

CAMPUS SCIENCE NEWSPAPERS™

Stony Brook Edition

May ♦ 1996

Family Medicine Pioneers Community- Based Research Efforts

by Elizabeth Kelso

Three things are necessary for the development of research networks: a zealot to make it happen, committed practitioners, and a dedicated staff who will get all the leg work done. When John G. Ryan, Dr.P.H., left his position at the University of Texas-Houston Health Science Center two years ago to join the Department of Family Medicine at the University of New York at Stony Brook, he brought with him the energy and vision needed to develop Long Island's first Practice-Based Research Networks. Finally, the position of zealot was filled. Since that time, Ryan has brought together a cadre of primary care physicians practicing on Long Island who are interested and motivated to examine what works and what doesn't work in the course of providing primary care interventions to Long Island residents. With the Department's Chair, Bob Schwartz, M.D., as Project Director, and an incredibly supportive staff, these 20 primary care physicians have been engaged in research activities with the Department's two research networks: the New York Metropolitan Area Primary Care Research Network (NYMetNet) and the Family Practice Training Site Research Network (FPTSRN).

The NYMetNet is comprised of physicians in private practice throughout Suffolk County, from Huntington to Amagansett. Currently, the NYMetNet is a Family Practice PBRN. In time, it is anticipated that the NYMetNet will expand to become a true primary care PBRN by including general internists, general pediatricians, and general obstetricians. The FPTSRN facilitates research activities among community-based residency training programs. Through this model for conducting research, mentor/mentee relationships among faculty and residents will be fostered while nurturing the research process among all participants. Residents will not only involve themselves in research first hand, but will also present their results at professional meetings. The goals for both networks are to enable academic faculty, residents, and community practice-based primary care physicians to conceptualize, design, implement, and disseminate the con-

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Stony Brook Scientists First to Capture Element Francium

by University News Services

A group of scientists from Stony Brook have succeeded in being the first to trap the element francium (Fr) with laser beams. Fr is so rare that there are less than thirty grams at any given time on earth.

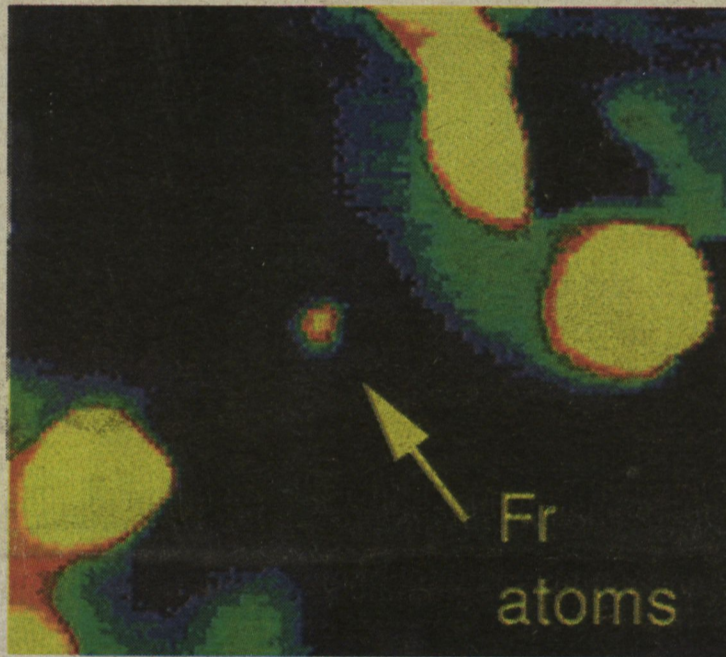
Small quantities of Fr can be found on the earth in uranium deposits. It is produced from the decay of heavier atoms and survives for less than twenty minutes before it decays into lighter elements. Francium is the least stable of the first 103 known elements, and, because of this, it has not been possible to collect large quantities for study.

The Stony Brook group, led by assistant professor of physics, Dr. Luis A. Orozco, has created Fr atoms with atomic number 210, using the Superconducting Linear accelerator of the Nuclear Structure Laboratory in the University. The francium is created in a reaction where a gold target is bombarded by a high energy oxygen beam. The resulting francium ions are collected and transported using electrostatic lenses and finally neutralized at the entrance of a glass cell with a magneto-optical trap. The trap is formed by a combination of six laser beams in the presence of an inhomogenous magnetic field. Several thousands of the atoms remain captured for about 20 seconds in a volume of less than 1 mm in diameter. Future improvements should allow holding times of several minutes. The captured atoms fluoresce and are visible in a video camera as a glowing sphere. (If you have access to the world wide web, the first pictures and data about Fr can be seen at: http://xray1.physics.sunysb.edu:80/physics/news_francium.htm)

Now that Fr can be concentrated and confined, the research team has started a program to study the atomic properties of Fr atoms. The structure of Fr is very simple. Francium, the heaviest of the alkali metals, is very similar to sodium. Scientists from many parts of the world are interested in using the Fr atom to study the weak interaction, one of the fundamental forces

of nature.

The effort to trap Fr with lasers began five years ago at Stony Brook, when Professor Orozco, an expert in lasers and trapping methods, joined forces with Dr. Gene Sprouse, chairman of the Department of Physics and an expert on accelerators and nuclear reactions. Students Gerald Gwinner and Jesse Simsarian, and postdoctoral fellows Paul Voytas, Wen Zhen Zhao and Wei Shi, all worked to develop the methods, and two undergraduates, David Entenberg and John Janis, built and tested key systems of



Francium (false color image)

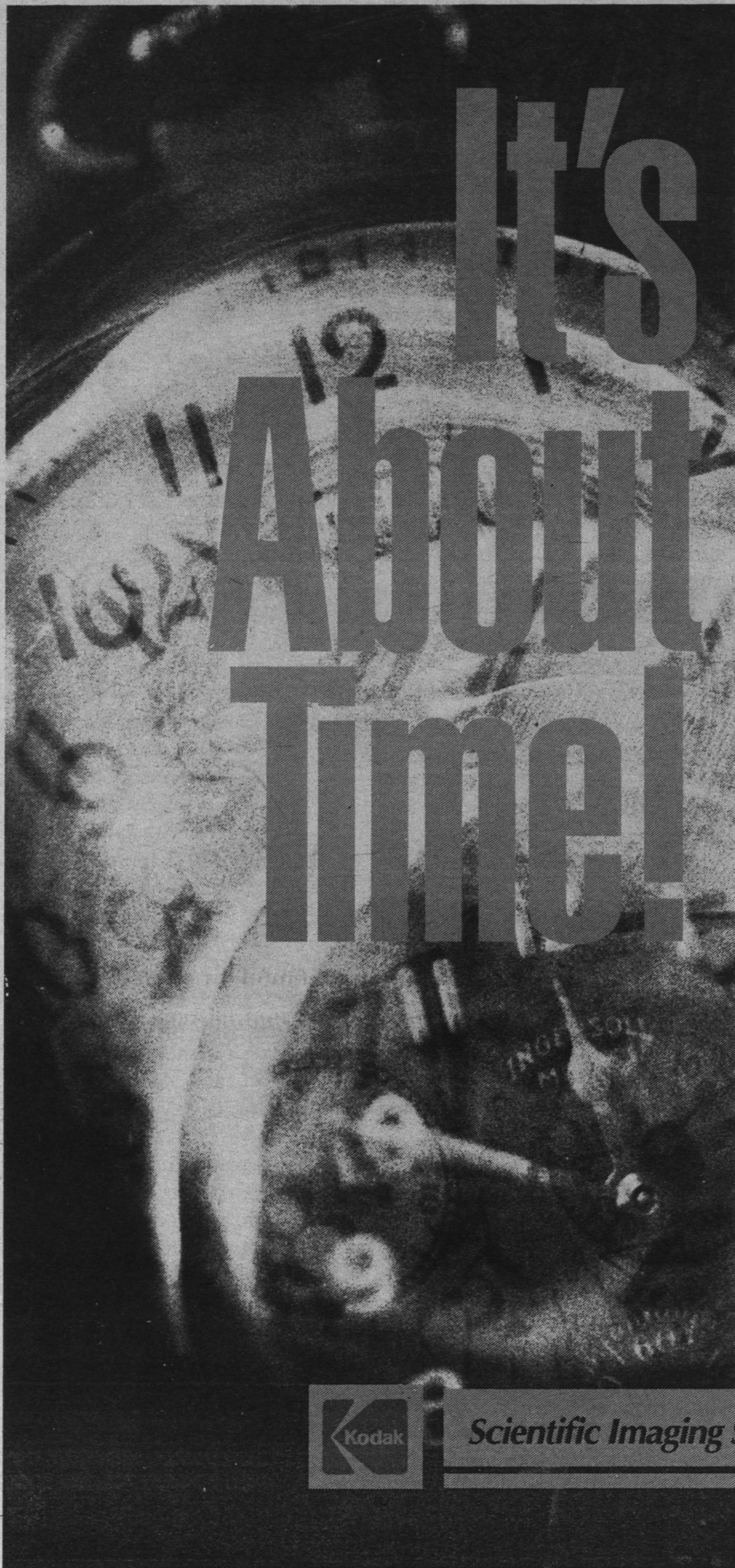
(courtesy USB Physics)

the apparatus.

Other groups in Colorado and California were also racing to be the first to trap the elusive francium, and there was much excitement at the first success. Word of the breakthrough traveled fast over the Internet to the scientific community, but when asked who was the first person they told of the discovery, both Simsarian and

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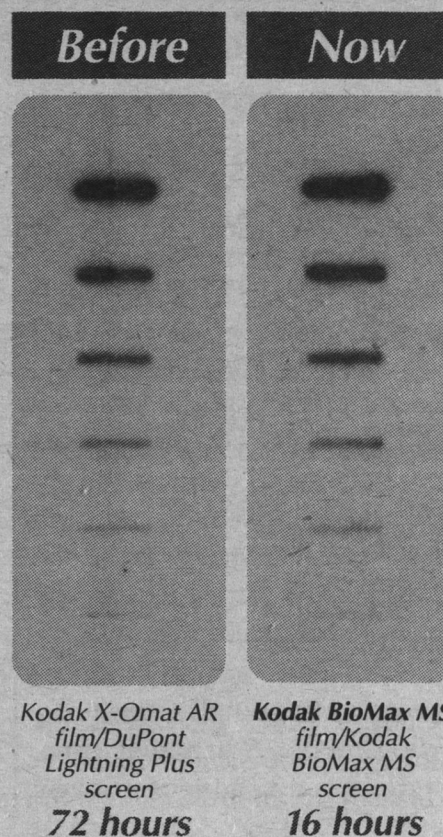


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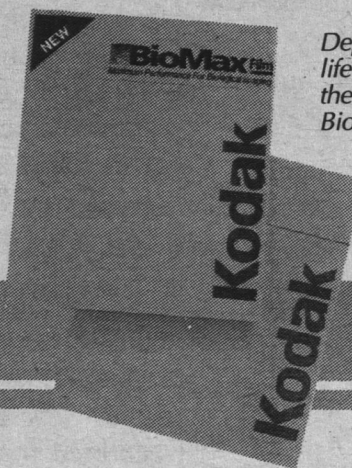
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Lean, Mean, and Clean

Physics Dept. Clean Room Keeps Dust
at Bay and Research Close By

by Lorraine M. Davis

Welcome to the Clean Rooms at the Superconducting and Nano-Fabrication Laboratory in the Physics Department at the State University of New York at Stony Brook, NY. You are about to embark on a cordial paper tour of a facility that comparatively few people are ever permitted physically to walk into. Yes, we are a public institution, but the nature of the research being carried out here requires us to have a strict code of admission. You have to be on our exclusive "Approved User's List" before you can come in, and getting on that list is not very easy! You see, we have to keep our rooms clean. I mean REALLY clean! And...well...quite frankly, you guys are just too dirty.

Let me give you an overview of what a "Clean Room" really is. A Clean Room is a room where all the air-handling must be kept under strict control. You are very familiar with heaters and air conditioners and their ability to regulate the temperature in your home. A Clean Room needs this temperature regulation as well, but it also needs a great deal more. It needs strict humidity control. It needs to maintain a positive air pressure relative to the air in rooms adjacent to it. It needs not only to keep its recirculating air relatively free of particles, but it needs to "clean up" the air when such particles are introduced from outside.

A Classified Clean Room must be able to clean its air to a specification set by the Federal Government for that particular room's class, known as the Federal Standard 209E. Clean Room classes range from a "Class 1" to a "Class 100,000" (or alternatively, M 1 to M 7) and specifies how many "particles" (of a specific size) are allowed to be floating in every cubic foot of air. The particle size that is used as standard is .5m (1/2 a micron) A Class 100 Room, therefore, would not have anymore than 100 of these 1/2 micron particles floating in every cubic foot of air.

I am sure you have all had the experience of gazing into the air through a shaft of sunlight and seeing all the floating debris that we breathe in. Think of how amazed you were to see all those swirling shapes consisting of fibers, spores, hair, dust, etc. There are millions, and when the lighting conditions are right you can see them! Well, guess what? Most of them are considerably larger than 10 microns (the smallest size visible to the human eye). For example, plant spores are about ten microns. Dust is larger than 1. The diameter of a human hair can be 100 microns! But in a Class 100 clean room you can have no more than 100 .5m per cubic foot of air. Achieving this is quite an accomplishment!

Complicating the efforts to keep Clean Room air clean is the presence of people who need to work in the room. Dr. David Austin once did a famous study about how many particles people "emit" and he gathered his information in the "Austin Index." The Index states that a person (in complete clean room gear - more on that later) emits 100,000 .3m particles per minute just sitting and completely motionless, and up to 2,500,000 .3m particles per minute just rising from sitting. Of course, people also tend to "carry-in" the debris that has settled on them from the outside world. Their shoes carry traces of wherever they have stepped. Clinging to their hair and clothing are smoke particles, to their faces are shaving pieces, make-up powders, and talc, just to name a few. People who do not adequately wash may, miraculously, not smell offensive, but they sure do slough off extra skin particles and dandruff that can kill a clean room rating.

This is why Clean Room workers have to wear "Clean Room Gear." The clothing we have chosen includes special non-shedding, anti-static lab coats, shoe covers, and caps. Workers are not ever permitted to enter the Class 100 Clean Room without latex gloves on because skin oil residues left on the surfaces they touch would attract dust. These garments serve as "packaging" material to protect the room from its work-

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To Our Readers...

Last month, our first issue of "Campus Science Newspapers, Stony Brook Edition" was published and distributed throughout the USB scientific community. We began to receive feedback almost immediately via email, telephone, and land mail. Hence, we would like to take this opportunity to show our appreciation for those of you who took the time to contact us. We listened to each and every response and, where suggestions were made, we discussed them thoroughly.

In this, our second issue, we hope that you will notice that, although we are similar in format to our first issue, there have been some significant changes in content. Firstly, we have attempted to include a more diverse offering of science news. There is something in this issue for everyone on campus, including undergraduates. We are also proud of the fact that we are bringing due recognition to two globally significant achievements by our own scientists (the capture of Francium and the discovery of the oldest known human tool). In short, we hope this issue of *Campus Science Newspaper* better "Unites Academic Research," as our motto indicates it should.

Please continue to offer your feedback. We value your comments, and our goal is to evolve into a newspaper that truly becomes an academic and research tool at USB. We appreciate your warm reception and are looking forward to many years of collaboration.

Please send us your letters, comments, suggestions, and submissions to us via the ground mail address listed below or by email at editor@pdpub.com.

