Modulation of Virulence Factors in Vibrio cholerae; A Chemical

Cholera is a reemerging infectious disease prevalent in areas of high population density and poor sanitation around the globe. Current antibiotic treatments are increasingly ineffective against this neglected infectious disease, which can often prove fatal if left untreated. An increasing level of understanding of the factors that govern bacterial invasion of host cells suggests that these virulence mechanisms represent a potential avenue for the development of a new generation of antibiotics that specifically target pathogenic organisms. By using high throughput screening techniques to evaluate a unique library of marine natural products we aim to identify compounds that selectively modulate biofilm formation in Vibrio cholerae, the causative agent of cholera. Biofilm formation has been identified as an important step in the invasion process for a number of human pathogens and is thought to be essential for bacterial pathogenicity. By using chemical genetic techniques to develop a clearer understanding of the mechanisms by which the bacterium invades host cells we aim to identify novel biological targets that can be employed in future drug discovery efforts. In addition, the natural products identified under this screening regime will form the basis for the future development of antibiotic lead compounds and chemical probes for drug development and target identification.
Community-Based Educational Reform: Documenting the Views of

This proposal seeks funding to study central elements of a Community-Based Educational Reform Project. This reform project contrasts with the two dominant approaches to school reform of the past quarter century which have relied upon either government initiated market-based mechanisms or school-based technical fixes to address the needs of students who perennially fall short of test score targets.

The study will document and analyze the views of parents, youth and teachers as they participate in focus groups, in the analysis of the focus group findings, and in digital story development based on the focus group findings.

These views will emerge through processes configured to bring the community into sustained, deep and systematic dialogues designed to understand the present situation, to identify both the hindrances to progress and the strengths on which change can be built, and to plan and act toward shared goals.

The research is innovative and distinctive in a number of ways. First, it represents a particularly robust and emergent approach to school reform, and nothing similar has yet been reported in the research literature.
Developing efficient computational tools for Bayes nonparametric

The introduction of simulation techniques as a computational tool in statistics has stimulated a phenomenal growth in the variety of real-life applications and the complexity of models being developed, allowing scientist to tackle problems that were well beyond their reach 15 years ago. However, unlike standard statistical methods available from off-the-shelf packages, the use of these sophisticated models is typically restricted to specialists, as the implementation burden of these computational algorithms can be daunting. Although some general-purpose software has been developed for Bayesian methods (e.g. the BUGS package), in the context of Bayesian nonparametric models no general purpose tool is available. This grant proposes the development of efficient C/C++ routines that implement Markov chain Monte Carlo algorithms for the Dirichlet process (DP) models and its extensions, as well as interfaces that allow the inclusion of these functions in high-level languages like Matlab and R. This is a highly visible project, as DP models have become a popular tool in statistics and computer science. We expect that practitioners and researchers will extensively use these packages, either directly or as a building block within more complex models, making UCSC and the Applied Mathematics and Statistics department an obligatory reference.
Watchout projection control computer system

My hope is to purchase a state of the art projection control system to augment my research in the area of performance design. My research has recently shifted to include more projection design, as typified by my current work as Projection and Lighting Designer on San Jose Opera's upcoming Eugene Onegin. The art of designing for performance is undergoing a dramatic change, as new technologies are creating seemingly limitless possibilities in the combination of live human performers and technologies on stage. In order to work on the cutting edge of this change, I need appropriate tools to move forward and experiment with these new possibilities. In attempting to use modern technologies to tell old stories, I am experimenting in refining our ability to establish setting, atmosphere, and mood. My goal is to refine the sophistication of intermingling new technologies with traditional storytelling techniques. In the upcoming Eugene Onegin, the goal is to project seamless full-stage projections from multiple projectors to increase intensity and scale. The program "Watchout" is the industry standard and the only program I know of capable of handling this task.
Unpublished Papers of Frantz Fanon at L?IMEC Paris, and the

I am writing to apply for a Special Research Grant in order to consult manuscript archives at L?IMEC Paris, and the Universite de Lyon, France. I need to do this archival work in order to complete Fanon (Reaktion Books), a comparative study of Frantz Fanon, the Martinican psychiatrist and political revolutionary. Excerpts from the book ? in earlier versions ? have appeared in Max Silverman ed, Frantz Fanon, Black Skin, White Masks (Manchester University Press, 2005), and as an ?Afterword? to my recent book, Haunted Life: Visual Culture and Black Modernity (Rutgers University Press, 2007).

