specific names and styles because the Serenade is, on a fundamental level, music that is about these different kinds of music and how they can relate to and reframe each other. This is music that freely combines high and low art, music that bends genre boundaries by uniting elements of mass culture and the cultural elite; My Serenade belongs equally to concert halls and cocktail lounges, to elevated places and elevators.



**Name:** Patrick Pezeshkian  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Biological Sciences  
**Faculty Sponsor:** Penelope Jones  
**Title:** *Memories of home.*  
**Category:** Arts  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #5

**Description:** Being science oriented, my life has always revolved around scientific facts and theorems. Art, for me is a form of self expression and a means to escape from the scientific norm into a domain where i can reflect my perceptions of nature onto canvas without equations or fomulae but with light, shadows, shapes and colours. All of the artwork i am to present have a unifying theme, they're all actual locations in Cyprus, which is my homeland where i grew up and spent the first 18 years of my life. I hope that through these few paintings i can share the beauty of the Island of Aphrodite (Cyprus) with those who have never been there.



**Name:** Dawn Pellerin  
**Academic Unit:** Fine Arts  
**Department:** Fine Arts  
**Faculty Sponsor:** David Bunn  
**Title:** *untitled*  
**Category:** Arts  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #10B  
**Description:** Dawn Pellerin shoots images of abandoned factories in the industrial/residential areas of Huntington Park and Vernon located just outside of downtown Los Angeles. The color photographs depict the buildings in various stages of demise and bring into mind the long and continuing history of labor and the factory in Los Angeles.



**Name:** Aaron Roethe  
**Academic Unit:** Thornton School of Music  
**Department:** Music Composition/Film Scoring  
**Faculty Sponsor:** Dr. Morten Lauridsen  
**Title:** *Conversation*  
**Category:** Arts  
**Submission:** individual  
**Format:** Performing Artistic Work  
**Location:** Exhibit #AV3  
**Description:** The inspiration for composer Aaron A. Roethe's "Conversation" came from the architecture of Orange County's Fullerton Train Station. The station's old style lamp posts spawned an image of a tap dancer and a clarinet improvising together in dim light. This image returned to Aaron three years later when he decided to create a theatrical dance piece for his sister, Jessica

Roethe. The composition grew in number from a duet to a quintet featuring an alto saxophone, trumpet, piano, and double bass. For this composition, Aaron attempted to create an improvisatory atmosphere, almost as if a conversation is taking place between the tap dancer and the instrumentalists; however, it must be noted that there is no improvisation on the part of the performers, including the tap dancer. Every sound the taps make, every rhythm Jessica performs can be found in the composer's original score. These notated patterns were choreographed by Ms. Roethe after the fact. Tonight's video presentation was created due to an unforeseen complication; the originally planned live performance of "Conversation" was halted when U.S.C. declared Newman Hall unfit to house a tap dancer. Aaron then took it upon himself to enlist to help of fellow students to film "Conversation", finding and managing his own film crew, venue, and performers to act out his vision. Aaron would like to thank all of the talented family and friends who assisted him in the long and enjoyable process of bringing "Conversation" to life.



**Name:** David Swanson, Justin Taber, Raul Ramon, Michelle Moskowitz  
**Academic Unit:** Annenberg Multimedia Literary Program  
**Department:** Art History/Communication

**Faculty Sponsor:** Karen Lang  
**Title:** *Vincent Van Gogh and Advertising*  
**Category:** Arts  
**Submission:** group  
**Format:** Artistic Entry  
**Location:** Exhibit #CC1  
**Description:** Our project is an examination concerned with the very way advertisers employ the myth of Vincent van Gogh. It works, if you will, as an exploration into what the van Gogh myth essentially signifies and then relates those notions to modern day advertising. Included in the web site our a wide scope of advertising images that range from shoes to perfume to even vodka. The hope in doing this project is to make people aware of how excessively used the van Gogh myth really is.



**Name:** Aaron Toronto, Orion Breen, Sara Reddy, Jean Chen, Jaelyn Doslak  
**Academic Unit:** School of Cinema and Television  
**Department:** Production  
**Faculty Sponsor:** Rich Fortinberry  
**Title:** *Blue Passion*  
**Category:** Arts  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #AV10  
**Description:** A man and a woman, once in a deeply emotional relationship, meet after being apart for many years. The man must decide if he wants to begin it all over again...

## HUMANITIES

**Name:** Atish Baidya, Curtiss Cobb  
**Academic Unit:** School of Journalism  
**Department:** Broadcast Journalism  
**Faculty Sponsor:** Bruce Zuckerman  
**Title:** *The Two Balaams*  
**Category:** Humanities  
**Submission:** group  
**Format:** Artistic Entry  
**Location:** Exhibit #CC12  
**Description:** In the Bible there is a story about a prophet named Balaam. He was sent by the King of Moab to curse the Israelites. God however intervenes and instead Balaam blesses the Israelites. Text from Deir Alla in Jordan recovered in the 1960's refers to a prophet named Balaam as well. But the story of this Balaam has no connections with that of the story in the Bible. The project looks at the connection between these two different traditions of Balaam the prophet. It will look at the differences and similarities between the Bible's portrayal of Balaam and that of the Deir Alla text.



**Name:** Doran Barnes, Jr.; Ms. Hayley McGuire  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Linguistics & Religion  
**Faculty Sponsor:** Bruce Zuckerman, Lynn Swartz-Dodd  
**Title:** *Theories of the Pyramid Texts*  
**Category:** Humanities

**Submission:** group  
**Format:** Artistic Entry  
**Location:** Exhibit #CC5  
**Description:** The Pyramid Texts refer to the earliest Egyptian funerary texts, which were spells carved on walls and in burial chambers inside pyramids to aid the deceased in moving to the afterlife. The Pyramid Texts are comprised of approximately eight hundred spells found from ten different pyramids of the Old Kingdom. They date from the fifth dynasty, the earliest from the pyramid of King Unas. No single pyramid contains all eight hundred spells. There is much current debate surrounding the reading and interpretation of the Pyramid Texts. In which direction is the text intended to be read? Where do they begin and where do they end? Our project will intend to make use of cutting edge research of a French Research team who has published their work on the restoration of the Pyramid Texts of King Teti. These new findings are crucial to interpreting the Pyramid Texts of King Unas, as the Unas and Teti texts were created approximately 25 years apart. The restoration of the Teti texts will be the greatest influence on the interpretation of Old Kingdom Pyramid Texts since the Unas texts were translated in 1950.



**Name:** Kevin Brian, Stephane A. Farenga  
**Academic Unit:** University of Southern California  
**Department:** Undecided  
**Faculty Sponsor:** Lynn Swartz-Dodd and Bruce Zuckerman  
**Title:** *The Lighthouses of Ugarit*  
**Category:** Humanities  
**Submission:** group  
**Format:** Artistic Entry  
**Location:** Exhibit #CC19  
**Description:** Located on the tell known as Ras Shamra, the ancient port city of Ugarit lies along the coast of modern-day Syria. Since the beginning of its occupation in the Aceramic Neolithic period, Ugarit has passed under the influence of several civilizations. It has gone through periods of great wealth and of great decline. We know that much of Ugarit's wealth and prosperity was based on trade. This doesn't come as much of a surprise since Ugarit was always at the forefront of craftsmanship. Located in a bay in the Mediterranean, many ships entered and left its port over the centuries. Since the rainy season spanned for 3/4 of the year, many of these ships must have gotten caught in storms and, worse yet, caught in the pitch-black night, sometimes even surrounded by a thick blanket of fog. Common sense tells us that neither Ugarit nor its clients would have been satisfied with constantly losing ships at sea. What was done about this problem? A theory has been proposed, based off of these thoughts and recent archaeological finds, that the two huge multi-story temples, built just a kilometer from the shore, were used as lighthouses—the first ever. We have designed a website exploring this theory, with evidence from the professor who proposed it and our own investigation into the geography, archaeological finds, and feasibility of such an idea. This site will be a resource for professors and students alike to visit, explore, and contribute.



**Name:** Eric Cherniss, Kelli Vail, Neva Ayn Rovner  
**Academic Unit:** School of Engineering  
**Department:** Undeclared Engineering  
**Faculty Sponsor:** Prof. Bruce Zuckerman  
**Title:** *Unveiling the Past - The Incirli Trilingual Inscription*  
**Category:** Humanities  
**Submission:** group  
**Format:** Artistic Entry  
**Location:** Exhibit #CC6  
**Description:** In 1993 a large basalt stela was found near the town of Incirli, Turkey. It dates to the 7th or 8th century BCE and contains inscriptions in three ancient languages - Phoenician, Assyrian, and Luwian. Profs. Bruce Zuckerman of USC and Prof. Stephen Carter of Hebrew Union College are currently working on a decipherment of the inscriptions. Our project documents the decipherment process and gives information and research about the stela and the historical milieu that it came from. We discuss the historical background and significance to religious history that the stela represents. In particular, the stela is very important to biblical history and contains many relationships to biblical figures and events. We can't show you the stela itself, but we hope this web page will be the next best thing.



**Name:** Emily Cheung, Alex Ramirez  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Economics  
**Faculty Sponsor:** Dr. Swartz Dodd, Dr. Zuckerman  
**Title:** *Near East Ancient Games*  
**Category:** Humanities  
**Submission:** group  
**Format:** Artistic Entry  
**Location:** Exhibit #CC3  
**Description:** Our ancient games project is an interactive website. Our goal is to educate the visitor or user on the fields of epigraphy and palaeography through the use of interactive games. We plan to have a formal introduction on what epigraphy and

palaeography actually are, and then continue on to the specifics of what is involved when studying these fields. In each section after the explanation of the specific field, we plan to present a historical example with a detailed explanation followed by an interactive game. The interactive game will be a recreation on the basis of the ancient models from our studies. The purpose of these recreated models is to demonstrate the skills required to decipher the original ancient counterpart.



**Name:** Stephane Farenga  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Undeclared Engineering  
**Faculty Sponsor:** Lynn Swartz-Dodd and Bruce Zuckerman  
**Title:** *The Barracks of El-Amarna*  
**Category:** Humanities  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #CC4  
**Description:** My multimedia project plans to take a close look at the city of El-Amarna. El-Amarna is a very important archaeological site because it was built by the pharaoh Akhenaten in the 14th century BCE. El-Amarna was the centerpiece of Akhenaten's short-lived religious reform. More specifically, I will be dealing with one of the structures belonging to the military/police complex. This complex stood within El-Amarna, and more specifically in the Central City. The Central City basically contained all the major administrative buildings and religious centers, such as the Aten temples, the Great Palace, the Bakery, the Military Posts. Within the military complex, we find the barracks, administrative offices, commander's home and magazines among others. I will be focusing on the barracks. This was a massive structure that was centered around an open court. On one side, stables were kept and on the other storerooms and the commander's home. What makes this building more interesting than others in this

complex, is the variety that it housed. With horses ready to go, a central well, magazines that stored items from grain to swords and a lavishly decorated home, the police barracks offers a lot to work with. My project will focus on a virtual 3D recreation of the actual barracks. This rendition will allow us to understand what it looked like in its prime and what was found inside. Descriptive text about each room and its uses will accompany the 3D model.