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clusions of meaningful primary care research projects under the guidance of the newly formed Division of Primary Care and Health Services Research.

Most clinical interventions are guided by research that occurs in the academic medical center, an environment in which the vast majority of physicians practice subspecialty medicine and focus on exquisitely defined conditions pertaining to specific organs or diseases. Primary care specialists, on the other hand, practice medicine primarily in community-settings and encounter patients presenting with a panoply of problems, often affecting not only their physical health but also their mental well-being. Sometimes, the two spheres fail to overlap. A family practice physician reflected on a story from medical school about a favorite professor who was a neurologist and who did not believe in the existence of tension headaches, telling his students, "I have never seen a patient with a tension headache." "Of course he never saw a tension headache," said the accomplished researcher and MD, "by the time they get to

the neurologist at the ivory tower, all of those patients have already been taken care of, so here's a fellow trying to teach that a tension headache does not exist!"

Family medicine research is at the interface of medical knowledge about the causes of disease and the social context in which people live. Based on this notion, the FPTSRN has initiated a study at five residency training sites located in both Nassau and Suffolk Counties. The study, "Familial alcoholism among primary care patients," examines the effects of alcohol abuse in the household on females' lifetime health status. Are women who share a home with someone who abuses alcohol more likely to experience specific adverse health outcomes and to use health services more frequently than those who don't? The physicians in the network also wanted to consider the collateral effect of alcohol abuse on the perceived quality of life by these women. To address these complex issues, a pilot study examining the effects of alcoholism on people who share a home with an alcoholic was initiated in October 1995 at the Stony Brook Family Practice Center located

in University Hospital and at the Glen Cove Family Practice Center (located in North Shore University Hospital at Glen Cove). "As a result of the preliminary data collection, we realized that 21% of our female primary care patients surveyed actually abuse alcohol, or screened positive based on the CAGE screening instrument," said Jeanne Kidd, Research Associate for the Division and the FPTSRN, "where female alcohol abuse falls between 10% and 11% across the general population." Thirty-six percent of the CAGE negative respondents (those who are not alcoholic) were identified as individuals who share a home with at least one household member who is abusing alcohol.

Much of the primary care research is conceived of to explain the things that are seen day in and day out in the practice setting. The research questions always originate from the doctors and data are collected from their practices by the research and practice staff. In this way, the Practice-Based Research Network is a grassroots effort to network health professionals, allowing them to assist one another

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Daily Hours of Study	GPA	
	Male	Female
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Two - Four Hours per Day	2.73	2.87
More than 4 Hours per Day	3.21	3.07

Daily Hours of Study	Frequency	Percent	Cumulative Percent
2 to 4 Hours per Day	221	34.7	62.8
More than 4 Hours per Day	270	42.3	105.0
Total	674	100.0	

school	gpa	gender	study
1	1.00	3.45	Males Less than 2
2	3.00	2.20	Males Two - Four
3	4.00	3.91	Males Two - Four
4	2.00	2.20	Females Less than 2
5	1.00	3.50	Females Less than 2
6	5.00	3.33	Females More than 4
7	3.00	3.29	Males Two - Four
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The Youngest USB Science Students

Future Science Educators Get a Taste of the Classroom

by Anthony Graziano

Above the Harriman Café, in the Physics building, there stands a lab that remains unknown to many students and faculty at Stony Brook. There are no mass spectrometers, no fume hoods, and no micropipets in the room at all. This is because it is not a "research lab," but rather a studio for students enrolled in the Science and Mathematics program at USB. Students go there and experience how elementary and middle school aged children learn about scientific phenomena.

The "Discover Lab" was developed to prepare student teachers for the classroom, while making youngsters more enthusiastic about science and mathematics education. Discover, headed by Wally Nelson, Jackie Brooks, and Cathy Barrett, operates with funding from the National Science Foundation. This innovative program is open to public and private schools in New York allowing the exploration of science in a "hands-on," non-traditional way.

The Discover Lab's main objective is to spark scientific enthusiasm. It accomplishes this by setting up a variety of challenging stations where mathematical and scientific concepts are used to solve problems. These stations, taught

by USB students, are designed to enhance the synthesis of information and develop critical thinking. At the end of each session, the children are asked to utilize the knowledge they have gained from each station to undertake a final

the program has not yet been determined because the children's visits to Discover are limited, making it difficult to follow particular groups of students. Discover's influence on academic achievement and science interest has not been conducted on these youngsters because of the limited visitation. "The program has been in progress for five semesters and will take at least ten years before any statistical data can be gathered and considered valid," says Nelson.

To compensate for the lack of statistical evidence, a survey consisting of ten short answer questions was distributed to Stony Brook students in the course. The survey was designed to obtain feedback pertaining to the efficacy of Discover Lab, and it demonstrated the following about Discover: The lab enhanced lesson flexibility, increased confidence levels among student teachers,

and increased student comprehension of scientific concepts. The course also helped those students decide whether science education is a career they would like to pursue. Many of the students enrolled in the program will eventually go on to teach secondary education in areas such as chemistry, earth science, physics, & biology.

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Children gather around a station which emphasizes weights & measures

project.

According to Wally Nelson, Professor of Discover's SCI 200/510 course, the lab is rather unique because it is the only one of two programs in the country that give those interested in science and mathematics education an idea of the profession before entering the classroom to student teach. However, the overall success of

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Stony Brook Anthropologist Uncovers the Oldest Tool Found to Date

by Kristin Harrison

As the 21st century approaches, the origin of the human race is still one of the most controversial topics researched today. Currently, there are a vast number of excavations in Africa, Europe, and Asia, with anthropologists searching for clues about human existence millions of years ago. According to Dr. John Shea, Assistant Professor of Anthropology at SUNY Stony Brook, one facet of human life that can offer a great deal of information is the tools that have been used throughout the ages.

Dr. Shea has been interested in tools since his teenage years. This interest has carried him into a fascinating career. After he received his Ph.D. at Harvard in 1991, he was asked to join the Anthropology Department at Stony Brook a year later. His focus is on "primitive technology,"

namely, the art of making stone tools and their usage. By examining tools excavated from a site, he can estimate how long it took them to be made and what kinds of animals were hunted. Biostratigraphy are fossils with a known age distribution. When the fossils are excavated, the tools found with them are easily dated.

In the summer of 1993, Dr. Shea was asked to excavate the site of Ubeidiya which, he explained, is "located in the Jordan Valley in Israel." Funded by the L.S.B. Leakey Foundation, Shea and his colleagues from Israel and France went to the site, which is estimated to be between 1.4 and 1.6 million years old. Both undergraduate and graduate students from SUNY Stony Brook

accompanied the team to the site, where they learned how to extract bones from the sediment and how to conserve them. The highlight of the expedition for Shea occurred during the excavation. He was inches away from striking at an ancient "hand axe," estimated to be 1.6 million years old. Shea had uncovered the oldest tool found to date.

While attending Harvard, Shea published

two papers relating to prehistoric man. In his paper, "A New Perspective on Neanderthals from the Levantine Mousterian" published in 1990, he offers the recent development that "modern humans may have preceded Neanderthals in that region [Israel] between

Shea explained. They then would move on to another area. Modern humans, on the other hand, were more "knowledgeable and smart" as they would "move before running out of food" he continued. The modern human would hunt gazelle during the summer at one camp, and

then ascend to the mountains to hunt red deer in the winter. When asked why they were not here today, Shea responded that "they probably became extinct due to the long winters that occurred."

These conclusions were based on two factors: the first was that there were "eight to ten times more points and fractures" found where Neanderthals were believed to have hunted than where modern humans did, resulting in more hunting; and the second was "the structures of the teeth found from the animal remains. "If the animal was killed in the summer, the

teeth were more opaque than if they were killed in the winter, where they are more translucent." Despite morphological similarities, he concluded when "faced with the same challenges, both responded in two completely different ways."

In addition to excavating, Shea also teaches four classes and finds it very rewarding. To Shea, teaching is more than just books and lectures; it is making the students remember what was taught, and one way is having them experience it. In his Fall classes, he enjoys showing his students how to make the tools the modern humans and Neanderthals used thousands of years ago.

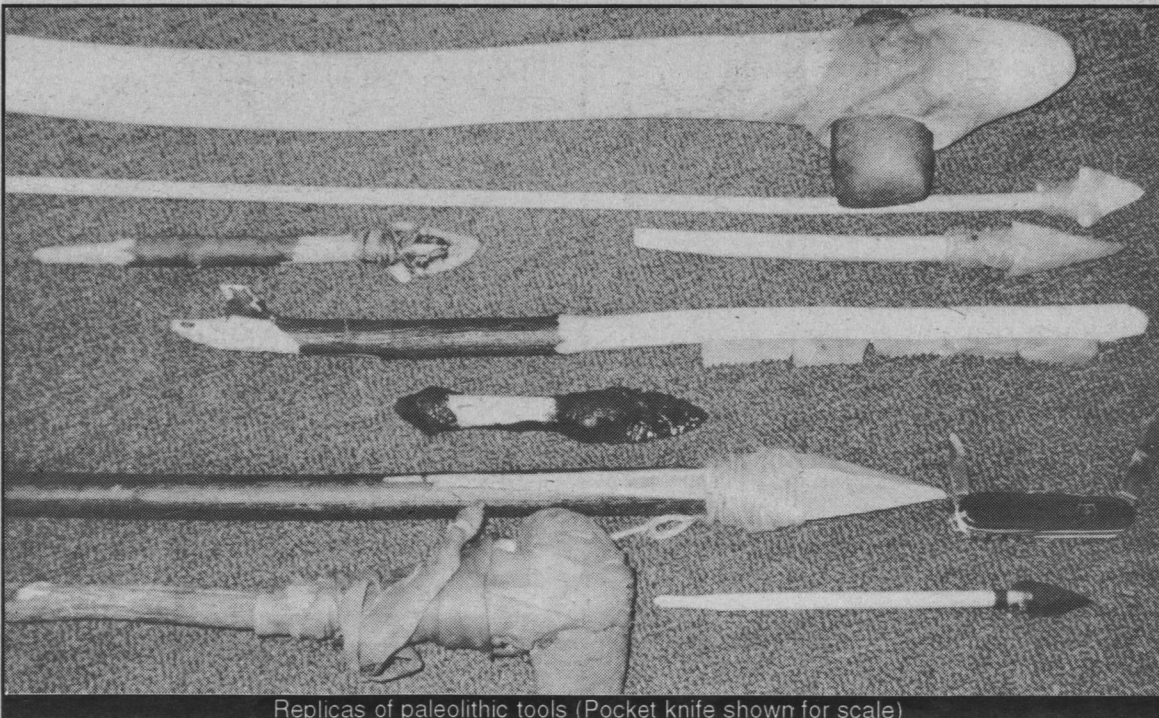
Shea's next venture is to go to North Jordan to excavate the caves where he had

found a tool while on an excursion with his wife in 1989. He is optimistic, and believes he may find modern human or Neanderthal fossils at the site. Once he finds a good place to excavate and is funded, he would also like to take more students with him. ■



Dr. John Shea, displaying his "primitive technology"

50,000-100,000 years ago." In fact, Shea wrote, looking at the fossil discoveries and mitochondrial DNA "suggests Neanderthals and early anatomically modern populations represent



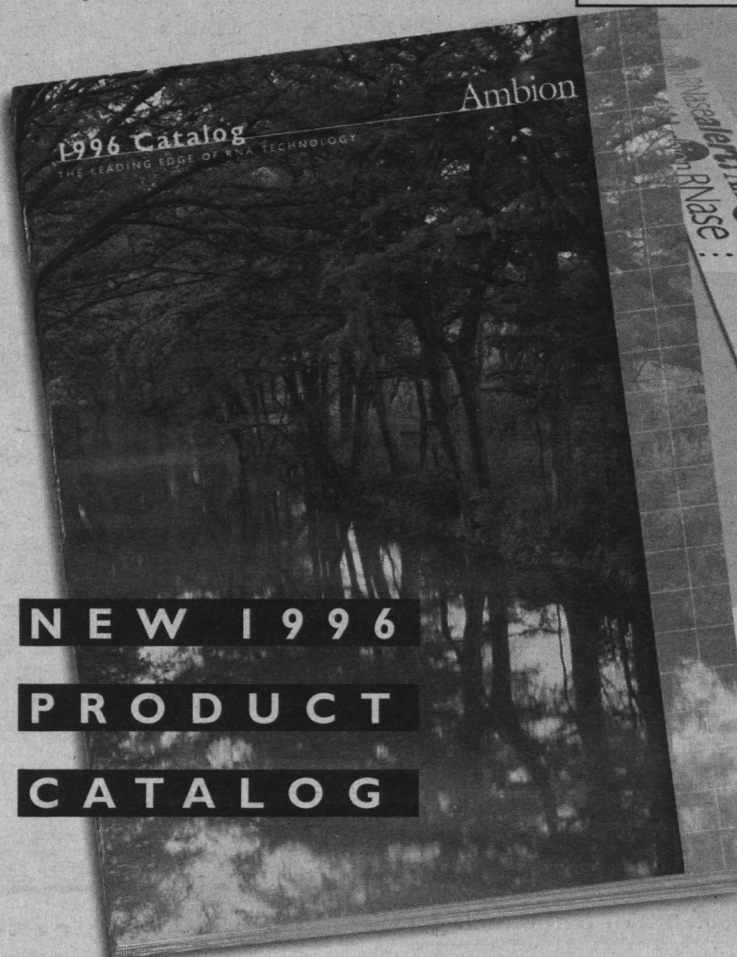
Replicas of paleolithic tools (Pocket knife shown for scale)

divergent hominid lineages and probably separate species." His argument is based on comparing the use-wear of stone tools, hunting behavior, and how each has evolved.