In Fanon I argue that commentators have continued to overlook the close ties between Fanon?s Fanon?s therapeutic practices and innovations in psychiatry (developed at Lyon under the supervision of Tosquelles and continued in Algeria and Tunisia) and his later social political thought forged during the Algerian War (1954-1962). That is, Fanon?s deep interest in the vicissitudes of unconscious life was just as much defined by his political work with the F.L.N. (Front de Liberation Nationale) as his reflections on the lived experience of colonialism redefined his interest in clinical techniques. This state of affairs is unremarkable enough in itself, but it astonishes me that scholars continue to read Fanon?s theories of colonization and violence outside of the clinical and therapeutic contexts that gave birth to them. Access to the clinical contexts of Fanon?s medical thesis (at Lyon and Paris) is therefore of great overall importance for this project.
The MB palace at Tel Kabri:

Tel Kabri, located in the Western Galilee, was the center of a Canaanite polity during the Middle Bronze Age. Excavations by Kempinski and Niemeier in 1987-1993 had revealed that the entire site, as well as its massive MB palace was destroyed at the end of the 17th century BC, with no further settlements built on most of the tel. These circumstances create a very favorable situation for the study of the MB society and political structure. Our renewed archaeological project had completed already one preliminary excavation season (2005) as well as two seasons of regional study (2006-7). To now the formation of urban settlements and palatial structures in MB Syro-Palestine was seen as a unified trajectory, a part of an interregional narrative, in which cities appear as part of a secondary state formation, exogenously inspired by earlier evoluational developments in Syria and Mesopotamia. However, the results of our regional study which compared the territories of Acco and Kabri during the MB have shown a more complicated picture, in which each polity had led a different trajectory to complexity, as well as a different settlement system. Our 2008 season of excavations at the palace, the first under UCSC auspices, aims to understand the development of the palace and its chronological locus within a regional narrative of MB complexity. At the same time, we will reexamine the existing paradigm of the crucial role of Syrian culture on the formation of the Canaanite palatial elite and on patterns of rulership during The MB period. The results of this season will be used as a stepping stone in the way to obtain long-term funding for excavations at Kabri.
Continued Study and Documentation of Commedia Dell’Arte Costume

I have been collecting information related to commedia dell’arte costuming practice that addresses a costume designer’s perspective towards this theatrical genre. Currently, no comprehensive text on this subject exists. I am creating a visual inventory of existing landmark 18th and 19th century commedia illustrations, marionettes, and ceramic figurines found in European and North American collections. To date, I have documented such objects in the Museo Correr in Venice and the Collection Des Arts du Spectacle in Paris. Through the use of measuring devices, photo and illustration methods, and Pantone color indicators, I disseminate each object in terms of its useful qualities for developing costume design conception. My culminated data will be translated into scale technical (flat) illustrations and basic 3-D scale garment replicas of these objects for future implications to my documentation on commedia costume form. At the close of my research, I will have a finished manuscript that addresses both the historical context and the costume construction techniques that could be derived from this wealth of information.
Studies on Novel Functional Surfaces as a Platform for Hybrid

The development of next-generation energy sources is a key to harnessing and providing the resources essential for every aspect of the world's economy, now and in the future. For semiconductor devices that convert light and/or heat into electrical power, high-efficiency is always realized at high-cost associated with expensive single-crystal substrates (SCSs) on which high-quality semiconductors required for high-efficiency are formed. For instance, solar cells fabricated on expensive SCSs are found in various extra terrestrial applications where high-efficiency is required while solar cells fabricated on inexpensive non-SCSs are used for such applications as table-top calculators. Therefore, a key to achieve high-efficiency at low-cost, i.e. our ultimate goal, is to develop an innovative route to synthesize high-quality semiconductors on a non-SCS, which, unfortunately, cannot be done in conventional devices designed in bulk because of unavoidable physical mismatches between high-quality semiconductors and a non-SCS. A whole picture changes when nanometer-scale semiconductors such as narrow wires and small spheres are employed. The proposed work centers on investigating the physicochemistry fundamental to the synthesis of nanometer-scale semiconductors on non-SCSs. The unique study proposed here will lead us to a building block with the view toward energy conversion devices with ultra high-efficiency at ultra low-cost.
Establishing the UCSC Forest Ecology Research Plot as a plant science

I request funds needed to establish the basic infrastructure and ecological monitoring that will enable the recently established UCSC Forest Ecology Research Plot (FERP) to become a novel, transformative platform for research on the spatial and temporal ecology of biotic interactions in a changing world, and a key campus resource for undergraduate, graduate, and faculty research. The FERP is a 6-ha (15 acre) mapped plot (8,385 woody stems ≥1-cm diameter) in the UCSC Campus Natural Reserve, modeled on the network of large plots that revolutionized tropical forest ecology. This is the first complete plot (>1 ha) in the temperate zone to use this methodology, and positions UCSC plant scientists to be leaders in forest dynamics research. I request funds to (1) establish subplots to monitor dynamics of understory seedlings and herbs, and (2) create a detailed map of soil nutrients, moisture, and texture. These projects will make the plot broadly useful to researchers from across UCSC, and provide the baseline to seek external funding. NSF program officers made it clear that funding to establish this basic infrastructure must come from outside NSF, but that once in place they would welcome proposals to build on and continue this work.
Sonic Sense exams the possibilities of communal interactivity with new