**Name:** Aaron Hurst  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** English  
**Faculty Sponsor:** Prof. St. John  
**Title:** *The Garden*  
**Category:** Humanities  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #56  
**Description:** The collaboration of a poetic work along with an artistic interpretation.



**Name:** Ananda Jacobs  
**Academic Unit:** Letters, Arts, and Sciences  
**Department:** Thematic Option  
**Faculty Sponsor:** Lauri Mullens  
**Title:** *Tahitian Mahu - Molding a Model of a Third Gender*  
**Category:** Humanities  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #55  
**Description:** The two-sex/two-gender world has long been the default system for categorizing people. This seems to be with good reason, when we consider the implications otherwise. Any system attempting to label beyond traditional female or male prescriptions would lead to confusion and instability - if we can't stick to a simple dichotomy, how are we to function as a complex global society? In this paper, I will demonstrate that this

argument is false. As we journey through the cultural practices of the Tahitian Mahu, we will not only see that a poly-sex system is a well established tradition in other parts of the world, but we will note that such unconventional categorization enhances rather than detracts from social stability. The Mahu, who are held in high regard within Tahitian tribal society, serve as epitomes of those who break conventional gender boundaries. Using the Tahitian cultural practice as a model, I will conclude that the notion of a limited two-gender system is merely a theoretical safety valve; and one that ultimately has no superiority over well-functioning poly-gender societies.



**Name:** Gale Kindberg  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Communication  
**Faculty Sponsor:** Profs. Zuckerman and Swartz-Dodd  
**Title:** *The Dead Sea Scrolls - The Isaiah Peshier*  
**Category:** Humanities  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #CC14  
**Description:** This website is dedicated to providing information about the Isaiah Peshier, which is one of the Dead Sea Scrolls. It includes background information on the area where the scrolls were found and the peoples who are believed to have written the scrolls. There is a history page on the prophet Isaiah, and what his writings have meant in the context of the entire Bible and in history. In addition, the full text of the Isaiah Peshier, as we have it, is presented on this website. The passages found in the Peshier that come from the Bible are also written as they are found in the New Standard Revised Bible and the King James Version Bible. There is a map provided on the website that has a list of the most important scrolls found in each cave, a brief description of these, and there are links that will point to outside websites with further

information about individual scrolls. The website has a short tour for anyone beginning their search into the Dead Sea Scrolls, so that they are guided through the information in a quick, easy manner. They can later go more in depth by visiting the informational pages.



**Name:** Alexis Lamb, Michelle Stuckey, Brian Omura, Matt Corbitt  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** International Relations  
**Faculty Sponsor:** Marcus Levitt  
**Title:** *The Petersburg of Crime and Punishment*  
**Category:** Humanities  
**Submission:** group  
**Format:** Artistic Entry  
**Location:** Exhibit #CC15  
**Description:** Our website is devoted to giving a visual tour of St. Petersburg, Russia, as it relates to Dostoyevsky's novel, Crime and Punishment. Along with giving a map tracing Raskolnikov's movements throughout the city, we have detailed the historical and literary significance of each of the important city landmarks that Raskolnikov visits throughout the novel.



**Name:** Ina Murdock-Santos, Annie Babcock, John Reifler, Kelle Leber, Ryan Gahagan  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Public Relations at Annenberg  
**Faculty Sponsor:** Prof. Zuckerman  
**Title:** *The Mosaic Restoration Project*  
**Category:** Humanities  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #CC2  
**Description:** For 25 years USC has had a skeleton in its closet. A donor gave a priceless mosaic that was once displayed in a Roman villa. Our group has documented the restoration of this 2nd century mosaic. The project records in a journalistic style the

restoration process of the mosaic and illustrates the importance of art of this kind in the ancient world. We have consulted different experts on art, archaeology, mythology, and geology. Our goal was to discover the methods used to restore an ancient relic of this kind and to provide a well documented site explaining such procedures to the public.



**Name:** Patrick Pascal  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** History  
**Faculty Sponsor:** Pierre Koenig & John Wills  
**Title:** *Kesling Modern Structures*  
**Category:** Humanities  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #53  
**Description:** This project will look at the life and work of William Kesling, a modernist active in Los Angeles between the wars. In many ways his career personified the boom-bust cycle, the creativity and the corruption of the era. The project combines original interviews with family and associates, court records, media coverage, contemporary images by the famed photographer Julius Shulman and a complete survey of his work to convey his importance to Los Angeles' development and explain why his work has been overlooked for so long.



**Name:** Camille Perkins  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Art History  
**Faculty Sponsor:** Dr. Marcus Levitt  
**Title:** *Magical Images - The Ritual Importance of the Semeiskie Icon and its Applicability to Art Historical Methodology*  
**Category:** Humanities  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #57

**Description:** Historically, the Semeiskie are members of the Old Believers, a group that rejected liturgical changes to the Russian Orthodox Church. The Old Believers were declared heretical at the Church Council of 1666-67, and consequently were alienated from mainstream Russian society. After forcible colonization of the Siberian Trans-Baikal in the eighteenth century and forced Sovietization in the twentieth, many of the Semeiskie's cultural and religious connections to Old Believer traditions have been weakened or lost. At the same time, elements of a pre-Schism folk belief system have survived. Among these elements is a belief in the supernatural powers of icons. Through interviews and photographs gathered on a joint USC / Russian Institute of Culture expedition during Summer 2000, my project records the role of the domestic icon in contemporary Semeiskie beliefs and practices. The second goal of the work is to borrow from anthropological analyses to develop one possible explanation of the Semeiskie belief in the supernatural powers of icons. This argument is elucidated through similarities to the cult of the icon that developed in sixth and seventh century Byzantium. In both cases, my research finds that the religious representation is not necessarily reflected in the use of the ritual object. Instead the object is fetishized, gaining a cultic significance. Lastly, I attempt to place the icons and their ritual uses into the theoretical discourse surrounding the methodology of a synthetic art history. I use my research to test the argument presented by Thomas Crow's *Intelligence of Art*, a work that integrates theories from the preeminent scholars Meyer Schapiro, Claude Levi-Strauss and Michael Baxandall.



**Name:** John Prichard  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Linguistics and Psychology  
**Faculty Sponsor:** Amy Richlin  
**Title:** *To Be a Gladiator*

**Category:** Humanities

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #52

**Description:** The popular and critical success of the film *Gladiator* has created new interest in classical studies and the Roman world. This creates a unique situation where ways of involving students in classical studies can go a long way towards promoting awareness of history, language, and other classically-related fields. The project includes research about historical gladiators, and how the authentic experience can be recreated in a fun and safe way so that students can have a project that is exciting as it is informative. Project includes mock fighting implements, live performance, and manuscript/outline of a book in progress. The book will be a how-to handbook which will let the reader develop their own equipment, as well as learn about the historical background of the event itself. It includes suggestions for further reading, web links, and other useful information to spark interest in the classics.

**Name:** Marissa Schleicher

**Academic Unit:** Letters, Arts & Sciences

**Department:** Art History

**Faculty Sponsor:** Lynn Swartz-Dodd

**Title:** *Ancient Andean Textiles - Decorative Paint Exposed*

**Category:** Humanities

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #54

**Description:** The importance of textile research in Andean Archeology has traditionally been limited to that of form and structure. However, in the past decade, researchers began to analyze and collect data on the colors used on Andean garments, focusing on dyes and the dyeing process. The problem with this line of study is the lack of any attention paid to the many painted textiles that existed in this region's varying cultures. Therefore, I recently

conducted research at the Getty Conservation Institute's Museum Research Laboratory (GCI), under the supervision of Ran Boytner, to discover what kinds of paint was used. The samples of painted textiles analyzed were collected from various museum and excavation collections during the year 2000 field season. They represent textiles from a range of Andean cultures, but all employing painting techniques to color their textiles. The samples went through numerous testing procedures, most importantly that of X-ray fluorescence (XRF) (employing the Kevex omicron), and Polarized Light Microscopy (PLM).



**Name:** Erin Szymanski, Julie Herdeg, Sandra Milicev

**Academic Unit:** Annenberg School for Communication

**Department:** Journalism

**Faculty Sponsor:** Karen Lang

**Title:** *Understanding Media through Vincent van Gogh*

**Category:** Humanities

**Submission:** group

**Format:** Artistic Entry

**Location:** Exhibit #CC11

**Description:** Using five categories to understand media through Vincent van Gogh, our web site explains the misconceptions that media may impose upon human perception of a mythical figure. "Vicnet in Cinema," "Media Interviews," "McLuhan & Berger," "Ear Myths," and "Links" are the five divisions that we felt were the essential elements in providing the internet user with a comprehensive view of understanding media. Vincent van Gogh's reflection in the media is not the true reflection of who van Gogh really was. In fact, no one will ever precisely know who this highly talented painter was. We can only encourage our users to open their eyes and to see things more clearly as they are, not as they have been labeled by the media.

## LIFE SCIENCES

**Name:** Suchitra Ananthnarayan  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Biological Sciences/Chemistry  
**Faculty Sponsor:** Professor Richard N. Bergman

**Title:** *Effects of Moderate Fat Diet on Gluconeogenic Enzyme Gene Expression*

**Category:** Life Sciences

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #16

**Description:** In a previous study, we have shown time dependent effects of moderate fat (MFAT) (2g/kg/day) feeding during 12 weeks in dogs. These dogs did not exhibit any significant body weight gain. However, MFAT increased central adiposity by 50% and reduced insulin sensitivity by 35%. Additionally, MFAT dogs exhibited an increase in insulin secretion as well as decreased insulin clearance. Another study, using the same protocol for moderate fat feeding, showed that endogenous glucose production (EGP) was less suppressed by insulin compared to control dogs. To elucidate the mechanism of hepatic glucose production (HGP) in fat-fed dogs vs. control dogs, we studied the expression of two genes involved in gluconeogenesis, phosphoenolpyruvate carboxykinase (PEPCK) and glucose-6-phosphatase (G6Pase), by Northern Blot analysis. G6Pase mRNA increased by 56% ( $p < 0.05$ ,  $n=4$ ) and PEPCK mRNA increased by 48%

( $p < 0.05$ ,  $n=4$ ) in MFAT dogs compared to control dogs. These results demonstrate an increase in the major enzymes of gluconeogenesis in insulin resistant MFAT dogs. The role of free fatty acids and possible signaling molecules secreted by adipose tissue in insulin's regulation of PEPCK and G6Pase gene expression needs to be considered.