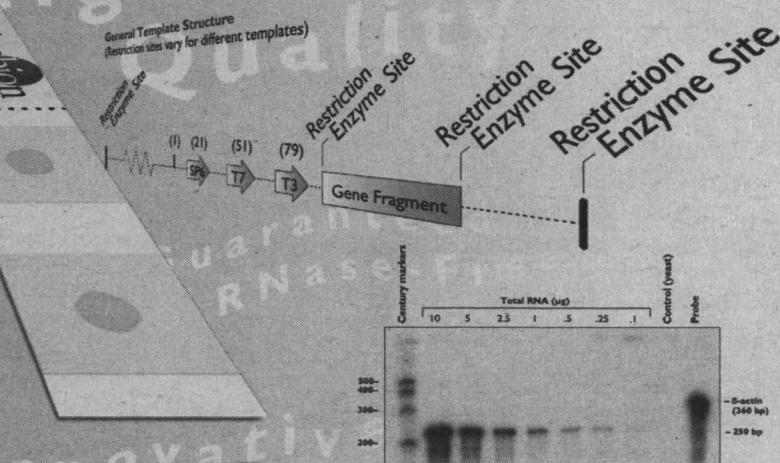
Shea also has a strong interest in the "seasonal mobility" of these two species. Neanderthals used "brute force and physical strength" by staying in one area and hunting all types of animals until the food was depleted

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Science Starts Early at Area High Schools

Stony Brook Faculty Play a Key Role in Success of Young Scientists

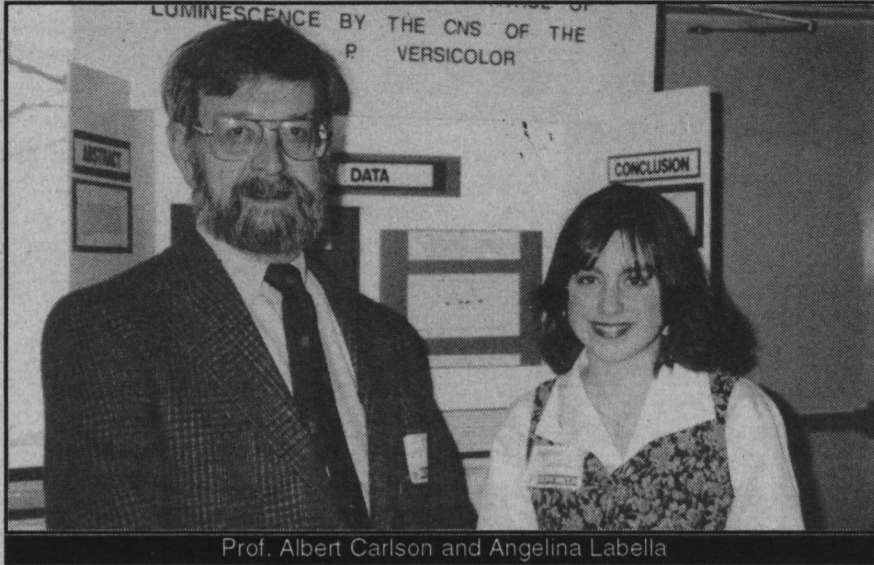
by Edna Zemanian

The High Schools of Nassau and Suffolk Counties are absolute hot beds of interest in all areas of science. Many schools have science research programs, where students conduct scientific and mathematical research in summer programs on Long Island as well as at major universities around the country, or even as far as Moscow. Stony Brook faculty provide one of the major engines that drive this profound interest in sophisticated research. As testimony to the success of these dedicated academics, Nassau and Suffolk have provided over 10% of the finalists and semifinalists in the national Westinghouse Talent Search each year, more than California, Pennsylvania and Texas combined. This year New York State as a whole provided 19 of the 40 finalists nationwide, with Long Island High Schools producing 6 of this total.

Stony Brook hosts the Long Island regional finals of the International Science and Engineering Fair. Over 50 Stony Brook faculty are involved in this effort each year. The regional fair sends 8 winners to the internationals, where students compete with over 700 participants hailing from all over the globe. Long Island entrants average 3 major prizes per student, demonstrating their quality and competitiveness. In last year's finals, one of Long Island's students received the second prize overall, and the students as a whole won over \$70,000 in scholarship money. Long Island students are also strongly competitive in other national and local competitions, winning awards in the Dupont, Nynex, Duracell and Toshiba competitions, the Long Island Math Fair, Long Island Congress, St. John's Symposium, and the New York State Science Olympiad.

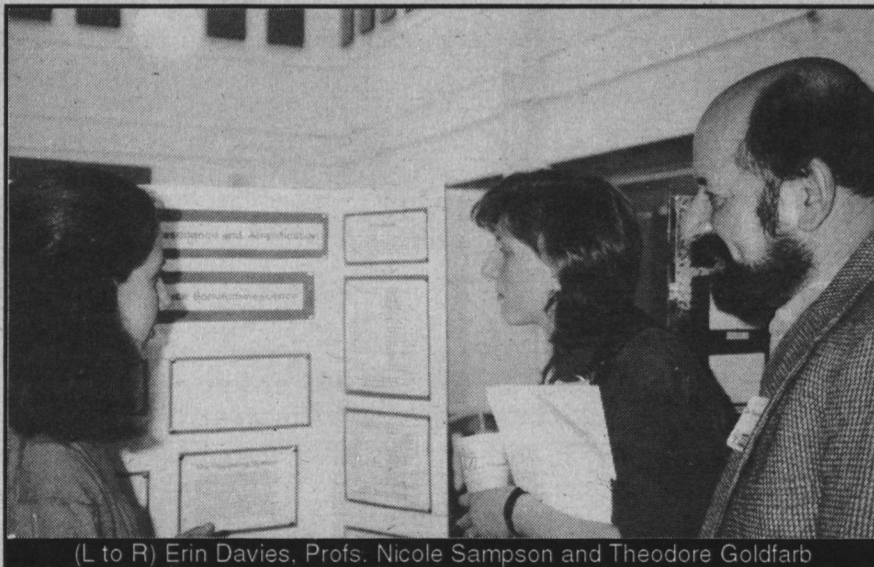
Just as in any successful sports program, the outstanding performance of the winners of national and international science competitions is built on a broad base of student participation.

Stony Brook's Center for Science, Mathematics and Technology Education has worked hard to encourage High School students interested in the "hard" sciences, as well as the social and behavioral sciences, engineering and mathematics. For the past 8 years the Center organized the Student Research Support Program that brings to campus each Fall over 1000 students interested in



Prof. Albert Carlson and Angelina Labella

research. Students hear faculty researchers and fellow students describe their research, take part in a poster session with their peers, and visit research laboratories across the campus. The university offers them library privileges, and the Center operates a telephone so they can contact relevant faculty to discuss their projects. The Center also offers a Summer Research Institute for 30 students to work in faculty research labs. The Research Institute helps students to write papers, prepare posters, and describe their research results. All participating students discover that research is an exciting, rewarding and very social activity; in many cases it changes their lives.



(L to R) Erin Davies, Profs. Nicole Sampson and Theodore Goldfarb

High school students get a real boost by interacting with university faculty and graduate students as part of a research team. The willingness of Stony Brook faculty to take on young, untutored but highly motivated high school students, and share their experience and knowledge, is one of this university's most productive investments. This effort by Stony Brook faculty comes at the cost of their time, their scientific resources, and even a little of their patience. Faculty-contributors come from life science, marine science, basic and clinical health science, physics, chemistry, earth science, mathematics, engineering, psychology, sociology, political science and women's studies. Stony Brook owes them all a debt of gratitude for their magnificent efforts on behalf of all the young researchers of Long Island. ■

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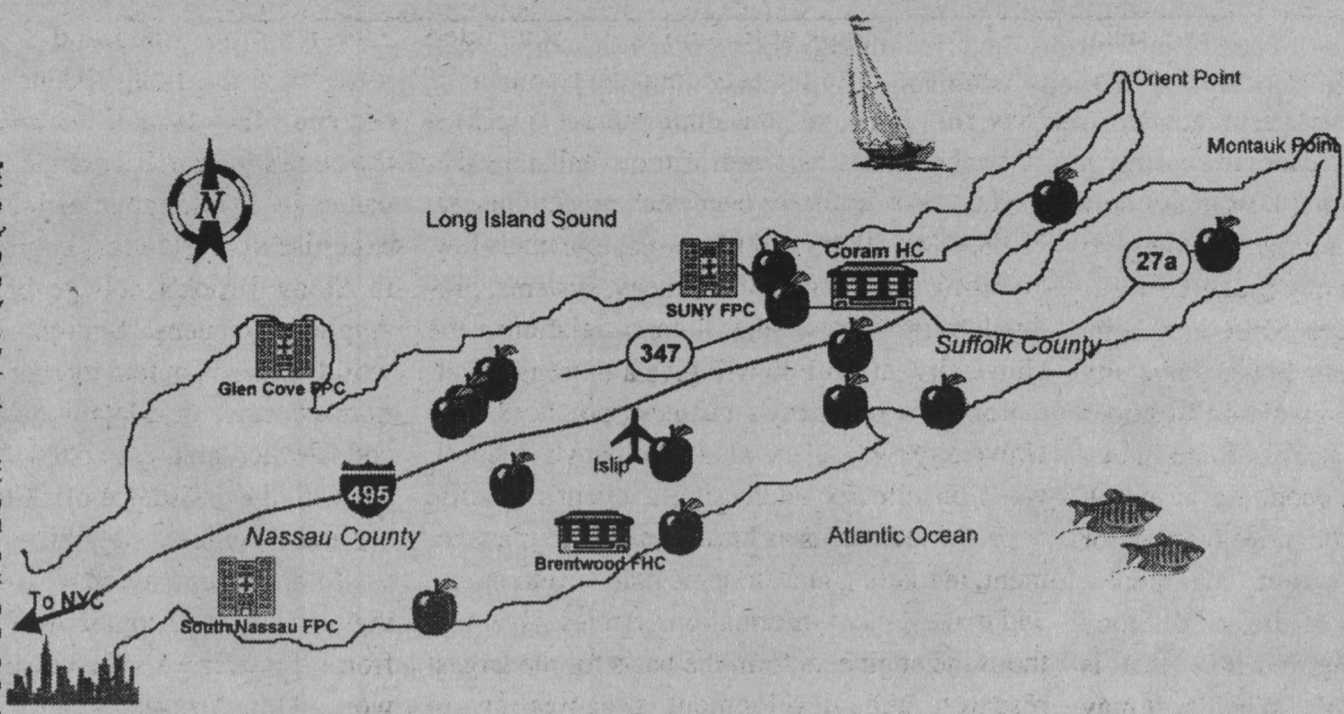
NYMetNet and FPTSRN Practice Locations

MAY, 1996



The NYMetNet is coordinated by the Division of Primary Care & Health Services Research of the Department of Family Medicine, Stony Brook University Hospital and Medical Center, Stony Brook, New York 11794-8461

The Family Practice Training Site Research Network is coordinated by the Division of Primary Care & Health Services Research of the Department of Family Medicine, Stony Brook University Hospital and Medical Center, Stony Brook, New York 11794-8461



NYMetNet Practices:

- K. Becker MD
Setauket
- C. Carlson MD & J. Keeler, MD
Matituck
- F. Cormier MD
Huntington
- A. Dorfman MD
E. Islip
- R. Ebarb MD
Babylon & W. Sayville
- J. Fahey MD
Bellport
- N. Fitterman MD
Huntington
- B. Haskell MD
Huntington
- R. Klein MD
Patchogue
- R. Langer MD
Patchogue
- A. Pesce MD & S. Shiesha
E. Setauket
- R. Plachy MD
Amagansett
- P. Tchao MD
Deer Park

FPTSRN Practices:

- R. Bonanno MD
Family Health Center
Suffolk County Health Department
Brentwood
- R. Fahrenwald MD
Family Practice Center
University Hospital & Medical Center
Stony Brook
- G. Stretch MD
Coram Health Center
Suffolk County Health Department
Coram
- S. Kirsch MD
Family Practice Center
South Nassau Communities Hosp
Oceanside
- L. Verardo MD
Family Practice Center
North Shore University Hospital at
Glen Cove, Glen Cove

DIVISION OF Primary Care & Health Services RESEARCH

Continued from Page 4

with knowledge and research that is appropriate for their patient populations. This relationship between research and a specific geographical location was clearly demonstrated last November when the primary care physicians in the NYMetNet first came together to brainstorm research questions they needed to address to serve their patients' unique needs.

Consensus from this meeting propelled the NYMetNet to investigate how Lyme disease on Long Island has impacted their patients' utilization of health care services. A tide of patient anxiety in light of the presence of Lyme disease across this population presents itself regularly regardless of negative test results and physician reassurance often waxing and waning with media attention. The Monday after the conference, Elisa Horbatuk, NYMetNet Research Associate, began her investigation into the current medical literature surrounding Lyme disease and Lyme disease anxiety. Due to the wide range of recommendations for the treatment of Lyme disease, Dr. Julia Fahey, a NYMetNet physician in collaboration with Elisa Horbatuk, has developed a set of treatment guidelines in an attempt to simplify the dissemination of this information among primary care physicians. Already the NYMetNet is showing the benefits of bringing community-based physicians (committed practitioners) and dedicated staff

together to make care more appropriate.

The NYMetNet physicians want to address thoughtfully the dissonance that emerges in these situations by better understanding their patients' perceptions about contracting, preventing, and curing disease in an effort to implement a different approach to addressing this issue in their private practices. The PBRN research is committed to expanding the primary care physician's understanding of the effectiveness of medical interventions using scientific rather than anecdotal evidence. The impact of the research process and the significance of this research will be realized by eventually examining how the community-based physicians may modify their practices based upon network research conclusions.

The goal of the Division of Primary Care and Health Services Research is to continue to add new practices to these primary care networks to include a greater diversity of primary care specialties among the physicians and a greater diversity of ethnic and racial groups among the network's patients. Start up costs for these networks have been borne by the Federal Government, the Department of Family Medicine, and Stony Brook University Hospital and Medical Center.

From the first conference held last November, the most evident issues of concern raised by the network physicians are those

that effect the health and health care of women and children. Statistics show that between 60% and 70% of the patients presenting to primary care practices are female. The weekend of May 4th and 5th will once again bring together the network physicians. The process for initiating research ideas, developing the study protocol, collecting data, and disseminating results continues among this group of practitioners committed to improving the health outcomes of their patients specifically, and the Long Island population in general. To learn more about the research activities and people involved in the PBRNs check out the Division of Primary Care and Health Services Research website (<http://www.fammed.sunysb.edu/research/research.html>) and the Department of Family Medicine at <http://www.fammed.sunysb.edu>.

The author is a Research Assistant in the Division of Primary Care and Health Services Research.

Strategic Partnership for Industrial Resurgence: Engineering the Way to Economic Growth

by Renate Thomas

Strategic Partnership for Industrial Resurgence (SPIR) is a program that is beneficial for businesses and companies that want to get ahead. In today's rapidly changing business environment, it is essential that businesses stay on top of advances in technology. Keeping up with these developments, though, can be difficult and costly. That's where SPIR can help. Through the materials of four State University of New York engineering programs, SPIR hopes to revitalize and redirect New York State industry by moving it toward an economy based on technical knowledge and the development of new technologies. The four campuses, Binghamton, Buffalo, New Paltz, and Stony Brook, offer an engineering resource that is unparalleled in New York state. Whether it may be a small firm looking to streamline manufacturing processes, a high-tech firm looking to expand the international horizons, or a company trying to adapt to new environmental regulations, SPIR's goal is to make business more competitive.

SPIR is built on the successful relationships between the individual SUNY engineering programs and their industrial partners. By working together, SUNY engineering programs can reach many more companies with an even wider range of needs. SPIR provides New York State industries with expertise of over two hundred and fifty engineers and applied scientists, experience with over one-hundred and fifty companies in New York State, access to top engineering and applied science students plus a host of other resources to help your business become more competitive. At Binghamton University, the Thomas J. Watson School of Engineering and Applied Sciences' ability to solve technology-related business problems is recognized by many industries. Through SPIR, companies gain access to the Watson School's vast fundamentals and, when needed, the other Binghamton programs. For example, the school of Management will be asked to provide a marketing plan for a new product. Binghamton's Integrated Electronics Engineering Center is at a prestigious level in the nation. Companies benefit from IEEC involvement as technical consultant or from early access to research breakthroughs in electronic packaging.

Since 1987, the Continuing Education Program has helped companies develop and retrain their employees through various instructional workshops and programs. Watson School's Continuing Education and Eng. Net (TM) programs further strengthen the mission of SPIR to introduce and transfer new technologies into business practice.

The University at Buffalo is also committed to contributing to the economic development of New York State, and that commitment is reflected in the names of some of the companies that Buffalo has assisted over the years: General Mills, GMC, IBM, and Motorola, to name a few. Focusing on a company's strategy, systems, production processes, and human relations, the University at Buffalo will give a thorough evaluation of a company's business practices. The University will also, at a company's request, work on directly addressing a client's specific needs in such areas as hazardous waste management, marketing and strategic plan development, and management information systems. Over one thousand engineers form the basis for the largest research and development organization in Western New York State. Partnering with companies through SPIR adds a deep technical focus to complement the broad strategic approach that was outlined.