The art installation entitled Sonic Sense, will employ viewers as the interface to intermittently produce an array of audioscapes, videos and mechanical noises that build, collect and distribute media into the gallery. The number of interactions with the sculptural nodes in the installation will increase collectively depending number of components, allowing for new and subtle types of behavior to emerge. A diverse selection of new media works will juxtapose and knit together disparate aural elements from inaudible whispers, lyric melodies, piercing noises, and industrial clatter to create a series of video audioscapes.

Engagement with the piece will be through the rhythm of participant?s breath, body temperature and other vital signs captured by the sculptural pod?s makeboard creating feedback loops suggesting a kind of co-dependency between the viewer and the piece, between the body and technology. The pods will also be accessible and programmable via the internet allowing for continued interaction and collaboration with the piece, the artists and their institutions, and the exhibition space.
The evolution of altruism and cooperation in lizards

We propose to study processes by which altruism evolves. Side-blotched lizards exhibit three colors, which correspond to three alternative social strategies that drive a rock-paper-scissors dynamic. Cooperation is beaten by aggression (rock), which is beaten in turn by deception (paper), which is beaten in turn by cooperation (scissors) to complete a rock-paper-scissors evolutionary cycle. We have recently discovered phylogenetic evidence of nine new origins of the rock-paper-scissors game in blue-bellied lizards, which are evolutionarily derived from the side-blotched lizards. We propose to verify that orange, blue and yellow colors in two species of blue-bellied lizards correspond to the rock-paper-scissors strategies observed in side-blotched lizards. We also propose to develop several nuclear genes, which can be used to improve the phylogeny of blue-bellied lizards and thereby allow us to determine the sequence by which colors (and corresponding strategies) are added to the evolving social system. Evidence from game theory for side-blotched lizards suggests that blue is invaded by orange, and thereafter yellow can invade the orange-blue social system and begin to entrain rock-paper-scissors oscillations. The new microsatellite and nuclear gene markers we develop will be used to revise an NSF proposal on the evolution of cooperation.
A Statistical Approach to Modeling User Mobility in Wireless Networks

Researchers on wireless networks and their protocols have relied considerably on event-driven simulators for testing and performance evaluation. Clearly, accounting for user mobility is critical when studying wireless network protocols. However, user mobility models employed by most network simulators to date are far from representing real user mobility patterns. A notable example is the widely used random waypoint mobility model, which describes node movement as a random process. In this work, our main goal is to develop mobility models for wireless networks based on real user mobility. To this end, we will make use of publicly available user mobility traces collected in a variety of scenarios (university campuses, conferences, convention centers, etc.) and develop flexible statistical models based on the available real data. These models will form the basic building blocks for stochastic models that will be used in network simulators. Additionally, we will explore the generality and portability of such models using different parameterizations to describe peculiar campus features. We anticipate that the mobility models we develop under this project will have significant impact on the methodology used for evaluating wireless networks and their protocols, since they will enable network simulators to consider scenarios much closer to reality. We also foresee that our models will be useful in the design, planning, and provisioning of wireless networks.
Social Signals, Winter Social Organization and Demography in Golden-

Plumage coloration often serves as a signal in birds. Previous research revealed the existence of 'badge of status' plumage signals in wintering birds. Our research on plumage and song signals in wintering flocks of golden-crowned sparrows goes beyond the previous narrow focus on signal function by broadening the investigating to include behavioral, ecological and evolutionary aspects. We will addressing three key questions. First, building on our observational evidence that plumage color serves as an aggressive signal we will conduct plumage manipulation experiments to provide definitive proof that it is plumage coloration, and not some correlated trait, that signals social dominance. Second, to investigate the function of winter song, and likely provide the first evidence that song is used for signaling in a winter flocking bird, we will conduct song playback experiments that simulate a singing bird by broadcasting recorded song from a speaker. Finally, we will investigate how birds use space and resources, and with whom, by combining radio telemetry (use of space) and genetic techniques (to assay relatedness among flock members). Data from this SRG-funded research would allow me to submit a competitive proposal for longer-term NSF funding, and contribute to publication of results in top tier journals.
Recording Project for "Requiem" for Chamber Choir and Chamber