**Name:** Anna Bagdasaryan  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Psychobiology  
**Faculty Sponsor:** Dr. John Walsh  
**Title:** *Molecular Dynamic Simulations of the Human Prion Protein*  
**Category:** Life Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #11

**Description:** Prion diseases are a novel class of fatal neurodegenerative diseases. Creutzfeldt-Jakob disease (CJD), kuru and Bovine Spongiform Encephalopathy (a.k.a. Mad Cow Disease) are just a few examples of the disorders caused by prions. Sporadic, infectious and genetic cases have been documented to occur. These diseases differ from other infectious diseases in that the pathogen seems to be a proteinaceous

particle devoid of any nucleic acid. The pathogenic event of these disorders has been shown to be a conformational change from the normal cellular form (PrP<sup>c</sup>) to an infectious isoform known as the Scrapie PrP (PrP<sup>sc</sup>). Studies by Circular Dichroism (CD) spectroscopy and Fourier Transform Infrared (FTIR) have revealed that the difference between the two lies at the secondary and tertiary levels of folding, with PrP<sup>sc</sup> having a substantially higher beta-sheet content. For this experiment, Molecular Dynamics (MD) simulations were used to investigate the effects of pH on the conformation of two fragments of the human prion protein. A segment involving residues 125-228, containing three alpha helices and an anti-parallel beta sheet and another segment from residues 90-231, including also the N-terminus tail, were used. By manipulating the pH, we were able to monitor the folding behavior changes of the protein at an atomic level on a pico-second to multinano-second timescale. The results indicate that the Low pH simulations experienced the most change in structure with the two simulations showing a noticeable divergence in behavior for C $\alpha$  RMSD, accessible surface area and hydrophobic contacts. The highly disordered N-terminus "tail" also seems to play a major role in folding. In the High pH simulations of the prion protein fragment containing the N-terminus "tail," a high degree of C $\alpha$  RMSD was observed. In the presence of "tail," Helix 1 (144-154) displayed a very dynamic nature by rotating to an orientation more perpendicular to Helix 2(173-194) and Helix3 (200-228) . In the Low pH PrP 90-231 simulation, as the N-terminus "tail" moved towards the protein core and tried to fold unto the beta-sheet, Helix1 this time, chose a position semi-parallel to Helix 2 and Helix 3. These conformational changes observed in our simulations may provide insight into the early stages of the conversion of the PrP<sup>c</sup> to PrP<sup>sc</sup>.



**Name:** Steve Hom

**Academic Unit:** Letters, Arts & Sciences

**Department:** Psychobiology

**Faculty Sponsor:** Dr. William O. McClure

**Title:** *Effects of Prenatal Stress and Puberty on Ventral Pallidum Cells in the Rat Model for Schizophrenia*

**Category:** Life Sciences

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #19

**Description:** We have previously shown that mild stress applied to pregnant rats causes anatomical changes in the brains of the resulting pups. The amount of change seen depends on the age of the pup when examined. Pups that had not yet undergone puberty did not show as great an effect as older pups. These results suggested that puberty might have a role in the effects of prenatal stress. To test this effect, female rats were gonadectomized before puberty. To control for the effects of the surgery, both unoperated and sham operated animals were used. Pups from mothers that were not stressed were also examined to determine the effects of the prenatal stress treatment. The areas of cells in the ventral pallidum of the brain were measured to look for neuroanatomical changes. The results showed that animals that had undergone prenatal stress and still had their ovaries had larger cells, while those animals that had undergone prenatal stress and had had their ovaries removed had significantly smaller cells compared to unhandled control animals. Sham operated animals did not differ from unoperated animals. It is possible that a hormone released by the ovaries interacts with cells in the brain that are affected by prenatal stress, causing cells to grow or shrink. These effects imply that human schizophrenia may result from a combination of prenatal stress and puberty. This could explain why schizophrenia, a disease probably caused by a challenge prior to birth, is displayed after puberty.



**Name:** Namath Hussain  
**Academic Unit:** School of Engineering  
**Department:** BME  
**Faculty Sponsor:** Dr. Mary Kearns  
**Title:** *Site-Directed Mutation in the CDR1 Region of scFv Antibodies to alpha(1,3) Gal*  
**Category:** Life Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #15  
**Description:** The use of pigs as organ donors for human transplantation has the potential to alleviate the shortage of organs available from allogenic donors. Human preformed and induced antibody responses to pig xenografts, however, present a major barrier to the successful use of pigs for human transplantation. We have recently established that xenoantibody responses in humans are encoded by two IgVH genes, IGHV3-11 and IGHV3-74. The identity of these clones, and variation in the structure of IgVH genes encoding xenoantibodies was established by DNA sequencing. We have recently cloned both somatically-mutated and germline IGHV3-11 genes from patients at days 10 and 21 post-BAL into a phagemid vector (pHEN2) using an overlap extension PCR technique. Single chain antibodies encoded by the IGHV3-11 genes that exhibit evidence of somatic mutation were used to block intracellular and surface expression of the a-gal epitope expressed on pig endothelial cells. These experiments were designed to determine whether somatically-mutated antibodies, encoded by clones expressed by patients at day 21 demonstrate an improved affinity for the a-gal epitope, and whether an improved ability to inhibit the binding and cytotoxicity of human natural antibodies could be demonstrated in single chain antibodies encoded by somatically-mutated clones.



**Name:** Mide Macaulay  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Psychology

**Faculty Sponsor:** Dr. Joann Farver  
**Title:** *Cerebral Interpositus Nucleus Lesions Impairs the Memory of Remotely Acquired Delay Eyeblick Condition*  
**Category:** Life Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #18  
**Description:** New Zealand male rabbits (*Oryctolagus cuniculus*) are trained on a delay eyeblink conditioning paradigm using a 350 ms tone conditioned stimulus, a 100 ms airpuff unconditioned stimulus, and a 250 ms delay interval. Rabbits then receive cerebral interpositus lesions using electrical shock treatment 1 month after learning. Controls consist of time-matched sham-operated rabbits. After the lesions, the rabbits are retested to see the effects of the cerebral interpositus on remote acquired memory. The lesions should significantly impair the retention of trace conditioned responses, whereas the control will show no impairment. Thus, the cerebral anterior interpositus nucleus can be considered as being necessary for the retention of both recently and remotely acquired delay conditioned responses.



**Name:** Hovanes Margarian  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Biological Sciences  
**Faculty Sponsor:** Donald Kohn, M.D.  
**Title:** *Analyzing The Potential Of The HIV-1 And FIV Based Vectors For Clinical Gene Therapy*  
**Category:** Life Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #12  
**Description:** Gene therapy using human hematopoietic stem cells (HSC) has great therapeutic potential for treating inherited and acquired diseases of the hematopoietic and immune system. Advances in gene therapy have been hindered by the inability to achieve adequate levels of long-term HSC transduction. This study compares the

effectiveness of the Human and Feline Immunodeficiency Virus based vectors (HIV-1, FIV) by measuring the percent integration and expression of a reporter gene, enhanced green fluorescence protein (eGFP), after transduction. Exposing Human umbilical cord blood cells (CD34+/CD38-) to both the HIV-1 and FIV vectors demonstrates which vector has the greatest potential for being used in clinical trials. Overall results confirmed that the HIV-1 based vector is a more efficient mechanism for transducing HSC, indicated by ten-fold higher gene expression as compared to the FIV vector. A new protocol was devised using Taq-Man Real-Time PCR to analyze gene integration into HSC by more sensitive means than traditional PCR. Although at this time the gene integration data is inconclusive, and several different approaches are being applied to elucidate the results, the HIV-1 based vector clearly has the potential for being adopted as an important gene transfer system in gene therapy.

**Name:** Hoang-Oanh Nguyen  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Biochemistry  
**Faculty Sponsor:** Joseph R. Landolph  
**Title:** *Molecular Diagnosis of Neurofibromatosis Type 2*  
**Category:** Life Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #24  
**Description:** Neurofibromatosis type 2 (NF2) is a genetic disorder characterized by the development of nervous system tumors. It is especially important to detect NF2 early because early diagnoses can offer patients a wide range of effective treatment options. Present diagnoses, however, are very costly and time consuming. Previous studies have indicated that most the mutations on the NF2 gene cause the gene not to be express, which means that the expression levels of the two alleles are unequal. This observation implies that unequal allelic

expression can be used as a tool for molecular diagnosis of NF2. This study focuses on optimizing a molecular assay that quantifies the unequal allelic expression of NF2. We mix the two alleles at different ratios to test the levels of sensitivity of the automatic sequencer. We perform delayed extraction of total cellular RNA from patients'; blood to compare the stability of the mutant allele to that of the normal one. We also stop polymerase chain reaction (PCR) at various cycles to stimulate the condition of decreasing allelic signals. The study shows that the automatic sequencer gives more accurate readings when the concentration of the alleles decreases. Therefore, the assay becomes more sensitive if the samples are diluted before they are subjected to the automatic sequencer.



**Name:** Tiffany Pineda  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Psychobiology (Neuroscience)  
**Faculty Sponsor:** Dr. Lou Byerly  
**Title:** *Control of Calcium Current by Altering Intracellular Calcium Concentration*  
**Category:** Life Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #20  
**Description:** Intracellular calcium has been shown to have great physiological effects in most eukaryotic cells as, for example, second messengers and regulators of neurotransmitter release. In this study, the effects of varying intracellular Ca<sup>2+</sup> concentration on Ca<sup>2+</sup> channel function was studied and analyzed to further understand the importance of free intracellular Ca<sup>2+</sup>. Neurons of the snail *Lymnaea stagnalis* were used in this study. The isolated inside-out patch clamp method was used to expose the intracellular membrane to solutions of varying Ca<sup>2+</sup> concentration, and the effects were observed. Ca<sup>2+</sup> concentration was buffered to specific concentrations by using buffers of varying Ca<sup>2+</sup> affinity. We found that 0.4μM Ca<sup>2+</sup> had no effect on Ca<sup>2+</sup>

channels, 1000 $\mu$ M Ca<sup>2+</sup> caused complete, irreversible block of the Ca<sup>2+</sup> channels, and intermediate concentrations produced partial, reversible Ca<sup>2+</sup> current block. We noticed a simple, one-to-one binding relationship between pCa and block of Ca<sup>2+</sup> channels, and determined the dissociation constant of the Ca<sup>2+</sup> channels, K, to be 10.0 $\mu$ M. There is disparity between the results of this study and those of whole cell studies. Whole cells show greater sensitivity to Ca<sup>2+</sup> concentration—1 $\mu$ M Ca<sup>2+</sup> causes almost complete channel block. Thus, our study shows that some component of the high-affinity mechanism by which voltage-gated Ca<sup>2+</sup> channels are regulated is lost when the giant patch is isolated.