Between Albany and New York City, the College at New Paltz serves a diverse group of high technology companies in the Mid-Hudson Valley region from start up to Fortune 500. The college's technical focus in electrical engineering provides a strong foundation for companies seeking to expand their technological capabilities in a competitive marketplace. New Paltz is a leader in the retraining and development of the Mid-Hudson Valley's technical work force. One successful example is the Software Institute. The Software Institute is a joint effort by Continuing Education, Electrical Engineering, and Computer Science Departments.

The only major research university on Long Island, SUNY Stony Brook works closely with industry to fulfill the region's high-tech future in advanced manufacturing, modeling, electronics, thin film manufacturing, software development and more. With a well-

educated work force and a strong technology infrastructure, Long Island is positioned to become "Tech-Island," an area similar to North Carolina's Research Triangle Park. Today's companies in a wide range of industries rely on the expertise of world-class engineers and scientists in Stony Brook's college of Engineering and Applied Sciences. Symbol Technologies, the world leader in automatic bar code data transaction systems, developed two dimensional bar codes which greatly expanded storage availability, with the assistance of a Stony Brook professor and a graduate student.

In addition, Dayton T. Brown, an engineering and testing company, recently benefitted from Stony Brook's technical expertise when it won a U.S. Army contract to create a state-of-the-art helicopter fatigue testing lab, the only one in the country. By winning this contract, Brown created 100 new jobs on Long Island. Many Stony Brook engineers and scientists bring years of experience with industry to work, and apply their knowledge in world-renowned research labs. ■



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ALANINE-SCANNING MUTAGENESIS OF A C-TERMINAL LIGAND BINDING DOMAIN OF THE INSULIN RECEPTOR ALPHA SUBUNIT

Mynarcik DC. Yu GQ. Whittaker J.

Journal of Biological Chemistry. 271(5):2439-2442, 1996 Feb 2.

Abstract

A recent affinity labeling study has suggested that amino acids 704-717 of the C terminus of the insulin receptor represent a contact site for insulin. To determine whether these amino acids are part of a ligand binding site, we have performed alanine-scanning mutagenesis of

this region. Mutant cDNAs encoding recombinant secreted receptors were transiently expressed in 293 EBNA cells, and their insulin binding properties were evaluated. Of the 14 residues in this region only 4 amino acids, Asp-707, Val-712, Pro-716, and Arg-717, could be mutated to alanine without compromising

insulin binding. The reduction in affinity resulting from the individual mutation of the remaining amino acids varied from an increase in K-d to 3.69×10^{-9} M (Asn-711) to greater than 10^{-6} M (Thr-704, Phe-705, Glu-706, and His-710); the K-d of native secreted recombinant receptor is 0.56×10^{-9} M.

DEMOGRAPHICS, FAMILY HISTORY, PREMORBID FUNCTIONING, DEVELOPMENTAL CHARACTERISTICS, AND COURSE OF PATIENTS WITH DETERIORATED AFFECTIVE DISORDER

Vocisano C. Klein DN. Keefe RSE. Dienst ER. Kincaid MM.

American Journal of Psychiatry. 153(2):248-255, 1996 Feb.

Abstract

Objective: This exploratory study examined the characteristics of a group of unusual and previously undescribed patients with major affective disorder who not only had been continuously symptomatic for prolonged periods of time but were also so functionally impaired that they required years of continuous care in psychiatric facilities or by family members.

Method: Twenty-seven inpatients with major mood disorders and 29 inpatients with schizophrenia were recruited from a large state hospital; 27 outpatients with major mood disorders were recruited from an affiliated outpatient facility. The research battery included the Structured Clinical Interview for DSM-III-R--Patient Version, the Premorbid Adjustment

Scale, and a semistructured interview designed to assess demographic, family history, developmental, and course information.

Results: Inpatients with deteriorated affective disorder differed from outpatients with nondeteriorated affective disorder along several important dimensions, including family history of mental illness, birth-related problems, physical disorders in infancy, premorbid functioning presence of mixed episodes and rapid cycling, and medication noncompliance between hospitalizations. Inpatients with deteriorated affective disorder differed from inpatients with schizophrenia on the Premorbid Adjustment Scale. Patients with bipolar affective disorder differed from those with unipolar disorder on many of the variables associated with deteriorated

of functioning.

Conclusions: Birth-related problems, physical disorders in infancy, and poor premorbid adjustment in childhood and adolescence appear to play an important role in deterioration of functioning among patients with unipolar depression. Disruption in treatment because of medication noncompliance and the appearance of mixed episodes and rapid cycling are associated with functional decline in bipolar affective disorder. Several characteristics previously considered specific to deterioration of functioning in schizophrenia, such as a high rate of birth complications and poor premorbid adjustment, appear to be associated with functional deterioration among patients with major depression as well.

LECTIN BINDING TO SURFACE GLYCOPROTEINS ON COULLANA SPP. (COPEPODA: HARPACTICOIDA) CAN INHIBIT MATE GUARDING

D.J. Lonsdale, T. W. Snell and M.A. Frey
Mar. Fresh. Behav. Physiol. v. 27 (2-3), 153-162

Abstract

We tested the hypothesis that surface glycoproteins found on Coullana spp. are important signals in contact mate-recognition. Female copepodites (mostly mold-state V) of Coullana canadensis (Maryland) and Coullana sp. (Florida) were treated with 0,1 mg ml⁻¹ of

four lectins that represent a variety of carbohydrate affinities. The females were then washed and exposed to males. Binding of some lectins significantly reduced the ability of males to recognize potential mates and initiate precopulatory mate guarding. Other lectin treatments had no significant effect on this behavior.

These data show that surface glycoproteins on female Coullana spp. are important mating signals for males in the recognition of conspecifics. Our results also suggest that differences in chemical signals among these sibling species may have evolved.

AGING AND IMMUNE FUNCTION - A POSSIBLE ROLE FOR GROWTH HORMONE

Gelato, Marie

Hormone Research 45(1-2):46-49, 1996.

Abstract

Elderly individuals have four to five times the case rate of cancer, tuberculosis and herpes tester and six to seven times the fatality rate from pneumonia compared to young adults. This may be causally related to two changes that occur with aging, i.e. decreased growth

hormone (GH)/insulin-like growth factor-1 (IGF-1) production and decreased immune function. Data from our laboratory as well as others have shown that, based on either GH secretory dynamics or IGF-1 levels, approximately 40% of adults aged 60 and older are GH deficient. In the same population of sub-

jects, immune function decreases such that there is a decline in cell-mediated and humoral immune responsiveness. Some of these immune deficits have been shown to be reversed in humans and primates by GH and/or IGF-1 treatment. This paper will review some of these data.

GAIN SPECTRA AND TEMPERATURE CHARACTERISTICS OF QUANTUM CASCADE LASERS

Vera Gorfinkel, Serge Luryi, Boris Gelmont

Proc. Int. Wkshp. on Physics and Computer Modeling of Devices based on Low-Dimensional Structures. ed. by V. Ryzhii, C. Hamaguchi, V. Mitin and M. Ershov, IEEE Comp. Soc. Press (1996) pp. 94-104.

Abstract We have developed a theory describing the operation of lasers based on intersubband transitions in a quantum well. The theory combines	a first-principles description of the intersubband lineshape and the optical gain with kinetic models for carrier heating. The theory is consistent with the experimental data available	and suggests new ways of improving the laser design for room-temperature high-power operation.
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METHOD OF MAKING AN ARTICLE COMPRISING A SEMICONDUCTOR DEVICE, [ACTIVE PACKAGING; A METHOD FOR FABRICATION OF THIN-FILM SEMICONDUCTOR DEVICES WITH ALIGNED LITHOGRAPHY ON OPPOSITE SIDES OF A THIN FILM]

Serge Luryi

US Pat. 5,496,743. (filed December 1993, issued March 1996).

Abstract of the Disclosure A Novel method of making a semiconductor device (e.g., a HBT) is disclosed. A semiconductor body that comprises bulk semiconductor material and epitaxial semiconductor material on the bulk material is processed by carrying out a first sequence of processing steps on the epitaxial material. The sequence comprises forming at least first and second contact means	on the epitaxial material. The resulting intermediate body is mounted, epitaxial material down, on a carrier body (e.g., a Si wafer with integrated circuitry thereon), such that the first and second contact means are electrically connected to, respectively, third and fourth contact means on the carrier body. Mounting is accomplished, exemplarily, by means of anisotropically conductive adhesive means. Subsequent	to mounting of the intermediate body on the carrier body. The second sequence comprises removing, in at least a portion of the mounted intermediate body, essentially all bulk semiconductor material. The inventive method can be used to produce, for instance, a very fast HBT of novel geometry.
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THEORY OF THE SPECTRAL LINE SHAPE AND GAIN IN QUANTUM WELLS WITH INTERSUBBAND TRANSITIONS

Boris Gelmont, Vera Gorfinkel and Serge Luryi
Applied Physics Lett. 69 (16), 15 April 1996

Abstract We investigate the spectral line shape of radiative intersubband transitions in a quantum well as determined by two factors: the electron scattering rate from states of given energy and the mass difference between the two subbands	involved. The interplay between these factors leads to an essentially non-Lorentzian form of the spectral line. We develop an analytic theory of the line shape and calculate the dependence of the intersubband optical gain in a quantum well on both the population inversion and the	temperature. Under typical conditions, the effect of electron temperature on the gain is similar to that of the lattice temperature, which points to the importance of hot carrier effects in understanding the behavior of intersubband lasers.
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CARRIER DYNAMICS AND PHOTODETECTION IN CHARGE INJECTION TRANSISTORS

Michael Y. Frankel, Gregory L. Belenky, Serge Luryi, Thomas F. Carruthers, Michael L. Dennis, Alfred Y. Cho, R.A. Hamm and Deborah L. Sivco
Applied Physics Journal, March 1996.

Abstract We study picosecond carrier transport dynamics induced by 200-fs 1.55 micrometer optical pulses in charge injection transistor structures. We propose and demonstrate a new method for the optical control of real space transfer in these devices. The minority holes photogenerated in the channel produce a substantial cooling of the hot electron majority carriers and lead to the reduction of the real space transfer.	The new method also allows to obtain a direct measure of the minority carrier lifetime in the transistor channel. These effects are demonstrated in InGaAs-channel devices with both InAlAs and InP barriers. The similarities are explained in terms of the interaction of photogenerated minority holes with majority electrons in the channel leading to photoconductor-like drain current and to a reduction in the real space transfer collector current. The differences	are attributed to the different conduction and valence band energy offsets between the wide bandgap barrier and the low bandgap collector and channel layers. As a practical application, the InAlAs-barrier device shows a capability of serving as a photodetector with the recovery speed of under 7-ps limited by the measurement system.
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OPTIMAL DIVISIBLE JOB LOAD SHARING FOR BUS NETWORKS

Jeeho Sohn and Thomas G. Robertazzi, Elec. Eng. Dept.
IEEE Transactions on Aerospace and Electronic Systems. Vol. 32, No. 1, Jan. 1996, pp. 34-40.

Abstract Optimal load allocation for load sharing a divisible job over N processors interconnected in a bus-oriented network is considered. The	processors are equipped with front-end processors. It is analytically, proved, for the first time, that a minimal solution time is achieved when the computation by each processor fin-	ishes at the same time. Closed form solutions for the minimum finish time and the optimal data allocation for each processor are also obtained.
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CALENDAR OF SEMINARS,

MAY 1-MAY 3

- May 1: "Atmospheric Damage by CFC's and Their Alternates," Dr. Prasad Varanasi, MSRC, 12:00 pm, Endeavour 120
- May 1: "Adiabatic Wavepacket Transformations," Dr. John Lawall, NIST Gaithersburg, 10:30am, Grad Physics, rm S-141
- May 1: "Morse Theory for Riemannian Distance Functions," Special Geometry Seminar, V. Gershkovich, Melbourne University, Math Building, 12:40 pm, rm 5-127
- May 1: Testing Macroevolutionary Scenarios: Character Evolution and Biogeography of Bufonid Frogs," Dr. Anna Graybeal, Dept of Zoology, Univ. of Texas, Austin, 3:30 pm, Life Sciences building, rm 038
- May 1: "Torsion Free Connections and the Notion of a Differentiable Structure in 4D," Dennis Sullivan, USB, Mathematics Department, 1:00, Math Tower, rm 6-125,
- May 1: "Renormalization group in statistical mechanics based on examples (continues)" Mini Course in Dynamical Systems, Roberto Silvotti, USB, Math Building, 2:00 pm, rm P-127
- May 1: "Location Registration and Paging for In-Building Personal Multi-Media Communications Systems," Dr Takafumi Sakamoto, R&D Center, Toshiba Corp., Japan, 10:00 am, Light Engineering Building, rm 250
- May 1: "What Brain Slices Tell Us About Strokes in Humans," George C. Newman, MD, PhD, Assoc Prof., Neurology, 5:00pm, Radiology Conference Room, Level 4
- May 1: "The Approach to Low Back Pain," Richard Deyo, MD, PhD, Professor of Medicine and Health Services, University of Washington, 8:00-9:00 am, Northport Veterans Administration Medical Center, Building 200, rm A1-5
- May 2: Title TBA, Dr. Richard Kolodner, Dana Farber Cancer Institute, 4:00pm, Life Sciences Bldg, rm 038
- May 2: "Microlocal Analysis and Nonlinear PDE," Michael Taylor, University of North Carolina, Chapel Hill, Math Building, 4:30 pm, S-240
- May 2: "Complexes of Dibenzofulvalenes," Prof Robert C. Kerber, USB, 4:00 PM, Chemistry Bldg, rm 412

MAY 1-MAY 3

- May 3: "Intertwining Surgery and the Geography of the Real Cubic Connectedness Locus," Dynamical Systems Seminar, Lyubich, Epstein, Martens & Yampolsky, USB, 3:45 pm, Math building, rm 5-127
- May 3: "Bispectral Index of EEG as a Measure of Sedation," Marc J. Bloom, MD, PhD, Asst Professor of Anesthesiology, University of Pittsburgh, Pittsburgh, PA, 7:00 am HSC, Level 4, rm 071.
- May 3: "The Search for Planets Around Other Stars: NASA's Grand New Odyssey," Professor Deane Peterson, Dept. of Astronomy, 7:30 pm, Lecture Rm 001 in ESS, Weather permitting, observing session on the roof of the ESS building using the Univ. telescopes after the lecture.
- May 3: "Muon Spin Rotation Studies of Doping in Systems Based on $\text{YBa}_2\text{Cu}_3\text{O}_7$," Professor Joseph Budnick, University of Connecticut, Storrs, 1:00 rm B-131 Grad Physics
- May 3: "Ground Water Contamination at Brookhaven National Laboratory," Dr. J. Naidu, Safety and Environmental Protection, BNL, MSRC, 3:30 PM, Challenger 163
- May 3: Title: TBA, Dr. L. Wang, USB, 12:00 pm, Endeavour Hall, rm 120
- May 3: "Laboratory Measurements of Extraterrestrial Objects," Richard N. Zare, PhD, Stanford University, reception at 3:30, Lecture at 4:00 pm, Old Chemistry, rm C-116
- May 3: "Molecular Basis of Viral and Oncogenic Diseases," Dept of Molecular Genetics and Microbiology, 8th Colloquium on Human Diseases in celebration of twenty-five years of Microbiology at Stony Brook, 9:00-5:00pm, HSC, Lecture Hall 1, Level 2
- Emilio Emini, "Viral Protease Inhibitor Therapy of HIV-1 Infection: The Genetics of Long-term Virus Suppression,"
- Akio Nomoto, "Current Understandings of Poliomyelitis,"
- Vadim Agol, "Molecular Aspects of Picornavirus Pathogenicity,"
- Rae Lyn Burke, "Contemporary Approaches to Vaccine Development: The Herpesvirus,"
- Arnold Levine, "The p53 Tumor Suppressor Gene,"
- Thomas Shenk, "Human Cytomegalovirus Immediate Early Proteins Block the Induction of Apoptosis,"
- Joan Brugge, "Regulation of Tyrosine Phosphorylation by Integrin Cell Adhesion Receptors"