Composer Hi Kyung KIM's composition, REQUIEM for chamber choir with four soloists and chamber orchestra for conductor Nicole PAIEMENT's groups-the UCSC Chamber Singers and Ensemble Parallele in San Francisco. After the premiere concerts of the piece, the collaborators would like to make commercial recording released by Albany Records Inc. in New York.
Documenting an endangered language: Chamorro

Linguists estimate that half of the world's current languages are in danger of becoming extinct in the next century. This language endangerment poses a threat to cultural diversity that is often compared to the threat that the endangerment of species poses to biodiversity. Within linguistics, language endangerment has served to highlight the importance of language documentation. Current efforts aim to create a scholarly record of endangered languages that can also be used for language maintenance or revival. In some cases, improved documentation could potentially enhance a language's chances of survival. This project will contribute to the documentation of Chamorro, a language which is at a critical moment in its history: though it has some 45,000 speakers, it is one of the two most endangered languages of Micronesia. I will work with the Chamorro community to revise and upgrade the Chamorro dictionary. Because the community views the Dictionary as the respository of all knowledge concerning Chamorro, the revision could enhance the language's prestige and so contribute to its survival. Chamorro has also figured in many theoretical discussions of phonology and morphology; the revision will enable such linguistic discussions to proceed from firmer empirical ground.
"Mas Bebes?" will be a 1-hour documentary video history of the legal and political battle surrounding the coercive sterilization of Mexican-origin women at USC-Los Angeles County Medical Center during the late 1960s and 70s. Many of the women spoke no English, and were prodded into tubal ligations in the late stages of labor by hospital staff who would often sterilize them based on little more than the question, "More babies?? The documentary raises questions regarding immigrants, gender, notions of citizenship, and access to public resources that resonate with present-day themes: What role did California’s eugenics movement play in the evolution of sterilization policy and practices in the state? How does present-day anxiety over the social, environmental and economic impact of population growth influence policies towards immigrant women? How do cultural and racial attitudes influence health care delivery as it relates to immigrant populations? "Mas Bebes? is intended for dissemination on public television and through civic and educational engagement activities, and the delivery of research content on multiple digital platforms. An SRG grant would provide for research travel to interview key participants in the case, the acquisition of archival print and visual materials including legal transcripts; and filming of preliminary interviews. Upon completion of the research and development stage, I believe I will have the necessary research data and materials to produce a full production proposal and a video work sample for production funding.
Caste-ing Sex: On Devadasis and Community Formation in Western

For gender studies of colonial and post-colonial India, the historical figure of the Devadasi (a pan-Indian term, alternately understood as sex-worker, courtesan, prostitute?literally ?maid to the gods?) proffers a complex script, a much-needed shift in the terms through which genealogies of caste and culture can be narrated. Devadasis (overdeterminedly in South India) have now become sought after objects of study, fueled by both feminist and state claims to discover and restore sexual difference in India?s past. *Caste-ing Sex* shifts regional location, and emphases, to focus on a particular Devadasi community in western India (principally in the states of Goa, Karnataka and Maharashtra)?the Gomantak Maratha Samaj -- to explore the couplings of colonialism and community formation that undergird such reifications. In doing so, I examine how the figure of the Devadasi appears as a historiographical puzzle, as a locus of confounding identities between nationalist struggles and reformist efforts in colonial and post-colonial India. Even as the Devadasi figure becomes taxonomized and rehabilitated through the passing of the various Contagious Disease Acts (1864, 1866, 1869) and Devadasi Acts (1930, 1932, 1934), what falls away are its attachments to genealogies of language, caste, pleasure and community formation in colonial India?attachments that must be understand as multiply colonial?Portuguese, British, and to some extent, French. By linking the Devadasi figure to histories of region, reform and nationalism, I raise the following questions: What happens when the establishment of anti-Devadasi laws is read in conversation with the colonial codification of profit and pleasure? What forms of citizenship and subjectivity are being historicized through the figure of the Devadasi, even as we recuperate its presence and expand our understanding of the colonial past?
'Final editing and recording preparation for

'Recording preparation for

MUSIC OF THE MADURESE edition'

This phase of my project prepares a translated re-edition of J. S. and A. Brandts Buys-van Zijp's major 1928 ethnomusicology source document De Toonkunst bij de Madoereezzen, (Music of the Madurese) and also adds an CD recording coordinated with the music cultures addressed in the monograph itself. The CD will be included in my new edition.

I have already gathered archival and field recordings of Madurese music from Library of Congress, my own fieldwork, and those of a colleague in New Zealand. The COR-SRG supports my travel to Indonesia, where I will meet with Madurese and other informants and advisors associated with the STSI National Conservatory and the Department of Culture to select the 70 minutes of recordings. During Fall, 2008, the SRG will support costs of sonic cleaning/noise reduction of the selected pre-W.W.II recordings by a professional recording engineer. We will work together in the New York area.