**Name:** Pradeep Prasad  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Biology  
**Faculty Sponsor:** Dr. Lou Byerly  
**Title:** *Electrophysiological Studies of Rodent Neurons*  
**Category:** Life Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #21  
**Description:** The patch-clamping technique provides an important and powerful method to study the electrical properties of neurons. However, before any analysis can be done, neurons must first be isolated such that they are free from the glial investments that hamper the study of neuronal electrophysiological properties. Thus far a wide range of methods are used for the isolation of neurons, particularly mammalian neurons, without any clear evidence for the importance or efficiency of particular steps in the isolation process. In this study we describe a fast, simple and reliable method for isolating mammalian neurons from defined regions of the brain, preserving morphology and electrophysiological function. This process of isolation is key to the study of neurons representative of the brain, requiring study

within hours of isolation but avoiding the problems of process growth and de-differentiation of neurons grown in culture. Furthermore, this study makes use of brain slices from rodents sacrificed in another lab for the purpose of identifying ways in which such biophysical analysis can be performed successfully and efficiently with minimal sacrifice of rodent life. This study is the first important step in a much broader exploration of Ca<sup>2+</sup>-dependent inactivation of Ca<sup>2+</sup> channels in mammalian neurons. Ca<sup>2+</sup> serves as one of the most important and ubiquitous secondary messengers in living systems, particularly in the function of neurons. For example, Ca<sup>2+</sup> ions control the mobilization, docking and fusion of the synaptic vesicle at chemical synapse. Particularly important is the role of Ca<sup>2+</sup> in the inactivation of Ca<sup>2+</sup> channels. Due to the toxicity of high levels of Ca<sup>2+</sup> in the cell, Ca<sup>2+</sup> serves a vital role in the negative feedback inhibition of Ca<sup>2+</sup> channels. This process is thought to be mediated both by voltage dependent inactivation and Ca<sup>2+</sup>-dependent inactivation. Many studies of Ca<sup>2+</sup>-dependent inactivation of Ca<sup>2+</sup> channels have been performed on invertebrate neurons, whereas few studies have been done on vertebrate, and more specifically, mammalian neurons. Such studies are significantly hindered by the relatively unstable and fragile state of isolated neurons. This study, therefore, provides a method by which neurons can be easily isolated and maintained for a suitable period of time for electrophysiological study.



**Name:** Rahul Shah  
**Academic Unit:** School of Engineering  
**Department:** Biomedical Engineering  
**Faculty Sponsor:** Dr. Daryl L. Davies  
**Title:** *Investigating Allosteric Coupling Pathways of the GABAA Receptor Using Hyperbaric Conditions*  
**Category:** Life Sciences  
**Submission:** individual

**Format:** Poster

**Location:** Exhibit #17

**Description:** Gamma-aminobutyric acid type-A (GABAA) receptors are allosterically modulated by a number of classes of compounds that bind at distinct but interacting sites on the receptor complex. These compounds include benzodiazepines, barbiturates, and neuroactive steroids. Allosteric modulation is comprised of two elements 1.) high-affinity binding of a modulator to its recognition site and 2.) transduction of the signal to the GABA recognition site. The coupling of the modulatory binding site to the GABA recognition site is poorly understood. Our lab uses 12 times normal atmospheric pressure of helium-oxygen gas as a novel tool to investigate this coupling process. Previous hyperbaric behavioral and biochemical studies suggest that allosteric coupling initiated by benzodiazepines, barbiturates, and neuroactive steroids can be sub-categorized by their sensitivities to antagonism by increased atmospheric pressure. The current study utilizes high-affinity equilibrium and non-equilibrium binding techniques to further investigate the nature of pressure's effect on coupling. The binding techniques involve the use of the radio-ligand [3H]-flunitrazepam as well as mice brain membranes (P2) which were extracted from C57BL mice. Pentobarbital modulation of [3H]-flunitrazepam binding (allosteric binding techniques) was antagonized by exposure to 12 ATA heliox. On the other hand, pressure did not affect benzodiazepine receptor affinity (Kd) or the number of benzodiazepine receptors (Bmax). These results suggest that pressure' can be used to investigate coupling in the GABAA receptor complex.



**Name:** Kimberly Shapiro, Phuc "Sam"

Nguyen, Kara Springer, J. Douglas Miles

**Academic Unit:** Letters, Arts & Sciences

**Department:** Biological Sciences

**Faculty Sponsor:** Dr. William O. McClure

**Title:** *Effects of Acepromazine on Electrically Stimulated Motion of Rat Ankle - An Interdisciplinary Study*

**Category:** Life Sciences

**Submission:** group

**Format:** Poster

**Location:** Exhibit #25

**Description:** The possibility exists that direct electrical stimulation of muscles of paraplegic patients can be used to drive locomotion. In this context, it is important to evaluate the effects of drugs on the functioning of the central nervous system. Of particular significance are tranquilizers and narcotics, drugs commonly employed by paraplegic patients. Using a model previously developed for quantitatively measuring motion of electrically stimulated rat limbs, the spinal cords of female Sprague-Dawley rats are severed and certain muscles of the hind limbs are implanted with chronic unipolar epimysial electrodes, allowing electrical stimulation of those muscles. In the current study, the tibialis anterior and soleus, two antagonistic ankle joint muscles, were examined. The resulting motion of the joint is videotaped and quantified using motion capture software developed for this project. Control trials run in the absence of drugs are compared to experimental trials run after injections of varying dosages of Acepromazine, a commonly used depressant. We examined the effects of the drug on motion of the rat ankle over time and muscle sensitivity to stimulation, measured by the change in the angle of deflection and the amplitude where motion is first detected, respectively. The results indicate a very small effect of a dose of 2-4 mg/Kg of intramuscularly administered Acepromazine on the extent of movement. The threshold for stimulation of movement increased by about 5%, indicating that animals treated with this drug are slightly less sensitive to stimulation. The effect of the drug does not vary dramatically over a 30 minute time period after injection.



**Name:** Thuzar Shin  
**Academic Unit:** School of Gerontology  
**Department:** Gerontology  
**Faculty Sponsor:** Christian J. Pike, Ph.D.  
**Title:** *Androgen depletion increases susceptibility to kainate-induced neuronal injury in male rats*

**Category:** Life Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #22

**Description:** Alzheimer's disease (AD) is an age-related neurodegenerative disorder characterized by b-amyloid (Ab) plaques, neurofibrillary tangles, neuronal loss and cognitive decline. There is currently no cure for AD. One target for therapy currently being pursued is the replacement of gonadal sex steroid hormones, which exhibit significant age-related declines in both men and women. Of increasing interest is the robust reduction in circulating testosterone levels in aged men. Since testosterone exerts positive influences in both the developing and adult brain, diminishing androgen levels may have negative consequences and may render the brain more vulnerable to insults and AD. However, it is currently unknown how the age-related decline in testosterone affects neuronal viability. The purpose of our study is to elucidate the role of testosterone in neuroprotection. We will use an in vivo model to investigate our hypothesis that androgen depletion through castration will increase susceptibility to neuronal injury. Additionally, we predict that restoring androgen levels will have a protective effect and therefore reverse the deleterious effects of castration. Preliminary data suggest that castration of adult male rats results in differential vulnerability to kainic acid lesions. Analysis of the hippocampus shows that depletion of androgen levels increases kainate-induced neuronal death, particularly in the CA3 and CA4 regions. Neuronal viability is improved by exogenous replacement of either testosterone or dihydrotestosterone. Our findings may provide novel evidence for testosterone neuroprotection and may be important in

developing new interventional strategies, such as testosterone replacement therapy, against AD and other age-related neurodegenerative diseases.



**Name:** Maria Ver  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Kinesiology  
**Faculty Sponsor:** Dr. Lorraine Turcotte  
**Title:** *Muscle perfusion with dichloroacetate yields higher malonyl-CoA levels & lower fatty acid oxidation*  
**Category:** Life Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #13

**Description:** The reverse cycle states that glucose oxidation inhibits free fatty acid (FA) oxidation via an increase in malonyl-CoA levels. This study investigates the primacy of the reverse cycle by exploring the role of glycolytic flux in the regulation of malonyl-CoA production. As an activator of pyruvate dehydrogenase (PDH), the mitochondrial enzyme that converts pyruvate into acetyl-CoA, dichloroacetic acid (DCA) is associated with an increase in glycolytic flux and acetyl-CoA levels without having to vary glucose availability. Because acetyl-CoA is then converted to malonyl-CoA, a potent inhibitor of carnitine palmitoyl transferase I (CPT I), fatty acid oxidation should be decreased in the presence of DCA. Thus, the purpose of this study was to determine the effects of an increase in glycolytic flux on FA metabolism by perfusing rat hindquarters with 500mM palmitate, [1-14C]palmitate, 6mM glucose, 10mU/mL insulin and with DCA (DCA group = DCA) or without DCA (control group = C). Our results show that glucose uptake and palmitate concentration and delivery were not significantly different between the groups. Also, fractional and total rates of palmitate uptake were not significantly different between the groups. As expected, glycolytic flux was increased and lactate release was decreased in the

DCA group versus the C group. Furthermore, post-malonyl-CoA levels were higher in the DCA than the C group. However, contrary to the expectations, palmitate oxidation rates were not significantly different between the groups. These results provide evidence against the primacy of the proposed malonyl-CoA dependent mechanism in the regulation of substrate oxidation in muscle.



**Name:** Suzanne Welcome  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Biological Sciences  
**Faculty Sponsor:** W. O. McClure  
**Title:** *Prenatal Stress of Rats Alters Laterality - Relation to Schizophrenic Lateralization*  
**Category:** Life Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #23  
**Description:** Prenatal stress causes both behavioral and neuroanatomical changes in the resulting adults. We have previously shown that stress applied to rats during gestation causes neuroanatomical changes that mimic those seen in human schizophrenics. We now report that prenatally-stressed animals also exhibit behavioral changes, and that these behaviors are modified when the animals are tested under conditions of mild anxiety. We find that both locomotion and rearing in the open field are affected by the presence of other rats in the testing room. Furthermore, in the absence of other animals rearing of the prenatally treated animals became lateralized - these animals preferentially used one paw or the other to support themselves at the wall. Locomotion was also significantly increased by the absence of conspecifics. Neither effect was seen with control, non-stressed, animals. Testing animals with only one cage in the testing area while a tape of the noise of conspecifics was played completely inhibited both lateralization of the treated animals. To test the hypothesis that anxiety was involved in

these effects, animals were tested for laterality in the presence of conspecifics using a step-down paradigm. Treated animals were not lateralized in control situations, but were lateralized after exposure to either shaking or repeated intense auditory pulses. Control animals were never lateralized. The increased laterality seen in prenatally stressed animals is highly reminiscent of the increased sinistrality reported in schizophrenics. It is possible that these prenatally stressed animals will provide a useful model system for schizophrenia.



**Name:** Judith Wong  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Chemistry and Music  
**Faculty Sponsor:** Dr. Lawrence Singer  
**Title:** *NCS-Induced Apoptosis in Neuroblastoma Cells Partially Prevented Using Agonist of NGF*  
**Category:** Life Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #14  
**Description:** Neuroblastoma is the most common childhood tumor. Despite chemotherapy and bone marrow transplantation, the survival rate remains 5-15%. Approaches to new therapies have included studies of the ability of two surface receptors that bind nerve growth factor (NGF) to protect against apoptosis during administration of the antimitotic agent neocarzinostatin (NCS). Our study was performed to determine how the ratio between these two receptors affects protection from apoptosis during NCS treatment. Human neuroblastoma cells transfected with TrkA (TrkA cells), the high affinity receptor, or an empty transfect (ET cells) were cultured and treated with 5C3, an NGF agonist at the TrkA receptor. The cells were then treated with NCS. Cell response to NCS was dose-dependent. The presence of 5C3 partially diminished the apoptosis-inducing effects of the drug in TrkA cells.