MAY 5-10

- May 5: "Adhesion-Mediated Tumor Suppression," Avri Ben-Ze'ev, Weizmann Institute - Isreal, 12:00 pm, Life Sciences, Rm 038
- May 6: "Floer Homology on the Cotangent Bundle (continued)," Symplectic Topology Seminar, Luisa D. Stelling, USB, 2:20 pm, Math Building, rm 5-127
- May 7: "Proteins that Recognize Siliac Acids," Dr. Ajit Varki, University California, San Diego Cancer Center, 4:00pm, Life Sciences Bldg, rm 038
- May 7: "Nucleic Acid Three-Dimensional Structure and Dynamics," Thomas L. James, U. California - San Francisco,
- May 8: "Sonoluminescence," Dr. Bradley Barber, Lucent Technologies (Bell Labs), 10:30 am, Grad Physics, rm S141
- May 8: "The Global Aids Pandemic: Toward A New Vision of Health," Jonathan M. Mann, MD, Director of International AIDS Center at Harvard School of Public Health, Director of the Bagnoud Center for Health and Human Rights, 8:00-9:00 am, Harold Atkins Learning Center, HSC Level 4
- May 9: "Recent Advances in the Application of the Excitation Chirality Method," Prof. Nino Berova, Columbia University, Chemsitry Building, 4:00 PM, rm 412
- May 9: "The Regulation of Il-2 Driven and Lymphocyte Proliferation," Michael B. Prystowsky, MD, PhD, Professor and Interim Chairman, Albert Einstein College of Medicine, Department of Pathology, Bronx, 12 pm, BHS T9-145
- May 9: "Sullivan Processes in Depth in Elastic Scattering," Prof. Joseph Speth, Julich, Germany, 4:00pm, Grad Physics, rm C133
- May 10: "Infrared Study of BaBiO_3 Insulating and Superconducting Phases," Solid State Seminar, Dr. Anton Puchkov, McMaster University, 1:00 pm, Grad Physics, rm B131

COLLOQUIA, and SYMPOSIA

MAY 13-17

- May 14: "Psychiatry and the Emerging Health Care System," Robert Michels, MD, Dean, Cornell Medical College, 11:00-12:30, HSC, Level 2, Lecture Hall 2,
- May 14: "Nuclear-cytoplasmic Export of mRNA in Yeast," Charles Cole, Dartmouth Medical School, 4:00pm, Basic Science Tower T8, Rm 140
- May 14: "Crowd Control for Capsid Proteins or Assembly of the Human Immunodeficiency Virus," Dr. Carol Carter, Professor Microbiology Department, USB, 12 noon, BHS Level 5, Rm 140
- May 15: "Evaluation of Biological Substrates by X-ray Microscopy," Bioengineering Seminar, Janos Kirz, Leading Professor of Physics, School of Medicine 4:00 PM, HSC, Level 3, Rm 6,
- May 15: "Pelvic Inflammatory Disease and Other BV Complications," Richard Sweet, MD, Department of Obstetrics, Gynecology, and Reproductive Sciences, University of Pittsburgh, Magee Womens Hospital, HSC, Level 2, Lecture Hall 3, 8:30-9:30 AM
- May 15: "Biascrimes: Errors in Medical Decision Making," Mark Graber, MD, Professor of Medicine, Division of Nephrology, DVAMC, 8:00-9:00 am, Northport Veterans Administration Medical Center, Building 200, Rm A1-5
- May 15: "Seizure Management," Alma Bicknese, MD, Asst. Professor, Dept. of Neurology, USB, 8:00 AM, HSC, Lecture Hall 6, Level 3,
- May 16: "Growth and Patterning of the Vertebrate Limb," Dr. Lee Niswander, Sloan Kettering Institute, NY, Molecular Biology Program, 4:00pm, Life Sciences Bldg, rm 038
- May 16: "Clinical Pathologic Correlation of Interesting Cases," Steve McClain, MD, 10:15 - 11:15am, 181 Belle Meade Road, Suite 5, E. Setauket, Stony Brook Dermatology
- May 17: "Percutaneous Management of Renal Calculi," Joseph Segura, M.D., Professor of Urology Mayo Clinic, Rochester, MN 8:00-9:00 AM, HSC, Department of Urology Conference Room, Level 9, Room 040.

MAY 20-24

- May 21: "Geriatric Depression" George Alexopoulos, PhD, Director of Special Service Program, New York Hospital, 11:00-12:30, HSC, Level 3, Lecture Hall 6
- May 21: TITLE TBA, Lawrence Rudel, Bowman Gray School of Medicine, 4:00pm, Basic Science Tower T8, Rm 140
- May 21: "3'-Nucleotides to Adenylyl Cyclases-A New Regulatory Pathway" Roger Johnson, PhD, Prof and Vice Chairman, Physiology and Biophysics, USB, 12 noon, BHS, Level 5, Rm 140
- May 22: "Cleft Lip and Palate & Other Congenital Cranial Facial Deformities," John Rock, MD, Chairman, Department of Obstetrics, Gynecology, and Reproductive Sciences, University of Pittsburgh, Magee Womens Hospital, 8:30-9:30 AM, HSC, Level 2, Lecture Hall 3,
- May 22: "Fatigue Depression and Quality of Life in Epilepsy," Alan Ettinger, MD, Assistant Professor, Department of Neurology, 5:00pm, Radiology Conference Room, Level 4
- May 22: "Cutaneous Fungal Infections in Childhood," Leonard Kristal, MD, Asst. Professor, Dept. of Neurology, USB, 8:00 AM, HSC, Lecture Hall 6, Level 3,
- May 22: "Bone Marrow Transplant 1996: Stem Cells, Umbilical Cord Blood and Beyond," Michael Schuster, MD, Associate Professor of Medicine, Chief of Adult Bone Marrow Transplantation, North Shore University Hospital, 8:00-9:00 am, Harold Atkins Learning Center, HSC, Level 4
- May 23: Title TBA, Dr. John Schimenti, The Jackson Laboratory, Bar Harbour, Maine, 4:00pm, Life Sciences Bldg, rm 038
- May 23/24 1:30PM, Brookhaven Nat'l Lab, Workshop on Neutron Reflectivity,
This workshop is organized in conjunction with the 1996 NSLS Annual User's Meeting to provide an overview of research activity using neutron reflectivity. Special emphasis is placed on the complementarity of neutron, x-ray, and other surface sensitive techniques in providing information on the relationship between morphology and structural properties of polymers and biomaterials.

MAY 27-31

- May 28: "Plants and Drug Discovery: Botany and Medicine Rejoined," Douglas C. Daly, New York Botanical Gardens, 4:00pm, Basic Science Tower T8, rm 140
- May 29: "Scald Burn Prevention," Margaret Parker, MD, Director, Pediatric Critical Care Medicine, USB, and Jane Corrarino, RN, Asst. Director, Bureau of Public Health Nursing, Dept. of Health Services, 8:00 AM, HSC, Lecture Hall 6, Level 3,
- May 30: "Vesicle-mediated protein sorting in the secretory pathway," The Maynard M. Dewey Lecture in Biomedical Sciences, Dr. Randy Schekman, Div of Biochemistry and Molecular Biology, Howard Hughes Medical Institute Univ of California, Berkeley, 4:00pm at HSC Lecture Hall 2, Level 2
- May 31: "Predictors of Behavior in Prostate Cancer," W. Scott McDougal, M.D., Professor of Surgery, Harvard Medical School, Chief of Urology, Mass General, Boston, Mass, 8:00-9:00 AM, HSC, Department of Urology Conference Room, Level 9, Room 040
- May 29: "The Physicians' Role in Allocation of ICU Resources," Gordon L. Snider, MD, Chief, Medical Service, Boston V A Medical Center and Maurice B Strauss, Professor of Medicine and Vice-Chairman, Department of Medicine, Boston University School of Medicine, 8:00-9:00 am, Northport Veterans Administration Medical Center, Building 200, Rm A1-5

DIFFERENTIAL SEROTONERGIC INNERVATION OF THE SUPRACHIASMATIC NUCLEUS AND THE INTERGENICULATE LEAFLET AND ITS ROLE IN CIRCADIAN RHYTHM MODULATION

Meyerberstein EL. Morin LP.

Journal of Neuroscience. 16(6):2097-2111, 1996 Mar 15.

Abstract

Serotonergic innervation is believed to inhibit the effects of light on the mammalian circadian timing system. Two anatomical components of this system, the suprachiasmatic nucleus (SCN) and the intergeniculate leaflet (IGL), receive serotonergic input from mid-brain raphe nuclei. The present studies use retrograde and anterograde tracing as well as neurotoxic lesion techniques to demonstrate that serotonergic cells in the median raphe nucleus (MR) project to the SCN and that serotonergic cells in the dorsal raphe nucleus (DR) project

to the IGL.

Neurotoxic lesions were also used to investigate the effects of selective serotonin (5-HT) neuron loss in the MR or DR on circadian rhythm parameters of animals entrained to a light/dark cycle or housed in constant light. 5-HT depletion in the MR, but not in the DR, induces an advance in onset, a delay in offset, and a longer duration of the nocturnal running-wheel activity phase. Circadian rhythm disruption in constant light is also more frequent in hamsters with MR lesions. A second experiment was designed to investigate the relation-

ship between lesion location, 5-HT-immunoreactive (5-HT-IR) fiber loss, and behavioral changes. Destruction of 5-HT neurons in the MR causes 5-HT-IR fiber loss in the SCN, which may account for the observed changes in circadian parameters. DR lesions result in 5-HT-IR fiber depletion of the IGL, with no associated changes in the entrained rhythm. The anatomical and behavioral results support the view that a 5-HT projection from the MR mediates 5-HT effects on circadian rhythm regulation in hamsters.

COCAINE UPTAKE IS DECREASED IN THE BRAIN OF DETOXIFIED COCAINE ABUSERS

Volkow ND. Wang GJ. Fowler JS. Logan J. Hitzemann R. Gatley SJ. Macgregor RR. Wolf AP.

Neuropsychopharmacology. 14(3):159-168, 1996 Mar.

Abstract

Binding of [C-11]cocaine in brain was measured with positron emission tomography in 12 detoxified cocaine abusers and in 20 controls to evaluate if there were changes in cocaine binding and in dopamine (DA) transporter availability associated with chronic cocaine use. Nine controls and 10 cocaine abusers had an additional scan with [18F]N-methylspiroperi-

dol to measure dopamine D-2 receptors.

Cocaine abusers had significantly lower uptake of [C-11]cocaine in brain (6.2 +/- 1% dose/cc tissues) than controls (7.7 +/- 2%). The distribution volumes (DV) for [C-11]cocaine were reduced in basal ganglia (BG), cortex, thalamus, and cerebellum (CB) of cocaine abusers. However there were no differences in the ratio of the DV in BG to that in CB, which is an

estimate of DA transporter availability. Values for DA D-2 receptor availability were decreased in cocaine abusers and did not correlate with estimates of dopamine transporter availability. In summary, detoxified cocaine abusers showed decreased uptake of cocaine in brain but did not show changes in DA transporter availability.

DUAL RESPONSE MODES IN LATERAL GENICULATE NEURONS: MECHANISMS AND FUNCTIONS [REVIEW]

Sherman SM.

Visual Neuroscience. 13(2):205-213, 1996 Mar-Apr.

Abstract

Relay cells of the lateral geniculate nucleus, like those of other thalamic nuclei, manifest two distinct response modes, and these represent two very different forms of relay of information to cortex. When relatively hyperpolarized, these relay cells respond with a low threshold Ca²⁺ spike that triggers a brief burst

of conventional action potentials. These cells switch to tonic mode when depolarized, since the low threshold Ca²⁺ spike, being voltage dependent, is inactivated at depolarized levels. In this mode they relay information with much more fidelity. This switch can occur under the influence of afferents from the visual cortex or parabrachial region of the brain stem. It has

been previously suggested that the tonic mode is characteristic of the waking state while the burst mode signals an interruption of the geniculate relay during sleep. This review surveys the key properties of these two response modes and discusses the implications of new evidence that the burst mode may also occur in the waking animal.

PHONOLOGICAL PROCESSING AND THE ROLE OF STRATEGY IN SILENT READING: BEHAVIORAL AND ELECTROPHYSIOLOGICAL EVIDENCE

Niznikiewicz M. Squires NK.

Brain & Language. 52(2):342-364, 1996 Feb.

Abstract

To examine the contribution of phonological processing in silent reading, 51 native English speakers made decisions about targets presented either in word pairs or in sentences. The target words were homophonically (plain-plane), orthographically (plane-place), or semantically (plane-jet) related. N200 was enhanced only to

homophonic targets, suggesting the use of phonological information in silent reading. Memory load did not affect the N200 amplitude. N400 was enhanced to all semantically incongruent words and was larger in the word pair condition. Reaction times were influenced by both experimental condition and target relationships; homophonic stimuli elicited the

fastest RTs in the word pair condition and the slowest RTs in the sentence condition, suggesting the use of different strategies. Thus, ERP components and behavioral responses registered different aspects of language processing. (C) 1996 Academic Press, Inc.

REALIZABILITY THEORY FOR CONTINUOUS LINEAR SYSTEMS [REVIEW]

A.H. Zemanian

Book, published by Unabridged Dover, 1995.

<p>Abstract This excellent study offers a thorough, concise exposition of realizability theory as applied to continuous linear systems, specifically to the operators generated by physical systems as mappings of stimuli into responses. Its primary concern is the study of physical properties and their mathematical characterizations but not the design of particular systems. Chapters 1 and 2 cover vector-valued functions, and integration with vector-valued func-</p>	<p>tions and operator-valued measures. Chapter 3 addresses Banach-space-valued testing functions and distributions. Chapter 4 through 8 explore systems theory in kernel operators, convolution operators, the Laplace transformation and scattering and admittance formalisms. The book will be of special interest to electrical network theorists, applied mathematicians and physicists, and put mathematicians interested in the applications of functional analysis. It will be accessible to all readers</p>	<p>familiar with introductory courses on real and complex analysis. Other prerequisites, such as topological linear spaces, Bochner integrals and Banach-space-valued distributions, are covered in the text or in the appendixes. The author has included a number of problems that ask the reader either to supply the proofs of certain assertions that were made - but not proved - in the text, or to extend the theory in various ways.</p>
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TRANSFINITENESS FOR GRAPHS, ELECTRICAL NETWORKS, AND RANDOM WALKS

A.H. Zemanian

Book, published by Birkhauser, 1996.