ET cells also benefited from the presence of 5C3, though protection was not as significant as in TrkA cells, which have a greater abundance of the TrkA receptor. TrkA cells thus bind more 5C3 and are more able to benefit from its protective effects, as proven by the increased viability in TrkA cells when exposed to 5C3 in conjunction with NCS. It can therefore be inferred that

the protective effects of NGF occur via the TrkA receptor. This study serves to further the knowledge of specific surface receptors' roles in NGF-mediated protection against NCS-induced apoptosis in these cells. In the future, these roles and their effects on the cell may be exploited in the development of novel chemotherapeutic strategies for neuroblastoma.

## PHYSICAL SCIENCES, MATH, & ENGINEERING

**Name:** Omar Asensio  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Chemistry  
**Faculty Sponsor:** Bruce E. Koel  
**Title:** *Which End is Up? "Heads or Tails" on Self-Assembled Monolayers*  
**Category:** Physical Sciences, Math, & Engineering  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #41  
**Description:** Self Assembled Monolayers (SAMs) are ordered 2D arrays of molecules which spontaneously form by chemical reaction on the surfaces of many different types of materials. They are the building blocks of nanoscale devices, sensors, and model surfaces of polymers. One type of SAM is formed by attaching a sulfur atom at the end of a long organic chain to the surface of a metal such as gold. If X-ray Photoelectron Spectroscopy is used to chemically profile the near-surface region of the SAM, we can easily verify that the sulfur atom at the end of our molecule is strongly bound to the gold atoms on the surface and is not just randomly oriented. All of the molecules are stuck (chemisorbed) to the surface, pointing in the same direction. In the case of SAMs grown on silicon, however, the analysis is not so straightforward and it is complicated by the presence of overlapping signals from the silicon substrate and sulfur atoms. In an important application, we deposit very small gold balls (2-10 nm), binding gold to sulfur on the tail end of the SAM. Our goal is to verify if the gold balls are chemically bound to the surface, through an interaction with the sulfur atoms of the SAM. It is a game of chemical darts, if we can detect the presence of a gold-sulfur bond, then we know the opposite organic end of the SAM is anchored to the silicon substrate, forming stacked pillars - the basic building blocks of a nanostructure. In this work, I develop spectral deconvolution techniques to

separate overlapping silicon and sulfur signals, allowing conclusions regarding the presence of gold-sulfur chemical bonds to be made. Acknowledgements. Without whom nothing would proceed, I thank Drs. M. Quinlan and B. Koel



**Name:** Matt Behrend  
**Academic Unit:** Engineering  
**Department:** Electrical Engineering  
**Faculty Sponsor:** Gerd Bergmann  
**Title:** *Investigation and Design of High Voltage Coupled Resonators*  
**Category:** Physical Sciences, Math, & Engineering  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #CC16  
**Description:** I have explored the nature and design of high voltage loosely coupled resonant circuits with a theory-based approach for the purpose of understanding high voltage generation and discharge phenomena. This work centers on my design and construction of a 3kW Tesla coil and subsequent analysis of its operation. A large portion of my work is in mathematical modeling of the system, solving with numerical techniques. In addition to a study of theory, I have explored issues of efficiency and optimization of component and system design. Most advancements have been in measurement methods, power switching, and excitation control. Detailed documentation is provided through my web site, which is specifically designed to be both a presentation of my work and an instructional tool for education in the practices of Tesla coils and high voltage electronics.



**Name:** Lindsey Bruesch  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Physics & Astronomy  
**Faculty Sponsor:** Prof. Werner Däppen

**Title:** *Laboratory Investigations of Europa's Sodium Atmosphere*

**Category:** Physical Sciences, Math, & Engineering

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #42

**Description:** Observations have shown that the atmosphere of Jupiter's ice moon Europa contains atomic sodium (Brown and Hill, 1996). The origin of this Na is still under investigation. There are two possible sources - (1) exogenic - implantation on Europa's surface from Io, another of Jupiter's moons, or (2) endogenic - originating from Europa's surface and subsurface ice, indicating a saline H<sub>2</sub>O-ice rather than pure H<sub>2</sub>O-ice surface. Recent theoretical work has shown that the desorption rate of Na from Europa's surface is larger than the rate of implantation of Na from Io (Johnson, 2000); therefore suggesting that the main Na source is endogenic. Yakshinskiy and Madey (1999) published results on their experimental work, demonstrating that endogenic Na can desorb from a surface exposed to UV irradiation. However, these authors did not directly apply this model to Europa. In a set of experiments, I simulate Europa's surface, using H<sub>2</sub>O-ice doped with Na<sub>2</sub>CO<sub>3</sub> (McCord, 1998). This simulant is exposed to Europa-like conditions in a high vacuum, cryogenic chamber and then irradiated with a UV light source. I use a quadrupole mass spectrometer to study the resulting atmosphere. Early results demonstrate the flux of UV-excited Na from the simulated surface is consistent with the endogenic desorption rate of  $1.2-3.8 \times 10^6$  atoms cm<sup>-2</sup> s<sup>-1</sup>, calculated theoretically by Johnson (2000).



**Name:** Linda Carpenter

**Academic Unit:** Letters, Arts & Sciences

**Department:** Physics

**Faculty Sponsor:** Dr. Nicholas Warner

**Title:** *Calculation of Quark Antiquark Potential Using String Theory in Schwarzschild-AntideSitter Spacetime*

**Category:** Physical Sciences, Math, & Engineering

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #47

**Description:** This project is a study of the static quark anti-quark potential using string theory. The quarks and anti-quarks are represented as the ends of a string hanging from a 3-brane, a (3+1) dimensional section of a ten dimensional space-time, into the gravity well of a black hole. The potential, which is equivalent to the string action, is calculated as a function of temperature and quark separation on the brane.



**Name:** Margaret Caslavka

**Academic Unit:** Letters, Arts & Sciences

**Department:** Earth Sciences

**Faculty Sponsor:** Doug Hammond

**Title:** *Linkages Between Global Climate and Composition of Cariaco Basin Sediments*

**Category:** Physical Sciences, Math, & Engineering

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #45

**Description:** The sediment in the Cariaco Basin, a closed basin in the Caribbean Sea just north of Venezuela, provides a record of past environments that may be useful for predicting future global changes. Measurements of organic carbon (TOC), carbonate, and nitrogen provide evidence about past changes in the source of nutrients and biological production, in response to local and global effects. For example, the chemistry of deep basin waters depends on the composition of oceanic waters near the basin sill depth, modified by the decomposition of biogenic debris raining into the basin from the overlying water. Glacial/interglacial cycles are characterized by oscillations in sea level. At low sea level (a glacial period) the source waters are low in nutrients and high in oxygen, whereas at high sea level (an interglacial period) the source waters are high in nutrients and low in oxygen. With less influx nutrients from the open ocean source waters, the basin is

less productive during glacial times. Analysis of sediment samples deposited 16-10 ky (bp) indicates that the onset of rapid sea level rise at 14.8 ky caused a decrease in sediment accumulation rate and a change in composition. Under oxic, glacial conditions the basin shifted from low TOC and low carbonate sediments to high TOC and low carbonate sediments under anoxic, interglacial conditions. The carbon to nitrogen ratio is higher than expected for marine plankton. The high ratio may be due either to input of terrigenous sediment, preferential loss of nitrogen during diagenesis, or denitrification.



**Name:** Dimitris Constantinou  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Biology  
**Faculty Sponsor:** Dr. Christodoulou, Dr. Byerly  
**Title:** *Reopro VS Aggrastat as a Platelet Aggregation Inhibitor in Acute Coronary Syndromes*  
**Category:** Physical Sciences, Math, & Engineering  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #46  
**Description:** Cardiovascular diseases, including acute myocardial infarctions (M.I.), remain the leading cause of death among both men and women in the USA. Activation and aggregation of platelets is central to the pathophysiology of such diseases. Using the Accumetrics Platelet Aggregometer, I studied whether inhibition of the final common pathway for platelet aggregation using Reopro (abciximab) or Aggrastat (tirofiban), both nonpeptide glycoprotein IIb/IIIa receptor antagonists, would improve clinical outcome under such cardiac conditions. All patients undergoing cardiac catheterization for an acute coronary syndrome in which we anticipated using any medication that would influence platelet aggregability were included in the study. A total of 18 patients received Reopro (n=18) and 13 patients received Aggrastat (n=13). Administration of Reopro produced

immediate and sustained high-grade IIb/IIIa receptor blockade and inhibition of platelet functioning (85-95%). The administration of Aggrastat resulted in a slightly reduced inhibition range (70-80%). Older patients displayed slightly higher levels of inhibition with both drugs relative to younger patients. Both Reopro and Aggrastat were generally well tolerated.



**Name:** Simon Gabriel  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Psychobiology  
**Faculty Sponsor:** Dr. Philip Stephens  
**Title:** *Solvent Effects on the Optical Rotations of Chiral Molecules*  
**Category:** Physical Sciences, Math, & Engineering  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #40  
**Description:** Chiral molecules form an important class, including both natural products and synthetic pharmaceuticals (drugs). Chiral molecules exhibit optical activity - i.e. they rotate the plane of polarized light. Until recently it has been difficult to extract structural information from optical rotation. In particular, the determination of Absolute Configuration (AC) has not been practicable. Recently, a new methodology has been developed which promises to greatly enhance the usefulness of optical rotation in characterizing the stereochemistry of chiral molecules. It involves the quantum mechanical calculation of optical rotation using the recently developed methodology known as Density Functional Theory (DFT). Optical rotation is measured in solution and is solvent-dependent. An important aspect of predicting optical rotation is therefore to account reliably for solvent effects. To do this, the Polarized Continuum Model (PCM), which treats solvent effects using classical electrostatics, has been used. In order to test this approach, we have measured the solvent dependence of the optical rotations of six chiral molecules with solvents varying from non-polar to highly

polar. Our results have been compared to the predictions of DFT/PCM calculations. For the highly polar solvents acetone, methanol and acetonitrile, the signs and magnitudes of solvent effects are accounted for very successfully by the DFT/PCM methodology. For the solvents, carbon tetrachloride, chloroform and benzene, agreement is not so good. These findings support the conclusions that solvent effects in acetone, methanol and acetonitrile are largely electrostatic in nature, while solvent effects in carbon tetrachloride, chloroform and benzene are dominated by other factors, including dispersion forces and covalent interactions.



**Name:** Steve Geiger

**Academic Unit:** School of Engineering

**Department:** Electrical Engineering

**Faculty Sponsor:** Dr. Tom Katsouleas

**Title:** *A New Type of Microwave Source*

**Category:** Physical Sciences, Math, & Engineering

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #CC7

**Description:** In order to explain a new type of microwave source from plasmas, I solved Maxwell's equations and simulated the surface current of a plasma in MATLAB. By analyzing the output produced from this simulation, I was able to determine that the plasma volume currents and not just the surface currents give rise to the directional beaming of microwaves that have been observed.



**Name:** Mohammed Hossain

**Academic Unit:** Letters, Arts & Sciences

**Department:** Physics and Astronomy

**Faculty Sponsor:** Prof. Gerd Bergmann

**Title:** *Magnetic Behavior of Na with Fe, Co and Ni impurities*

**Category:** Physical Sciences, Math, & Engineering

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #44

**Description:** Thin films of Na are covered with 1/100 of a mono-layer of Fe, Co and

Ni. Then the impurities are covered with several atomic layers of the host. The magnetization of the films is measured by means of the anomalous Hall resistance. Fe and Co show a moment of 6 Bohr magnetons while no moments for Ni. Furthermore the magnetic dephasing of the conduction electrons is measured by means of weak localization. For Fe the dephasing is so large that it can't be measured. Co shows a moderate value while Ni shows hardly a dephasing effect at all. The experimental results suggest that Fe impurities in Na possess a resonance at the Fermi level. If the 3d impurities have atomic wave functions in the alkali hosts Cs, Rb, and K, then in Na 3d impurities show a transition to a hybridization with the conduction electrons.



**Name:** Ebrahim Kazemzadeh

**Academic Unit:** LAS

**Department:** Linguistics

**Faculty Sponsor:** Shri Narayanan, Dani Byrd, and Elaine Andersen

**Title:** *Toward Robust Conversational Interfaces - Error Recognition and Recovery*

**Category:** Physical Sciences, Math, & Engineering

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #50

**Description:** Our research aims to model the typical behavior of users of an automated airline ticketing hotline using a corpus of 642 dialogues transcribed as text files. We defined a set of tags that we used to characterize the human-computer interaction in the presence of errors. By analysing the distribution of tags in the dialogues, we hope to discover dialogue patterns and find ways to improve such systems.



**Name:** Jerry Lim, Duy Nguyen

**Academic Unit:** School of Engineering

**Department:** Biomedical Engineering

**Faculty Sponsor:** Adrian Polliack

**Title:** *Automotive Vibrating Indicator (AVI)*

**Category:** Physical Sciences, Math, & Engineering

**Submission:** group

**Format:** Poster

**Location:** Exhibit #43

**Description:** The Automotive Vibrating Indicator was designed as a project for a Rehabilitation Engineering class in the Biomedical Engineering department. This device was designed to assist hearing-impaired drivers to detect any oncoming emergency vehicles. Hearing-impaired drivers are at a disadvantage compared to other drivers because they are unable to hear audible warnings of other vehicles, such as sirens or horns. An electronic warning system would alleviate some of these disadvantages. Although there are many types of devices that allow individuals to function with daily activities, there are very few online retailers that sell automotive assistive devices (AADs). One of the products that are offered is the "Emergency Response Indicator (ERI)." It is a bulky device that alerts the driver of sirens by the use of 4 LED displays. However, drawbacks include size, cost, and the possibility of the warning overlooked by the driver. The goal of our proposal is to build a simpler, less expensive, and more reliable warning system. We propose to reduce the size of the device by making the function and circuitry simpler. This will reduce the cost of the device and increase the efficiency of the indicator at the same time. Rather than having a blinking indicator, the device will implement a vibrating warning. A device such as the AVI could not only reduce the risk of traffic accidents but could also lower the high insurance premiums so many of us, especially the hearing-impaired, have to pay.

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**Name:** Melisa Paramo

**Academic Unit:** Letters, Arts & Sciences

**Department:** Earth Sciences

**Faculty Sponsor:** Frank Corsetti

**Title:** *Using Chemostratigraphy to Find the Precambrian Cambrian Boundary - Implications for Animal Evolution*

**Category:** Physical Sciences, Math, & Engineering

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #49

**Description:** The Precambrian Cambrian transition records the explosive evolution of metazoan (animal) life between approximately 580 and 520 Ma. A key evolutionary question revolves around the timing of the transition - was it globally synchronous or protracted? An intense negative carbon isotope excursion ( $\delta^{13}C$ ), nearly coincident with the boundary at ~544 Ma, provides a global marker with which to calibrate the rate of evolutionary change. A particularly well exposed Precambrian-Cambrian stratigraphic succession has been discovered at Cerro Arituaba in central Sonora, Mexico. In order to locate the Precambrian-Cambrian boundary at Cerro Arituaba, the technique of carbon isotope chemostratigraphy was applied. Samples of limestone and dolomite were collected at an interval of approximately one to three meters through 300 meters of section. They were then cut, polished, evaluated for postdepositional alteration, and drilled, producing a powder. The powdered microsamples will be analyzed for  $\delta^{13}C$  using mass spectrometry. Once the boundary excursion is established at Cerro Arituaba, the search for types of fossils and the environments that record the Cambrian evolutionary explosion can be undertaken. The biostratigraphic information will make it possible for more detailed correlation with other Neoproterozoic-Cambrian sections and more precise calibration of evolutionary events.

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**Name:** Thomas Pintaric

**Academic Unit:** School of Engineering

**Department:** Integrated Media Systems Center

**Faculty Sponsor:** Ulrich Neumann

**Title:** *Immersive Panoramic Video*

**Category:** Physical Sciences, Math, & Engineering

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #AV11

**Description:** The acquisition and presentation of high-resolution panoramic video presents a number of technical difficulties. We

demonstrate a system that acquires high-resolution (>3Kx480) panoramic images. These images are recorded at 30Hz frame rates and played back for later viewing. During playback users wear a head-mounted display (HMD) and a head-tracking device that allows them to turn their heads freely to observe the desired portions of the panoramic scene. User impressions initially indicate that the experience produces a strong sense of immersion and this new form of media offers new options for creating immersive simulations.



**Name:** Paul Schultz

**Academic Unit:** Letters, Arts & Sciences

**Department:** Earth Science

**Faculty Sponsor:** Scott Paterson

**Title:** *The Southern Branch of the Agua Blanca Fault - Does it Utilize a Cretaceous Anisotropy?*

**Category:** Physical Sciences, Math, & Engineering

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #48

**Description:** The Agua Blanca Fault (ABF) is an active dextral strike-slip fault south of Ensenada, Mexico. Recent investigations have demonstrated that the fault is an inherited structure that originally accommodated the Early Cretaceous suturing of an exotic island arc (Alisitos arc) to the North American margin (east) and the Santiago Peak arc (north). Cretaceous suture-related deformation is characterized by intense ductile strain (>60% shortening) and fault-parallel isoclinal folds developed only along the southern side of the ABF. Subsequent Tertiary strike-slip-related deformation is typically brittle, with thick zones of gouge and brecciation. Tertiary slip on the structure occurs along a single strand across most of the peninsula but is distributed between northern and southern branches in Valle Santo Tomas. This paper reports the results of investigation designed to determine whether the southern branch of the active fault utilized the Cretaceous

structure or initiated anew without the benefit of a pre-existing anisotropy. A transect of ~15 km<sup>2</sup> south of the southern branch of the ABF was mapped and samples were collected for finite strain analysis. Finite strain intensities were <20 % shortening without an identifiable gradient toward or away from the fault. A regional-scale fold exhibited an axial plain striking N58 W, oblique to the N72 W trace of the fault. Finally, a narrow zone of intense brecciation was observed within a kilometer of the fault. Together, these observations suggest that the southern branch of the ABF did not follow the Cretaceous suture.



**Name:** Melissa Dobbins, Chun-Cheng Lin, Barry Fink

**Academic Unit:** department of physics

**Department:** electrical engineering

**Faculty Sponsor:** Hans Bolzer

**Title:** *Temperature Measurement Using NMR in Platinum*

**Category:** Physical Sciences, Math, & Engineering

**Submission:** group

**Format:**

**Location:** Exhibit #51

**Description:** A necessary part of a low temperature physics laboratory is the ability to measure temperatures approaching absolute zero. Our project involved building and testing a thermometer capable of measuring temperatures below one millikelvin. The theory behind the thermometer involves the known nuclear magnetic behavior of Pt 195. The Pt 195 creates nuclear magnetic resonance (NMR) signal, which we then amplify to take measurements. These measurements directly relate to the temperature of the cryostat. Our project has focused on modifying the pre-amplifier design to get more accurate measurements of the temperature. Our new design along with the test data we have gathered will be presented along with a more detailed background on the theory behind how the thermometer works at the symposium.

## PROFESSIONAL & APPLIED DISCIPLINES

**Name:** Cetaree Amiri, Daynabelle Santos,  
Jennifer Castellanos, Fernando Cifuentes,  
Dominic Wong

**Academic Unit:** School of Nursing

**Department:** Nursing

**Faculty Sponsor:** Cathy McNeese

**Title:** *Navajo Nation Health Promotion  
Outreach*

**Category:** Professional & Applied Disciplines

**Submission:** group

**Format:** Poster

**Location:** Exhibit #3

**Description:** The Navajo Nation Health Promotion Outreach project is an undergraduate nursing student community service project designed to provide primary health teaching and nursing care to the Navajo people in the Four Corners area of Utah. The project is designed, coordinated, and run solely by undergraduate nursing students during spring break, March 11-17. Nursing students provide teaching and nursing care to clients at the Montezuma Creek Community Health clinic, as well as to children in surrounding elementary and junior high schools. This collaborative effort between Navajo staff and USC student provides valuable insight into alternative cultures and different views on health care access and health needs.



**Name:** Daniel Barnes

**Academic Unit:** School of Engineering

**Department:** Computer Science

**Faculty Sponsor:** Hadi Moradi, Anthony  
Borquez

**Title:** *Positive Outlook - How to communicate  
in the Information Age*

**Category:** Professional & Applied Disciplines

**Submission:** individual

**Format:** Artistic Entry

**Location:** Exhibit #CC8

**Description:** Positive Outlook is a website devoted to maintaining communication

between individuals and groups. Originally, the website was simply a small project for an information technology class, but Positive Outlook has evolved into a meeting place for friends and colleagues, for business or leisure. The site incorporates chat rooms, email, a task list and planner, project management, and message boards as well as full administration features for users with clearance. Because of its rich features presented in a friendly and intuitive environment, Positive Outlook has received an "Excellent" rating by all of its testers. There is simply no better way to coordinate and communicate on the World Wide Web.



**Name:** Kelly Davidian

**Academic Unit:** Rossier School of Education

**Department:** Education

**Faculty Sponsor:** Dr. Margo Pensavalle

**Title:** *The Difference is You*

**Category:** Professional & Applied Disciplines

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #1

**Description:** As an elementary educator I believe the fate of humanity is in our children's hands. I am presenting my whole-hearted motivation to open human hearts through learning with "The Difference is You," a recycling program my fifth grade class and I began. I believe children should feel, think about, and respond to their studies, thus, the emergence of this hands-on experience which encompasses all types of learners. I teach students that success is measured by how they feel about their own goals and accomplishments, and the time and effort they put into them. The class united to assist the environmental effort of recycling. We made a proposal to our student council, and the entire school joined our effort. We now have bins for plastic, glass, aluminum, and paper. We have "no

trash" days, where nothing is thrown away that could not be recycled. Research conducted shows a direct correlation between the students' active participation and a continued effort in other areas of community and volunteer service. It is small efforts over time that make a difference and the children have learned that they are the difference.