<p>Abstract Transfinite numbers were invented by Cantor over a hundred years ago, and they profoundly affected the development of twentieth-century mathematics. Despite this century-old introduction of transfiniteness into mathematics, its implications for graphs has only been examined during the past decade. This book is devoted exclusively to transfinite graphs and their ramifications for several related topics, such as electrical networks, discrete potential theory, and random walks.</p>	<p>A transfinite graph is one wherein at least two nodes are connected through infinite paths but not through any finite path. Such a structure arises when two infinite graphs are joined at their infinite extremities by "1-nodes." In fact, infinitely many graphs may be so joined, and the result may have infinite extremities in a more general sense. The latter may in turn be joined by "2-nodes." These ideas can be extended recursively through the countable ordinals to obtain a hierarchy of transfinite graphs.</p>	<p>Transfiniteness introduces radically new constructs and expands graphs and their related topics far beyond their conventional domains. For example, a random walk may now "wander through infinity." Also, a lacuna in the conventional resistors to "different parts of infinity." In general, many solved problems of conventional graphs and networks reopen into largely unexplored research areas, and, on the other hand, the researcher of the transfinite is confronted by questions having no counterparts in conventional theories.</p>
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DETECTION OF BINARY MARKOV SOURCES OVER CHANNELS WITH ADDITIVE MARKOV NOISE

Fady Alajaji, Nam Phamdo, Nariman Farvardin and Tom Fuja

IEEE Transactions on Information Theory, V. 42, No. 1, 230-239, January 1996.

<p>Abstract We consider maximum a posteriori (MAP) detection of a binary asymmetric Markov source transmitted over a binary Markov channel. Here, the MAP detector observes a long (but finite) sequence of channel outputs and determines the most probable source sequence. In some cases, the MAP detector can be implemented by simple rules such as the "believe what you see" rule or the "guess zero (or one) regardless of what you see" rule. We provide necessary and sufficient conditions under</p>	<p>which this is true. When these conditions are satisfied, the exact bit error probability of the sequence MAP detector can be determined. We examine in detail two special cases of the above source: (i) binary independent and identically distributed (i.i.d.) source and (ii) binary symmetric Markov source. In case (i), our simulations show that the performance of the MAP detector improves as the channel noise becomes more correlated. Furthermore, a comparison of the proposed system with a (substantially more complex) traditional tan-</p>	<p>dem source-channel coding scheme portrays superior performance for the proposed scheme at relatively high channel bit error rates. In case (ii), analytical as well as simulation results show the existence of a "mismatch" between the source and the channel (the performance degrades as the channel noise becomes more correlated). This mismatch is reduced by the use of a simple rate-one convolutional encoder.</p>
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NEUROTRANSMITTER RELEASE [REVIEW]

Matthews G.

Annual Review of Neuroscience. 19:219-233, 1996.

<p>Abstract Synaptic vesicle exocytosis is rapid and highly localized, which are features that arise from the organization of the presynaptic active zone, where vesicle fusion occurs. Colocalization of calcium channels with the proteins making up the vesicle docking machinery at the active zone, combined with the low affinity and high</p>	<p>cooperativity of the calcium sensor for vesicle fusion, allows vesicles to fuse with short delay after a presynaptic action potential. Evidence suggests that the calcium concentration driving synaptic vesicle fusion corresponds to the high level (50-100 μM) achieved only within the microdomain of elevated calcium near the inner mouth of open calcium channels.</p>	<p>Retrieval of synaptic vesicle membrane by endocytosis is also regulated by internal calcium but at much lower concentrations. Endocytosis occurs rapidly after exocytosis if internal calcium is near the basal level but is inhibited by elevated internal calcium (0.5-1 μM).</p>
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SIZE-STRUCTURED PISCIVORY: ADVECTION AND THE LINKAGE BETWEEN PREDATOR AND PREY RECRUITMENT IN YOUNG-OF-THE-YEAR BLUEFISH

Francis Juanes & David O. Conover
Marine Ecology Progress Series 128: 287-304 (1995)

Abstract

The interaction of size-structured predator and prey populations can affect the recruitment success of both predators and prey. Here, we examine how the timing and location of spawning, advective processes, and size-structured predator-prey interactions may influence the ecology and life history of an offshore-spawning, estuarine-dependent marine fish. Bluefish *Pomatomus saltatrix* recruit to mid-Atlantic Bight estuaries as 2 distinct cohorts. The predominant spring-spawned cohort results from: (1) spawning in the South Atlantic Bight in March and April, (2) advection northward along the edges of the Gulf Stream, and (3) an active migration into New York/New Jersey (USA) estuaries in June and July. A second less abundant cohort resulting from summer-spawning in the mid-Atlantic Bight recruits to

inshore areas in August. This inshore recruitment entails a dramatic habitat shift that coincides with a feeding shift from planktivory to piscivory and a large increase in growth rates. We hypothesized that the migration of spring-spawned young-of-the-year (YOY) bluefish into northern estuaries at an advanced size facilitates piscivory on the local inshore fishes that become their principal prey. We tested this hypothesis by determining the annual recruitment date of YOY bluefish and their prey, and by examining the diet and prey size selectivities, and predator size-prey size relationships of YOY bluefish in Great South Bay (GSB), New York. Our results showed that: (1) the date of juvenile recruitment into GSB coincides with the appearance of their main prey item, Atlantic silver-sides *Menidia menidia*; (2) YOY bluefish feed primarily on the most abundant

prey available in GSB; and (3) bluefish are size-selective, consistently ingesting small prey sizes. These results suggest that advection into high latitudes permits spring-spawned bluefish to exploit habitats at an earlier time and at a larger size than would otherwise be possible. This unique strategy also allows bluefish to accelerate the onset of piscivory by timing their estuarine entry with the appearance of small coastal fishes. The relationships between bluefish and their prey are determined by a complex interplay between recruitment timing of both predator and prey, relative prey (size and type) abundances and predator selectivities. The observed pattern of spawning, advection and recruitment to nursery areas, which is common to other bluefish populations, may represent a reproductive strategy that maximizes growth and survival.

ASSIMILATION OF TRACE ELEMENTS INGESTED BY THE MUSSEL MYTILUS EDULIS: EFFECTS OF ALGAL FOOD ABUNDANCE

Wen-Xiong Wang, Nicholas S. Fisher & Samuel N. Luoma
Marine Ecology Progress Series 129: 165-176 (1995)

Abstract

Pulse-chase feeding and multi-labeled radio-tracer techniques were employed to measure the assimilation of 6 trace elements (110m Ag, 241 Am, 109 Cd, 57 Co, 75 Se and 65 Zn) from ingested diatoms in the mussel *Mytilus edulis* feeding at different rates (0.1, 0.49 and 1.5 mg dry wt h⁻¹). Uniformly radio-labeled diatoms *Thalassiosira pseudonana* were fed to mussels for 0.5 h, and the behavior of the radio-tracers in individual mussels was followed for 96 h in a depuration seawater sys-

tem. Assimilation efficiency (AE) of each element declined with increasing ingestion rate and increased with gut passage time. The importance of extracellular digestion relative to intracellular digestion increased with ingestion activity, which, when coupled with a decline in AE, suggested that extracellular digestion is less efficient in metal absorption. Zn assimilation was most affected by ingestion rate, suggesting that AE may play a role in the physiological regulation of this metal in *M. edulis*. In an experiment to simulate the effects of an

acidic gut, lowered pH (5.5) enhanced the release of elements from intact diatom cells, especially at low particle concentration. These results indicate that both feeding components of the mussel (i.e. gut passage time, digestive partitioning) and metal chemistry (i.e. metal release at lowered pH within the bivalve gut) are responsible for the difference in the assimilation of trace metals at different food quantities observed in mussels.

Submit your recently-published abstracts to editor@pdpub.com, or mail to Campus Science Newspapers—Stony Brook Edition; 2780 Middle Country Road, Suite 213; Lake Grove, NY 11755. Phone 737-3415, Fax 737-3414

STATVIEW FOR WINDOWS

The image shows three main components of the StatView interface:

- Create Analysis Menu:** A list of statistical tests including Descriptive Statistics, Frequency Distribution, Percentiles, One Sample Analysis, Paired Comparisons, Unpaired Comparisons, Correlation/Covariance, Regression (highlighted), ANOVA, Contingency Table, Nonparametrics, Factor Analysis, Survival: Nonparametric M..., Survival: Regression Models, and Univariate Plots.
- Variables Dialog Box:** A window for managing data variables. It includes buttons for 'Add', 'Remove', and 'Split By'. Below these are dropdown menus for 'Data' (set to 'Pred & Conf Limits D') and 'Order' (set to 'Alphabetical'). A list of variables with checkboxes includes 'Conf error', 'Fitted Dependent', 'Lower conf limit', 'Lower pred limit', 'Pred error', 'Reagent Concentration', and 'Residual Dependent'.
- Third Order Regression Plot:** A scatter plot titled 'Third Order Regression 95% Confidence and Prediction Limits'. The y-axis is labeled 'Y Variables' and ranges from 100 to 200. The x-axis is labeled 'Reagent Concentration' and ranges from 0 to 20. The plot shows data points, a fitted curve, and confidence/prediction limits.

Annotations with arrows and text indicate the ease of use: 'double click' points to the 'Add' button, and 'click' points to the 'Regression' menu item and the 'Lower pred limit' checkbox.

	Coefficient	Std. Error	Std. Coeff.	t-Value	P-Value
Intercept	81.161	3.689	81.161	22.001	< .0001
Reagent Concentration	36.042	1.126	6.628	32.011	< .0001
Reagent Concentration ²	-4.009	.105	-16.533	-38.273	< .0001
Reagent Concentration ³	.125	.003	10.388	42.208	< .0001

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Funding Updates

Compiled by Peter Saal

SUNY STONY BROOK—OFFICE OF THE VICE-PRESIDENT FOR RESEARCH

Dept. of Education: Challenge Grants for Technology in Education

The Challenge Grants for Technology in Education Program provides grants to consortia that are working to improve and expand new applications of technology to strengthen the school reform effort, improve student achievement, and provide sustained professional development of teachers, administrators, and school library media personnel.

As catalysts for change, grants under this program will support communities of educators, parents, industry partners, and others who are working to transform their schools into information-age learning centers. These challenge grants will support the development and innovative use of technology and new learning content in specific communities. Each effort should clearly focus on integrating innovative learning technologies into the curriculum to improve learning productivity in the community.

Challenge grant communities need not be limited by geography. The information superhighway can be used to create virtual learning communities linking schools, colleges, libraries, museums, and businesses across the country or around the world. Students of all ages, no matter where they live, could tap vast electronic libraries and museums containing text and video images, music, art, and language instruction. They could work with scientists and scholars around the globe who can help them use mapping tools, primary historical documents, or laboratory experiments to develop strong research and problem solving skills.

The Secretary gives special consideration to applications from consortia which are developing effective responses to the learning technology needs of areas with a high number or percentage of disadvantaged students or the greatest need for educational technology. Only consortia may receive grants under this program. Consortia shall include at least one local educational agency (LEA) with a high percentage or number of children living below the poverty line. They may also include other local educational agencies, State educational agencies, institutions of higher education, businesses, academic content experts, software designers, museums, libraries, and other appropriate entities.

For Applications or Information Contact: Telephone 1-800-USA-LEARN (1-800-872-5327) for applications. For information contact Challenge Grants for Technology in Education, U.S. Department of Education, Washington, D.C. 20202-5544. Telephone 202-708-6001. Individuals may fax requests for applications. Fax: 202-708-6003. Deadline for Receipt of Applications: **June 21, 1996**. Estimated Range of Awards: \$500,000 to \$2,000,000 per year. Estimated Number of Awards: 23.

NSF/EHR: Advanced Technological Education - Preliminary Proposals for Centers and Projects

This program promotes exemplary improvement in advanced technological education within associate degree-granting institutions in collaboration with four-year institutions, secondary schools, and industry. The program supports curriculum development and program improvement for science and engineering technicians who are being educated for the high performance workplace of advanced technologies. Support is expected for a spectrum of projects and up to five Centers of Excellence. Preliminary proposals due June 25, 1996. Formal proposals are due Dec. 10, 1996. Contact the Division of Undergraduate Education at 703-306-1668. (Ref: NSF 96-10)

DoE/OER: PN 96-13 - Research in Photochemistry

A workshop entitled "Research Opportunities in Photochemical Sciences", organized by the Office of Basic Energy Sciences, was held February 5-8, 1996 in Estes Park, Colorado. The purpose of that meeting was to provide a forum to discuss and highlight the importance and relevance of basic research in various facets of photochemistry and related scientific fields to present and future technologies. There is a report available to the scientific and energy technology community, which contains a Recommendations for Future Research section via the Internet using the following E-mail address: <http://www.er.doe.gov/production/bes/chm/chmhome.html>

Potential applicants are strongly encouraged to submit a brief preapplication. All preapplications, referencing Program Notice 96-13, should be received not later than April 30, 1996. A response discussing the potential program relevance of a formal application generally will be communicated to the applicant within 15 days of receipt. The deadline for receipt of the formal applications is May 29, 1996, in order to be accepted for merit review and to permit timely consideration for award in fiscal year 1996.

It is anticipated that up to \$500,000 can be made available for grant awards during FY 1996, contingent upon availability of appropriated funds. Applications will be subjected to formal merit review and will be evaluated against the following criteria, listed in descending order of importance: (1) Scientific and/or technical merit of the project; (2) Appropriateness of the proposed method or approach; (3) Competency of applicant's personnel and adequacy of proposed resources; and (4) Reasonableness and appropriateness of the proposed budget.

In fiscal year 1997, it is expected that funds will be available to support research in photochemistry, subject to fiscal year 1997 appropriations. Complete information about the photo-chemistry program may be obtained from either Dr. Silvia E. Ronco or from Dr. Mary E. Gress at 301-903-5827. To be considered for possible fiscal 1997 funding, potential applicants may submit applications at any time after the May 29, 1996 due date set forth in this notice. The submission of brief preapplications prior to submitting formal applications is encouraged. Electronic access to ER's Financial Assistance Guide is possible via the Internet using the following E-mail address: <http://www.er.doe.gov/production/grants/grants.html>

NSF: Coupling, Energetics, and Dynamics of Atmospheric Regions

The Division of Atmospheric Sciences of the National Science Foundation is accepting proposals for the Coupling, Energetics, and Dynamics of Atmospheric Regions (CEDAR) Program. CEDAR is a broad-based, community-initiated, upper atmospheric research program. The goal is to understand the behavior of atmospheric regions from the middle atmosphere upward through the thermosphere and ionosphere into the exosphere in terms of coupling, energetics, chemistry, and dynamics on regional and global scales. These processes are related to the sources of perturbations that propagate upward from the lower atmosphere as well as to solar radiation and particle inputs from above. The activities within this program combine observations, theory and modeling. The awards are to include scientific grants for established investigators and two awards each year for post-doctoral research positions.

The goals of the CEDAR program include the study of: (1) dynamics and energetics of the upper atmosphere, with particular emphasis on the region between 80 and 150 km; (2) coupling between the mesosphere, ionosphere, thermosphere, exosphere, and magnetosphere; and (3) horizontal coupling between adjacent geographic regions. CEDAR support has led to improved spectrometers, interferometers, and imagers; allowed upgrades of existing facilities; and supported the development of lidars and small radars. Several facilities contain a broad array of state-of-the-art tools, providing a solid infrastructure by which to address outstanding aeronomical problems.

Applicants may request up to three years of funding in their proposals. Total funds available to the CEDAR Program in FY 1997 is expected to be about \$1 million. It is anticipated that approximately 20 awards will be made for CEDAR in FY1997 depending on availability of funds. The deadline for submission of proposals is May 1, 1996. Further information may be obtained from Dr. Sunanda Basu (Division of Atmospheric Sciences, NSF; sbasu@nsf.gov; 703-306-1529) or Dr. Robert Robinson (Division of Atmospheric Sciences, NSF; rmrobins@nsf.gov; 703-306-1531).