**Name:** Ahmed Hussain  
**Academic Unit:** Marshall School of Business  
**Department:** International Business  
**Faculty Sponsor:** Merle Hopkins (Tentative)  
**Title:** *Tapping the untapped home markets*  
**Category:** Professional & Applied Disciplines  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #CC17  
**Description:** Its a Database Management System for the Childcare/Daycare industry. The title of the Program is "Student Management System". This program will manage all database and accounting activities of a small to mid-sized Childcare Center. The program capable of producing over 80 forms and reports, managing the staff, printing their pay checks and even creating id card with bar-code. The program eliminates most of the paperwork. It took me over two months to design and another 2 months to develop and debug. Today it is one of the leading Childcare Center Software available for the best price. I only need some venture capital to hit the market!



**Name:** Jennifer Manuel  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Psychology  
**Faculty Sponsor:** Cristina Gibson/Joanne Farver  
**Title:** *The Development of Trust Among Virtual Team Members from Different Organizational Cultures*  
**Category:** Professional & Applied Disciplines  
**Submission:** individual

**Format:** Poster

**Location:** Exhibit #4A

**Description:** This study examined how differences in organizational culture influence the development of trust among members of virtual teams of multi-national, Fortune 500 corporations. Virtual teams are groups of geographically and/or organizationally dispersed coworkers that are assembled using a combination of telecommunications and information technologies to accomplish an organizational task (Townsend, et. al, 1998). A qualitative analysis was used to investigate three different virtual teams, each differing in the number of organizations represented on each team. A computer-facilitated, qualitative analysis was used to examine interview data from a sample of participating members on each team. Each team's ability to build trust was compared. It was hypothesized that the number of organizational cultures represented on a virtual team is negatively associated with the establishment of trust. It was found that teams with greater differences in organizational cultures articulated less trust among team members than teams with fewer differences in organizational culture. This study provides applicable insight for corporations currently implementing virtual teams, as well as contributes to emerging theory on virtual teams.



**Name:** Kristin Price

**Academic Unit:** Marshall School of Business

**Department:** Management and Organization

**Faculty Sponsor:** Peter Kim

**Title:** *Collective power*

**Category:** Professional & Applied Disciplines

**Submission:** individual

**Format:** Poster

**Location:** Exhibit #4

**Description:** Expanding upon French and Raven's canonical bases of power – legitimate, coercive, reward, expert, and referent, is the idea that there exists a

legitimate base of power to be found amongst the masses. Popularized by the Stanford Studies, Stanley Milgram's findings, and extensive research on mob mentality and groupthink, the potential of collective power was regularly engaged throughout the civil unrest of the sixties and seventies. However, as often the case in examples given, the engaged populace also simultaneously employs one or more of French and Raven's traditional bases of power. This harmful confounding of power bases, belittles the significance and uniqueness of the singular use of collective power. When typically low-status workers self-manage themselves, as in the case of the United Farm Workers and, more recently, last summer's local janitors; two groups who have little claim to any of the other five sources of power; the one base of power they can successfully claim is that of the collective and its unique characteristics.



**Name:** Victoria Sarun  
**Academic Unit:** School of Dentistry  
**Department:** Dental Hygiene

**Faculty Sponsor:** Mrs. Jane Forrest  
**Title:** *The Fact About Fluoride Varnish*  
**Category:** Professional & Applied Disciplines  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #2  
**Description:** Objective - To compare the effectiveness of fluoride varnish to fluoride gel in treating and preventing dental caries. Hypothesis - The use of fluoride varnish has more advantages and is as effective (if not more) as fluoride gel. Methods - Review and analyze research articles on fluoride varnish and fluoride gel. Results - Fluoride varnish reduces caries at the range of 10.1 to 25.2% in comparison to about 10% with fluoride gel. Varnish is also able to reduced caries at about 56% with three times a year applicaiton. Conclusion - There are varties of topical fluoride in the market, professional should decides which is best for each patient base on patient assesement. More research on fluoride varnsih is needed in the United States in order to gain more acceptances by the dental professional and the public.

## SOCIAL SCIENCES

**Name:** Douglas Adams  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Economics  
**Faculty Sponsor:** Tony Kwon  
**Title:** *Discrimination in hiring in a global capitalist system*  
**Category:** Social Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #37  
**Description:** Global capitalism provides an environment in which everyone can benefit. I will explain global capitalism focusing on the role of the markets and the limited role of government. I will explain how market mechanisms are increasingly rapid, and critique Keynes's criticism that "in the long run we are all dead." I will also show that in lightning fast information age, securities prices represent all available information about a firm. Finally, I will show how this makes discrimination in hiring by publically traded firms impossible, and support my argument with real cases.



**Name:** Sudha Arunachalam, Dylan Gould  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Linguistics  
**Faculty Sponsor:** Dani Byrd, Shrikanth Narayanan, Elaine Andersen  
**Title:** *When Children Talk to Computers - Politeness & Frustration Markers*  
**Category:** Social Sciences  
**Submission:** group  
**Format:** Poster  
**Location:** Exhibit #35  
**Description:** The goal of this research program is to examine how children interact with machines. Specifically, we are interested in system adaptability - responding to children in a customized manner. Children are one of the primary potential users of computers for conversational interaction, for example in

multimedia games and computer instructional material. Computer systems interacting with children need to be tailored for these users so that they will understand child intent and so that the child will have a positive and successful experience with the system.



**Name:** Aaron Bartels  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** History  
**Faculty Sponsor:** Lynn Swartz Dodd  
**Title:** *Ancient Near Eastern Warfare*  
**Category:** Social Sciences  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #CC9  
**Description:** I designed the website Ancient Near Eastern Warfare, to explain and describe the birth, growth, and social, cultural, religious, and political influence that warfare had in the context of Ancient Mesopotamia. The index page offers the viewer various directions to go - be it clicking on an ancient city on the map to go to that part in an essay, or going to a divided index of era-specific essays, the gallery, timeline, or links pages. This site was designed for the 2000 fall term project of my Near Eastern and Mediterranean Archaeology class (Rel. 394). Central to my site are the 34 pages of essay that chronologically approach advancements in warfare while explaining important parallel changes in ancient near eastern society. Essays are divided into ages, beginning with the organized tribes around 33,000 BC and leading to the Akkadian Empire of 2,000 BC. Interspersed between paragraphs are high quality pictures or illustrations of relevant weapons, ancient propaganda, strategic formations, and siege-proof architecture. These pictures are also in the website's gallery, which contains about 80

objects. In addition, the color-coded timeline of separate areas in the Near East shows the rise of various civilizations parallel to significant technological and cultural progressions. This timeline includes various points on it, which when clicked send one to the related part of an essay. The links page contains more than thirty related websites categorized by general topic. I designed each page with a consistent efficient style, and utilized interactive “rollover” images and clickable image maps to make the site more intuitive.



**Name:** Adam Choppin  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** International Relations  
**Faculty Sponsor:** Dr. Gerald Bender  
**Title:** *Oil and Conflict in Sudan*  
**Category:** Social Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #26  
**Description:** Commercial development of Sudan's oil industry has given way to intensified conflict over the control of oil resources and political maneuvering to use oil as a weapon of war. Widely accepted as the world's deadliest, yet most overlooked conflict, the ongoing civil war in Sudan has killed over 2 million people in the past 18 years while displacing 4 million civilians from their homes. I contend that the development of Sudan's oil industry has raised the stakes in the conflict so as to make a just and peaceful settlement nearly impossible to achieve. As a part of my research, I have spoken with numerous experts on the subject including the former chief consultant for Chevron's Sudan operations, a veteran US diplomat to Sudan, and experts on Sudan at the Defense Intelligence Agency. Furthermore, I have accumulated a vast array of primary evidence, including company reports, rebel press releases, conference minutes, personal interviews, and government statements to support my thesis. This material should

form the basis of the first comprehensive book discussing oil development and conflict in Sudan, which I hope to complete this year.



**Name:** Francesca Cimino  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Psychology  
**Faculty Sponsor:** Laura Baker, PhD  
**Title:** *Aggression and Prosocial Behavior in the Twin Relationship - A multimethod approach*  
**Category:** Social Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #28  
**Description:** The sibling relationship is often the longest lasting in an individual's life. The quality of sibling relationships has been shown to influence children's behavior and social adjustment, and is important for establishing self-concepts and for social-cognitive development. Thirty-six pairs of nine-year-old twins (monozygotic and dizygotic) participated in the current study, which utilized child self-report, maternal interviews, and behavioral observation in a contrived setting to evaluate the children's behavior within the twin relationship. Constructs measured included hostility/conflict, rivalry, and affection/warmth. The study will investigate how well parent, child, and independent observer reports correlate across the constructs. Additional analyses will explore expected relationships between behaviors (i.e. are children assessed as hostile also assessed as negative and not warm?) Further examination will consider zygosity differences to determine whether MZ twins show more similar behavior towards each other than DZ twins, and whether the behavior MZ twins engage in is more positive than what is exhibited by DZ twins.

**Name:** Curtiss Cobb III  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Political Science/Psychology  
**Faculty Sponsor:** Ann Crigler  
**Title:** *The Role of Faith in Individual Political Reasoning*  
**Category:** Social Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #39  
**Description:** As there becomes an increasing number of researchers begin studying the emerging field of Political Psychology; scholarly interest is shifting from a collective awareness of political reasoning and action to an attempt for understanding at an individual level. Rosenberg's Theory of cognitive moral development, predicated on earlier work by Piaget and Kohlberg, attempts to explain political reasoning as a dualistic developmental process by which the individual is categorized into one of three thinking styles based upon the processes he/she uses to understand and interpret social cues. Sequential thinkers track action on objects, while linear thinkers place actions in relation to one another. Systematics, the highest form of reasoning, juxtaposes relations between actions. Problematic for this theory is the way it fails to integrate adequately a concept of faith into Political Reasoning. This research will try to discern what proper role, if any, faith plays in a person's capacity for higher order thinking in Political Reasoning. The resulted revision to Rosenberg's Theory will then be tested against data collected from a 1999 study of voters in Baltimore and Philadelphia. Thinking style will be measured based upon responses to an adaptation of Kohlberg's Heinz dilemma. Religiosity will be measured by the number of religious references in the subjects' responses.



**Name:** Timothy Crockett  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Political Science

**Faculty Sponsor:** Prof. Judith Grant  
**Title:** *Rethinking Mother Earth - Gendered Thinking and Environmentalism*  
**Category:** Social Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #38  
**Description:** Nearly every culture and society in the history of humankind has conceived of an anthropomorphic conception of the planet Earth and Nature. That conception is nearly universally female. From ancient fertility goddesses to the "Gaia" movement of the 20th century, we have always thought of the earth as a female figure. Gender affects the way we think about just about everything, and environmentalism is no exception. I have written a paper critiquing the common wisdom of most environmentalist groups in America, and American environmental policy making, from the standpoint of gender. How does gender affect the way we address problems in the environment? How can we conceive a more gender-neutral environmental policy that will produce better results for the planet and ourselves? My project is all about answering these questions and making a call for a more rational, real world environmental policy that embraces the latest technology and helps us develop a more manageable, sustainable relationship with the ecological milieu in which we live.



**Name:** Jennifer Durley  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** History  
**Faculty Sponsor:** Dr. Mauricio Mazon  
**Title:** *The Combat Motivation of Union Volunteers in the American Civil War 1861-1865*  
**Category:** Social Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #30  
**Description:** Over five million men fought on over ten thousand battlefields, from 1861-1865 during the American Civil War.

Ultimately 619,000 men perished in the conflict. This study explores the sources of motivation of the Union volunteers. The primary sources for this study are letters written by soldiers and their families. The four collections used are the, Krueger and Fox Collection of Civil War Letters located in the Special Collections Department of the University of Southern California Library and the private collections - the Heaton Family Papers and the letters of Archibald K. Miller. The letters of ten soldiers provide the information for the study. These soldiers in this study are - George Heaton 2nd Regiment Company E Iowa Infantry, Edward Heaton 30th Regiment Company G Iowa Infantry, Albert Heaton 30th Regiment Company G Iowa Infantry, Hiram Heaton 2nd Regiment Iowa Infantry, Edwin Obriham 9th Regiment Company H Iowa Infantry, Charles Obriham, Harlow Obriham and Franklin Obriham of the 38th Regiment Company E Iowa Infantry, Charles Beebe 38th Regiment Iowa Infantry, Edward A. Fox 14th Regiment Company I Connecticut Volunteers, and Archibald K. Miller 30th Regiment Kentucky Volunteers. The central argument is that economic inducements such as bounties and salary played a larger role in motivation than previously attributed to in the scholarship upon the topic. Other factors of motivation that are found amongst these soldiers include, patriotism and the ideology of Union, pressure from friends, family and community, honor and duty, abolitionism and adventure.



**Name:** Marina Gaplanyan, Nancy Salem  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Communication  
**Faculty Sponsor:** Dr. Kenneth Sereno  
**Title:** *The Effect of Social Influence Under Conditions of Uncertainty as it Relates to Age*  
**Category:** Social Sciences  
**Submission:** group  
**Format:** Poster  
**Location:** Exhibit #32

**Description:** Conformity refers to individuals abandoning their views and taking on or accepting the views of society. In reviewing the literature, we found that the age variable has not been taken into consideration when testing for social conformity. In order to enhance our understanding of the relevance of age to conformity, we tested three age groups; young children (ages 5-12), college students (ages 18-24) and lastly adults (ages 35 +). Our hypotheses were - H1, when placed in a situation of uncertainty individuals will conform. H2, as people grow older they are less likely to conform. Using a Chi-Square test, results indicated that both hypotheses were supported. Young children had a high conformity rate, college students were less likely to conform, and adults showed no significant levels of conformity.



**Name:** Geraldine Kim  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Economics  
**Faculty Sponsor:** Murat Somer  
**Title:** *The American Taste for the Arts*  
**Category:** Social Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #36  
**Description:** America is one of the wealthiest and well-educated countries in the world. However, comparative economic statistics show that the American taste does not reflect this in terms of art consumption. This study examines aspects of American cultural history and market structure that have influenced this lack of interest. Specifically, it examines demand factors such as education, income, and public-good values. Some implications of this analysis lie in policy decisions on funding and education as well as personal consumption habits.

**Name:** Hillary LeRoux  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Psychology  
**Faculty Sponsor:** Professor Gatz  
**Title:** *Symptom Differences in Older Adults with Early and Late Onset Generalized Anxiety Disorder*  
**Category:** Social Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #29  
**Description:** The prevalence of generalized anxiety disorder (GAD) in older adults is higher than major depression and many other psychological disorders. However, despite a high prevalence rate, few studies have researched GAD in this population. GAD is a chronic disorder, often beginning earlier in life and persisting into old age. This study compared the type of GAD symptoms, i.e., somatic or cognitive, and clinical severity for older adults whose age of onset for the disorder was early or late. Sixty-three participants were divided into early (N = 46) and late onset (N = 17) groups. Symptom frequency information was derived from questionnaires and interviews. T-tests revealed significantly higher scores for the early onset group than the late onset group on the Penn State Worry Questionnaire, but not on other measures. Chi-square analyses found that early onset participants had significantly higher rates of comorbid disorders and current medication usage than late onset participants.



**Name:** Margaret Mendoza  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Psychology  
**Faculty Sponsor:** Gerald C. Davison, Ph.D.  
**Title:** *Perceptions Toward Victims and Perpetrators of Hate Crimes*  
**Category:** Social Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #34  
**Description:** Hate crimes are criminal acts motivated by the perpetrator's hatred for the victims' perceived membership in a

particular demographic category. An analysis of the perceptions surrounding hate crimes is helpful in identifying attitudes and beliefs that facilitate tolerance as well as those that result in hostility, particularly the hostility that is directed toward hate crime victims. The person perception vignette methodology was utilized in this study to examine the perceptions and automatic inferences of 404 college students toward the victims and perpetrators of three different types of hate crimes and a non-hate crime. This between subjects experimental design randomly assigned the participants to read a vignette depicting a non-hate crime or a comparable hate crime that was motivated by either the perpetrator's hatred for the victim's race, sexual orientation, or the victim's religion. Participants' perceptions of the targets (victim and perpetrator) in each vignette were captured via four multi-item bipolar adjective scales designed to measure responsibility, blame, harm, and violence. The study revealed significant differences between the hate crime and non-hate crime conditions with regard to people's perceptions of both perpetrators and victims. Results showed the victim was more violent, blameful, harmful, and responsible in the NON-hate crime condition compared to each of the three hate crime ones, and that the perpetrator was perceived as more violent, blameful, harmful, and responsible in each of the three hate crime conditions compared to the non-hate crime condition. Findings revealed no significant differences among the three different hate crime conditions for people's perceptions of both the victim and the perpetrator. Results imply that in terms of people's perceptions of the victim and the perpetrator, it is insignificant whether the hate crime was motivated by hatred for a victim's sexual orientation, race, or ethnicity. What is of significance is that regardless of the specific hate crime perpetrator motivation, people tend to view hate crimes as more serious than non-bias crimes.

**Name:** Kristin Minto  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Political Science  
**Faculty Sponsor:** Dr. Judith Grant  
**Title:** *Exclusionary Policies on Women in the Military*  
**Category:** Social Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #27

**Description:** I am currently writing a 60 page thesis paper for my political science honors class on the exclusionary policies imposed on all women in the military. Through citing and analyzing personal interviews, case studies, scholarly sources, and weighing the arguments for and against with current facts, I will establish that the exclusionary policies imposed on all women in the military are, indeed, discriminatory and should be considered unconstitutional. I believe anyone who is physically up to standards and skillfully qualified should be allowed to take on any position he or she chooses, regardless of race, class, or sex. However, due to the simple (and uncontrollable fact) that a woman is a woman, she is excluded from any type of direct ground combat, all submarines, and all Special Warfare divisions in the military (i.e. SEALs, Marine RECON). I hope my reasoning and findings shown in my research will make clear that it is the individual, not the sex of the individual that determines one's destiny.



**Name:** Jonathan Schnereger  
**Academic Unit:** Letters, Arts & Sciences  
**Department:** Religion  
**Faculty Sponsor:** Lynn Swartz  
**Title:** *Weapons of an Ancient Empire*  
**Category:** Social Sciences  
**Submission:** individual  
**Format:** Artistic Entry  
**Location:** Exhibit #CC18  
**Description:** Excavations at the ancient site at Kenan Tepe in south eastern Turkey have

yielded a small number of metallurgical finds, including, copper wire, bronze, iron and various slag (waste product from metal production and smithing). In combination with other excavation data the analysis of the objects allows important insights regarding the nature of the metal industries at Kenan Tepe from the periods c.4,000 BC to c.146 BC. In cases where conventional contextual chronological indicators, such as pottery, are lacking, analysis of the elements in the copper objects can offer for the first time significant, new criteria for absolute and relative dating of archaeological sites in this area. Other important data are dependent on close analysis of iron finds, especially as a means of clarifying what kind of metal production was being done at this site. The iron finds offer the first view of the practices of the indigenous people and how the site was connected with the Assyrian Empire, the largest pre Roman empire. Of central concern is whether Kenan Tepe supplied the Assyrian Empire with raw material to feed the Assyrian war machine, whether refined, weapons-grade material was being produced on site for local production, or whether the metal remains are simply the remains from an indigenous smithing industry. To assess the metal finds from the various contexts at Kenan Tepe, metal finds were sampled and standard metallurgical analysis conducted (optical microscopy and scanning electron microscopy with EDEX) in the conservation laboratory at the Los Angeles County Museum of Art in collaboration with conservation scientist and metals-expert Meg Abraham. This collaboration represents the first systematic attempt to use such high-technology instruments to assess ancient metals from an archaeological site in Southern Turkey. These initial findings will serve as a baseline from which to assess the broader archaeological problems of using metallurgical analysis for chronological dating and as indicators of industrial and socio-economic practices. The work will be continued this summer, when further samples will be collected at Kenan Tepe and elsewhere to expand the database.

**Name:** Marc Simpao  
**Academic Unit:** School of Gerontology  
**Department:** Gerontology  
**Faculty Sponsor:** Dr. Elizabeth Zelinski  
**Title:** *Gender Differences in Autobiographical Memory*  
**Category:** Social Sciences  
**Submission:** individual  
**Format:** Poster  
**Location:** Exhibit #31  
**Description:** Autobiographical memory is memory for one's life events. This kind of memory is assessed by associating word cues with life events and the age at which these events take place. Much interest in autobiographical memory focuses on the distribution of the memories with respect to when they occurred, particularly the phenomenon known as the "reminiscence bump." The "bump" refers to the disproportionate amount of memories recalled from early adulthood, mostly in the

teens and 20s, relative to later periods of adulthood. A social theory of reminiscence evaluates gender differences in autobiographical memory. According to this account, differences in the acculturation and social events of men and women affect the formation of identity and memory. This is especially apparent in older women since their lives differ from men because of more restrictive gender roles early in life. This study evaluated gender differences in autobiographical memory from a social theory perspective. The Galton word-cue technique was used whereby 18 word cues were presented to elicit memories. Based on the cue, participants recalled a memory and the age that it occurred. Participants (n=58) were divided by gender and age (63-79 and 80-95). Distributions of memory events were plotted by age. Significant gender differences were found in that men showed the reminiscence bump whereas women showed a flatter function.