NSF/NOAA: Coastal Studies in the Great Lakes

Research activities in the Great Lakes are supported by a number of organizations including the Division of Ocean Sciences (OCE) at the National Science Foundation (NSF) and the Coastal Ocean Program (COP) at the National Oceanic and Atmospheric Administration (NOAA). This Announcement of Opportunity is under the auspices of the Coastal Ocean Processes (CoOP) initiative within NSF/OCE and the regional ecosystem studies initiative of the NOAA Coastal Ocean Program.

CoOP's primary interest is in research to address the following question: What processes control the cross-margin (inshore to offshore) transport of biological, chemical, and geological materials in the coastal margins of the Great Lakes? COP's primary interest is in research to address the following goal: Develop and test scientific strategies for assessing, quantifying, and predicting the impacts of multiple stresses, both natural and anthropogenic on the ecological resources of the Great Lakes or selected subregions.

Proposals from teams of investigators are encouraged, with clear identification of individual(s) having responsibility for program integration and synthesis. Studies may be proposed by submission of several collaborative proposals having some common objectives from different PIs, or by an omnibus proposal that contains various multidisciplinary components. In either case, a common overview statement of research approach and objectives should be prepared. The CoOP Office at University of Maryland (see above) will facilitate the exchange of information amongst PIs wishing to develop a proposal in response to this Announcement.

The CoOP Home Page will provide occasional postings and other useful information: <http://www.coop.hpel.umd.edu>.

Site selection should consider application of results to the Great Lakes in general as well as to the coastal ocean. Site selection should also consider potential cooperative research benefits with other U.S. agencies as well as Canadian Great Lakes research programs. Proposals submitted in response to this Announcement of Opportunity must be received by **15 August 1996**. Questions may be directed to: H. Lawrence Clark, NSF Division of Ocean Sciences: 703-306-1584 (e-mail: hclark@nsf.gov) or John Wickham, NOAA Coastal Ocean Office, 301-713-3338, (e-mail: jwickham@cop.noaa.gov).

American Cancer Society: Extramural Grants Program

By the end of June, the American Cancer Society's Extramural Grants office will distribute new diskettes containing policies for all grants, awards, and training opportunities. Application forms for certain awards will be sent from the National Office only after receipt of a letter of intent has been received and approved.

Research Opportunity Grants (ROG): This grant replaces the Research Development Grant program. Research Opportunity Grants are intended to provide limited funds for a single year for a variety of critical and urgent needs in cancer research. The research should meet the Society's definitions of preclinical, epidemiology, or clinical research, which includes psychosocial and behavioral, health policy and health services research. The project should not be easily or, in a timely way, supportable via the Society's other research programs. Funding decisions will be made within four months of receipt of the application.

Applications must meet one or more of the following eligibility requirements: (1) the delay required to accomplish standard ACS review of the project would seriously delay a major advance, (example: new therapeutic approach to a currently untreatable cancer such as pancreatic cancer, or the development of a highly efficient and effective screening/diagnostic test for ovarian cancer); (2) a unique opportunity that is time limited (example: a new marker that has been developed after a clinical trial has started); and (3) an emergency that would significantly hamper the productivity of an ongoing project(s), (example: equipment failure). An unusually grave emergency need that does not meet the previous eligibility criteria may be submitted as a letter of intent and eligibility will be determined on a case-by-case basis. Letters of Intent may be submitted at any time.

Clinical Research Training Grant for Junior Faculty: for individuals with doctoral or equivalent degrees during the first four years of a faculty appointment who wants to develop their clinical research skills to qualify as fully independent investigators. Only applications requesting support for clinical and epidemiological cancer research, including psychosocial, behavioral health services and health policy research, will be accepted. Deadlines: **October 1, 1996** and **March 1, 1997**.

Cancer Control Career Development Award for Primary Care Physicians: for primary care physicians pursuing an academic career with an emphasis on cancer control. This award supports candidates in supervised programs that will develop their clinical and teaching expertise and capacity to perform independent research in cancer control. Academic rank of instructor to assistant professor. Untenured. MD, DO, or equivalent degree. No more than ten years out of training. Deadline: **October 1, 1996**.

Training Grant in Clinical Oncology Social Work: to support the training of social workers to provide psychosocial services to cancer patients and their families. Master's level candidates must be in second year of training for a master's degree. Both programs must prepare trainees for direct clinical practice; the post-master's program must include opportunities for research. Second year trainees may receive an additional award at the post-master's level. Institutions must nominate individuals to fill awarded positions. Deadline: **October 1, 1996**.

Physician Training Award in Preventive Medicine: to support the training of physicians in accredited preventive medicine residency programs; such programs must provide an emphasis on cancer epidemiology, prevention, and early detection. Candidates must have a M.D., D.O., or equivalent degree, and must be accepted by or applying to the sponsoring residency program. Deadline: **January 24, 1997**.

Scholarships in Cancer Nursing - Master's and Doctoral Degrees: to strengthen nursing practice in the following fields of cancer nursing - research, education, administration, and clinical practice. Currently enrolled in or applying to either a doctoral degree program in nursing or a related area, or a master's degree graduate nursing program with demonstrated integration of cancer nursing content. Must meet requirements of master's or doctoral study by the time of funding. Must have a current licensure to practice as a registered nurse. **October 1, 1996**.

American Lung Association: Research Grants and Fellowships, 1997-98

Research Training Fellowships: for individuals who have demonstrated a commitment to a career in investigative or academic medicine relevant to lung disease. This fellowship provides support for the training of scientific investigators in the fields of adult and pediatric pulmonary medicine and lung biology. Applicants must hold the degree of M.D., Ph.D., or have comparable qualifications, and be seeking further training as scientific investigators. Awards are \$32,500 for the first year and may be renewed for an additional year for \$32,500. At the time of application, MD applicants should have completed their clinical training, have some research experience, and be seeking 4th and 5th years of continued research fellowship training. Support for applicants with a Ph.D. will not be awarded beyond the third post-doctoral year. Completed applications must be submitted by **October 1, 1996**.

Clinical Research Grants: for investigators working in clinical areas relevant to lung disease. These areas may include physiologic or epidemiologic studies or those addressing questions directly related to patient care, health services research or ethical issues. This grant is targeted to individuals who have completed at least two years of research training and who are at the instructor or assistant professor level. Awards are for a maximum of \$25,000 and may be renewed for an additional year. Applications must be submitted by **November 1, 1996**.

Lung Research Dissertation Grants: for doctoral students in the fields of science related to the social, behavioral, epidemiologic, psychological and educational aspects of lung health as well as nurses pursuing a doctoral degree in any field. Applicants must be matriculating in a full-time doctoral program with an academic career focus. Awards are up to \$21,000 per year (maximum of \$16,000 for stipend and \$5,000 for research support) and may be renewed for a total of three years. Applications must be submitted by **October 1, 1996**.

Research Grants: provide starter or seed money to new investigators working in areas relevant to the conquest of lung disease and the promotion of lung health. The awards are considered postdoctoral "seed money" for the support of new, not already established investigators holding doctoral degrees. Awards are targeted for individuals who have completed at least two years of research training and who are at the instructor or assistant professor level. The six individuals receiving the highest merit score will be designated Edward Livingston Trudeau Scholar. Awards are for a maximum of \$25,000 and may be renewed for an additional year. Applications must be submitted by **November 1, 1996**.

Career Investigator Awards: provide stable salary and/or project support for investigators who are making the transition from junior to mid-level faculty. The award is not generally available to individuals who are full professors or who have more than eight years of faculty experience. The awards are designed to support physician investigators, but applications will be accepted from other scientists. Awards are \$35,000 per year and may be renewed for an additional two years. Application deadline is **October 1, 1996**.

Dalsemer Research Scholar Award: intended to support research in interstitial lung disease is available to physicians who have completed graduate training in pulmonary disease and are beginning a faculty track in a school of medicine. The award is up to \$25,000 a year for research and salary support and may be renewed for a second year. An endowment established by the John A. Hartford Foundation, the Wheelabrator Foundation, and Mr. Leonard Dalsemer supports this research scholars award through the American Lung Association. Dalsemer applicants who are approved for, but do not receive funding, will be considered eligible for a Research Grant. Application deadline is **November 1, 1996**.

Applicant with an Interest In tobacco control research are encouraged to apply. All awards carry specific eligibility requirements set forth in application materials. Award renewals are based on the outcome of renewal applications and the availability of funds. This announcement does not commit the American Lung Association to honor any application. **All application forms must be requested from the Association in writing.** Minority candidates are encouraged to apply. For further information and applications write to: American Lung Association, Medical Affairs Division, 1740 Broadway, New York, NY 10019-4374.

Cystic Fibrosis Foundation: Clinical Research Grants

The Cystic Fibrosis Foundation intends to facilitate studies of cystic fibrosis by providing support for investigator-initiated CF patient research that represents topics of clinical importance to CF. The sponsor defines clinical research as serial observations and measures of cystic fibrosis patients over time with and without intervention. Projects of interest are those that include studies in CF individuals which are: (1) designed to definitively answer some question about the pathophysiology of CF or its management; or (2) pilot and feasibility in nature and aimed at determining the best strategies and methods for approaching a major question that ultimately will require assessment through a large-scale, multi-center, collaborative trial. Funding priority will be placed on those studies that have the likelihood to impact on the pathological consequences. Studies to be conducted solely in animal models or in human tissues removed from subjects, and studies aimed at discovering the basic CF defect will not be considered for this program.

Letters of intent are due by **June 1**. Letters that are accepted are invited to submit a full application by October 1, 1995. Applications may be for projects to be undertaken at a single institution or as a collaborative effort among a group of institutions. Awards may not exceed \$50,000 per year for direct costs for a maximum of three years, plus eight percent indirect costs. Application forms and guidelines are available from: Stacey C. FitzSimmons, Ph.D., Director of Clinical Research, Cystic Fibrosis Foundation, 6931 Arlington Road, Bethesda, MD 20814. Telephone: 301-951-4422.

MDA: Research Grants

The Muscular Dystrophy Association provides support for research into forty diseases of the neuromuscular system to identify the causes of, and effective treatments for, the muscular dystrophies and related diseases, including spinal muscular atrophies and motor neuron diseases, peripheral neuropathies, inflammatory myopathies, metabolic myopathies, and diseases of the neuromuscular junction. Basic research projects explore the fundamentals of nerve or muscle biology, studying topics such as: which proteins are required for proper nerve and muscle function; how nerves and muscles interact; and how defects in certain proteins can be overcome. Clinical research projects directly investigate possible treatments or improvements of neuromuscular disease diagnosis. These projects include: clinical trials of possible therapeutic drugs; clinical trials of possible neuromuscular diseases; and development of diagnostic tests.

Preliminary letters requesting applications are required by **June 15**; completed applications are due July 10, 1996 for research to start the following January. Eligible applicants are faculty members who hold an M.D., Ph.D., D.Sc., or equivalent degree. Awards are for either one, two, or three years. Application forms and guidelines are available from: Karen Mashburn, Grants Coordinator, Muscular Dystrophy Association, 3300 East Sunrise Drive, Tucson, AZ 85718. Telephone: 520-529-2000; Fax: 520-529-5454.

ONR: Lasers for Medicine

Proposals that exploit unique features of free-electron lasers for medical and related materials science research are invited by the Office of Naval Research. Proposals may be submitted anytime through **March 7, 1997**.

Projects will be evaluated relative to (in descending order of importance): (1) overall scientific and technical merits; (2) offeror's capabilities, experience and facilities; (3) qualifications of proposed principal investigator and key personnel; (4) relevance of research to realizing medical applications; and (5) realism of proposed cost. Awards may extend up to three years. For proposal guidelines and more information, contact MFEL Program, ONR, Attn. Dr. M. Marron, ONR 341, 800 N. Quincy St., Arlington, VA 22217-5660. Telephone: 703-696-4038.

ES-96-006: Use of Transgenic Model Systems in Molecular Toxicology

A major goal of the National Institute of Environmental Health Sciences (NIEHS) is to foster research that will increase the knowledge of the diverse health effects of exposure to environmental agents. It is likely that many common diseases, including cancer, lung disease, neurodegenerative diseases, cardiovascular diseases, and developmental abnormalities or dysfunctions, have an environmental component. There is critical need for a thorough understanding of the action of environmental agents on human health at the genome level. Recent advances in molecular biology permit novel approaches for the identification of genes involved in environmentally associated diseases. This Request for Applications (RFA) objective is to encourage innovative, mechanistically based research using transgenic technologies to investigate the alterations of gene expression induced by environmental agents in specific target cells and organs, and to determine how this response varies at critical times during exposure. The total estimated funds available for the first year of support for the entire program is \$1.5 million. The expected number of awards is six to eight research project (R01) grants. Letter of Intent Receipt Date: May 10, 1996; Application Receipt Date: June 10, 1996.

PAR-96-031: NIDDK - NIAID International Collaboration Small Grant Awards

The National Institute of Diabetes and Digestive and Kidney Diseases and the National Institute of Allergy and Infectious Diseases of the National Institutes of Health announce a pilot program to promote collaborative biomedical research efforts in both clinical and basic science research that addresses the mission of the NIDDK. The mission of the NIDDK is to provide broad fundamental and clinical research support for a spectrum of chronic and disabling diseases including: diabetes mellitus, digestive diseases, kidney and urologic diseases, hematological diseases, metabolic and endocrine diseases, nutritional disorders and obesity. Noting that collaborative international research provides special opportunities for furthering the mission of the NIH through unusual resources, populations and environmental conditions, the NIDDK invites applications for small grants to augment collaborative international research.

The grant mechanism used is the small grant (R03), which provides limited funds (maximum of \$50,000 direct costs per year) for short-term (up to two years) research projects. The small grant (R03) awards responsive to this Program Announcement support either clinical or basic science collaborative research efforts related to the mission of the NIDDK that are performed outside the United States, taking advantage of established NIAID-supported International Centers. Investigators are encouraged to establish formal collaboration(s) with the Director or participating scientists of a NIAID International Center(s) and submit an application for small grant support to initiate small research projects or pilot investigations that would have specific aims consistent with the mission of the NIDDK and the research scope of the NIAID International Center.

HS-96-007: Computerized Decision Support Systems for Health Providers

The Agency for Health Care Policy and Research (AHCPR) invites applications to conduct research on computerized decision support systems (CDSS) as a component of electronic medical record systems. The goal of this research is to assist providers' decisionmaking and to improve the cost-effective delivery of health services. This Request for Applications (RFA) solicits applications to address one or more of the following elements for incorporating CDSS into electronic medical records: (1) Use of clinical practice guidelines in decision support systems while maintaining security and confidentiality of patient care data in different patient care settings, (2) The impact of CDSS on the effectiveness of the patient care process, patient outcomes of care, and/or cost impact on patient care, and (3) Identification and testing of factors that influence practitioner use of CDSS. Letter of Intent Receipt Date: May 7, 1996; Application Receipt Date: June 12, 1996.

AA-96-002: Antibodies and Alcohol-Related Behavior

The National Institute on Alcohol Abuse and Alcoholism seeks research applications aimed at developing antibodies to proteins mediating alcohol-related behaviors. This Request for Applications invites research applications that develop and utilize such antibodies to study the effects of ethanol on neurotransmitter receptor subtypes and second messenger proteins and on phosphorylation states involved in the actions of ethanol. Applications should develop and characterize highly specific antibodies to determine the distribution of the subunits in specific cell types, neural pathways, and brain regions known for their ethanol sensitivity. It is estimated that up to \$1.4 million will be available for approximately six to seven research project grants (R01) under this RFA in FY 1996. Letter of Intent Receipt Date: May 13, 1996; Application Receipt Date: June 13, 1996.

PA-95-047: National Cooperative Drug Discovery Groups for the Treatment of HIV Infection

Program Project (P01) applications in response to the above referenced Program Announcement are due June 1, 1996. The PA, which describes the research objectives, application procedures, review considerations, and award criteria for this solicitation, may be obtained electronically through the NIH Grant Line (data line 301/402-2221), the NIH GOPHER (gopher.nih.gov), and the NIH Website (<http://www.nih.gov>). Applications will also be accepted on June 1, 1997.

PA-96-035: Chemical Senses - Neurotransmitters and Neuromodulators

The National Institute on Deafness and Other Communication Disorders and the National Institute on Aging invite research project grant (R01) and First Independent Research Support and Transition (R29) award applications for the support of research fundamental to understanding the neurochemistry of pathways in the olfactory and gustatory systems throughout the life span. This research includes the identification and characterization of the neurotransmitters, neuromodulators, receptors, and secondary messengers throughout the chemosensory systems.

Sigma Xi: Grants-in-Aid of Research

Graduate and undergraduate student grants-in-aid are offered for scientific investigation in any field. Awards are for up to a maximum of \$1,000, except in the fields of astronomy and eye or vision research where special funds allow for awards up to a maximum of \$2,500. Contact telephone: 800-243-6534. Deadline: 05/01/1996

ers. Depending on the Clean Room requirements and maintenance program, other places may choose similar or more elaborate clothing, such as Bunny-suits and face masks.

To help reduce the amount of contaminants being tracked in we keep "Tacky Mats" at the entrance to each lab. A Tacky Mat is a large bundle of sticky tape material. The Mat is secured by adhesive strips to the floor in front of the entrance and the top, fly-paper like surface, is exposed so that lab visitors can step on it. Like the erstwhile fly, the visitor sticks to the mat. But little strength is needed to lift the foot again, leaving behind only the dirt that was previously on the soles of the shoe covers.

In order to help the Clean Rooms maintain their integrity, we have to use an intensive and consistent maintenance program. Among other things, this involves vacuuming and washing the floors every day. The Class 100 Clean Room has all of its horizontal surfaces cleaned (special cleaners and non-particulating cloths) every day and vertical surfaces are wiped once a week as well.

Besides these stringent methods, the key ingredient in keeping Clean Room air clean is the presence of HEPA filters. Such "High Efficiency Particulate Air" filters can catch particles of up to .3 micron with a 99.97% efficiency. All incoming Clean Room air is pumped through multiples of these filters. We even have HEPA filters within the rooms re-circulating the air. (Allergy sufferers are usually quite happy to breathe our air, because even the best air quality that Nature can achieve is 100,000 .5 micron particles per cu/ft. in an undisturbed, rural environment.) The HEPA filters are pretty expensive, but necessary to pull the particles from the air stream. More expensive, and more efficient still are the ULPA, or Ultra Low Particulate Air filters which can catch particles down to .12 micron size with a 99.999% efficiency. The ULPA filters are generally required in Class 10 and higher Clean Rooms.

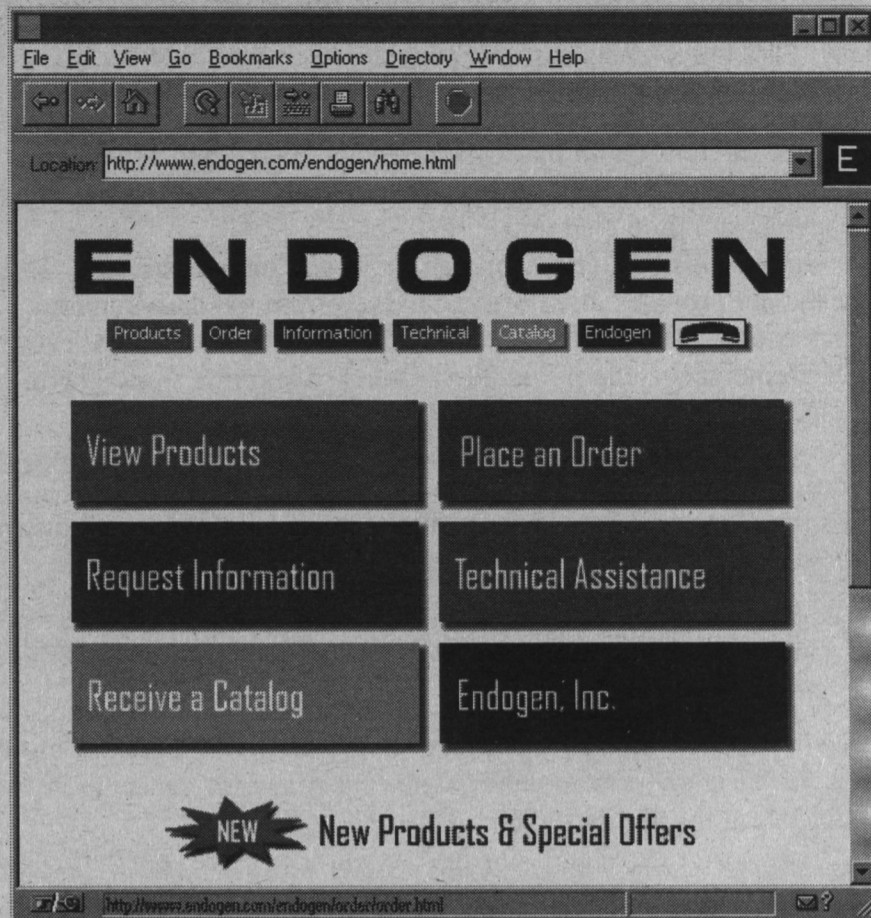
Maintaining an air pressure in the Clean Rooms higher than the pressure in the rooms adjacent to it is also very critical. The reason for positive air pressure is quite simple: people must be able to enter and leave the room and, because it is virtually impossible to create a room with no air leaks, steps must be taken to insure that any air flow is always directed outward. Air allowed to flow in would be unfiltered, heavily contaminated air. Every time contaminated air mixes with filtered air dilution occurs. In reality, all filtered air becomes diluted with unfiltered air; the extent of the mixing affects the final achievement of Clean Room Classification.

Our Clean Rooms are largely used for fine feature photolithography processes. Photolithography requires the use of various chemical solutions, some of which tend to absorb water from the atmosphere. That is to say, they are Hygroscopic. This adsorption effect can drastically alter the properties of the chemicals. This is one of the prime reasons that our Clean Rooms cannot be permitted to have humidity readings of over 40%.

Personnel awareness and training must be particularly acute in a Clean Room facility. Any Clean Room Worker must be fully trained and made aware of duties and responsibilities, because it is not only his or her work that is affected, but the integrity of the whole Clean Room environment. Because it is applicable to a wide range of products, many analysts regard the Clean Room Industry as the fastest growing industry worldwide. Many businesses require Clean Rooms in their processing efforts today. No longer are Clean Rooms the domain of the surgeon or the micro-electrician. Instead, today there is a massive increase in the proliferation of Clean Room technology in the pharmaceutical, food processing, automotive, aircraft, and paint industries, to name a few. Smaller products, products with fewer defects and longer shelf lives demand less contamination during production. Clean Room training, therefore, becomes a valuable skill to learn.

This discussion doesn't even begin to touch on all the details and intricacies of our particular Clean Rooms. Any such discussion would require a book! But if your curiosity is tweaked, come down to the Sub-level of the graduate Physics building sometime and peek into the window of our Thin Film Lab to see gowned individuals at work at the Vacuum Systems, or come check out our video-monitor showing the Inner Clean Room. Or better still, become one of our graduate students, go through complete training, and become one of the privileged few to work in the Clean Rooms at the Superconducting, Nano-Fabrication Lab of SUNY, Stony Brook. ■

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Students were questioned on the correlation between instructing elementary school students and secondary science. The feeling held by many of the student teachers enrolled in the course was that the teaching style does not vary greatly between the two. The most complex lessons can be broken down into their simplest components and taught at the elementary level. The essential teaching tools such as flexibility, adaptation, confidence, and the ability to ask the right open-ended questions are prevalent on all levels of education. However, when the Discover Lab setting is transformed to an "actual" classroom, the beneficial results are not as obvious. Stony Brook students claim that Discover fails to take into account factors that are prevalent in the field such as student-teacher ratios, varying student behavior, and time restraints.

The children visiting Discover Lab, however, are enthusiastic. This is because the lab provides more than an escape from the daily monotony of their classrooms. When asked about Discover, on fifth grader from Setauket Elementary School replied, "instead of learning from a textbook, we become scientists."

As we progress into the twenty-first century, there will be a movement in science education toward an integrated spiraling curriculum. The sciences will become intertwined and students will have the opportunity to draw their own conclusions about subject matter, thus making learning more meaningful. The goal in Discover Lab is to get students to gain a broader appreciation for science and increase the amount of hands-on activities. By achieving these goals, the program will attract a broader spectrum of students. Discover enhances the learning process and aids those who have heretofore depended on mere memorization. It also intrigues visual learners who enjoy exploring scientific concepts in ways which give them the ability to be creative.

This new approach and attitude toward science education was expressed by Charles Guercia, a Stony Brook student enrolled in the program. "I instructed a third grader on cantilevers and asked the student to explain the activity performed. He proceeded to give a lesson on the device using his own ideas in which I learned a new teaching approach. I feel that as a teacher, I will learn as much from my students as they will from me." ■



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Rubbing The *Pumice* Stone

Faculty and Students Rock On

by Donnette A. Dabydeen

Dr. Gerald Thomsen, a Professor in the Biochemistry Department, is not unlike Dr. Jekyll and Mr. Hyde. By day he is an analytical intellectual at USB; by night a rip-roaring rock star at the local bar. He dwells in a multidimensional world, ranging from microscopes and centrifuges to amplifiers and microphones. The band *Pumice*, of which he is a member, is definitely not your average garage band. The other members also have the Jekyll and Hyde personae: they are all graduate students studying Marine Biology and Molecular Biology.

Thomsen's passion for music began in his childhood, when he fell in love with the rich intonation of the piano. This passion was intensified while taking piano lessons for several years. While the flame of desire burned strong, his other interests, especially in the sciences, prevented him from giving his all to musical pursuits. Focusing on academics at the University of Tampa, where he majored in marine biology, Thomsen had little time for music. The hard work required in his studies drew him away from his artistic love; he was therefore never able to be in an organized band while taking his early piano lessons or as an undergraduate. Instead, he says he was "just jamming on occasions, singing with the radio and collecting a storehouse of songs in my head."

His interests shifting in the direction of molecular biology and cell physiology, Thomsen earned his Ph.D. at the Rockefeller University, where he worked in the field of gene transcription and gene regulation with a renowned scientist in the field, Dr. Robert Roeder. The intensity of the research, as in the

case of his undergraduate years, prevented him from performing in an organized way, so instead he sang in small choral groups. Throughout his struggle to keep the music alive in his soul, Thomsen never gave up hope and kept striving for that elusive "organized band."



The dream soon became reality. While doing his post-doctoral research in Biochemistry at Harvard, he bonded with other scientists who shared his enthusiasm for music. Together, they formed a true blues-based band, "The Blues Doctors." Although the commute [from Stony Brook to Boston] makes it difficult to practice and perform as often as he would like, the band has managed to stay together for five years.

In the Fall of 1993, Thomsen came to Stony Brook as an Assistant Professor of Biochemistry. During his first year at USB, as would be expected, Thomsen was buried under grant proposals for funding in the field of vertebrate molecular embryology, as well as teaching developmental biology. However, despite his usual heavy workload, he fatefully met some

postdoctoral and graduate students from neighboring labs who were interested in forming a band. *Pumice*, as they named the band (because a pumice stone is a porous volcanic rock often used to soften calloused skin, which parallels the band's purpose to soften hard times through their music) was born. Although they had to balance their music practice with their work schedules, the band played regularly and served as a terrific stress reliever.

Currently, the members of *Pumice* include Thomsen on vocals, Greg Golling on bass guitar, John Griffin on guitar, Eric Andruils on trumpet, Chris Gobler on drums, and Jim Wells on the horn. Although the band has already experienced some changes since its creation, they expect to be stable for the next few years. They perform a diversity of music, spanning The GoGo's, Greenday, U2, Neil Young, Hole, REM, Nirvana, and many others. *Pumice* performs in local clubs and bars, including The Spot and Checkmate. (They can also be booked for parties.) The band is now entering a position to choose its own gigs and hopes to play in some NYC clubs in the near future. They also aim to play at the 4th annual Long Island Music Festival on June 26-30.

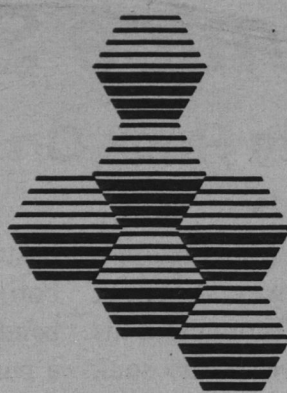
Inspired by the diverse fictitious character Buckaroo Bonzai, who was a physician, physicist, and rock and roll star, the band hopes to juggle a "dual career scenario: playing in the city clubs, putting out albums, and pipetting." *Pumice*, a diamond in the rough, will no doubt someday shine due to their unceasing ambition and hard work. ■

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Center for Biotechnology

A New York State Center for Advanced Technology

Center Announces 1996-97 ITG Awards

The Center's scientific advisory panel has recommended funding for seventeen research projects under its Innovative Technology Grant (ITG) Program. The ITG program funds innovative faculty research that has clear commercial potential.

Priority is given to collaborative projects with New York State companies. Corporate partners have provided financial and in-kind support to match the Center's investment. Center awards range from \$25,000 - \$35,000 each.

<i>Project Title</i>	<i>P.I.</i>	<i>Dept./Institution</i>	<i>Corp. Partner</i>	<i>Cost</i>
1. Mechanism of Antiviral Action of New Therapeutic Agent for Ocular Herpes Simplex Keratitis	<i>Calhoun, David</i>	Chemistry/City College	Redox	\$50,100
2. Use of HIV-1p24 Multimeric Complexes & X-Ray Structure to Elicit Antibodies Against Conformational Epitopes	<i>Carter, Carol</i>	Microbiology/USB		\$28,000
3. A New Separation Medium for Gel Electrophoresis	<i>Chu, Ben</i>	Chemistry/USB		\$33,000
4. Effect of Structure and Formulation of Novel Topical Anti-Plaque Agents of Potential Systemic Absorption	<i>Evans, Richard</i>	Oral Biology/Buffalo	Omnipharm	\$50,000
5. High Surface Area Fluoropolymeric Support Materials for Biotechnological Applications	<i>Gardella, Joseph</i>	Chemistry/Buffalo	Integrated Technologies	\$53,800
6. Inorganic-Organic Interpenetrating Networks: New Bio-Compatible Material	<i>Grey, Clare</i>	Chemistry/USB		\$35,000
7. Isozyme-Selective Regulators of Adenylyl Cyclase	<i>Johnson, Roger</i>	Physiology/USB	Cadus	\$50,000
8. Optimized Yeast Strain for Functional Expression of Mammalian G Protein/Coupled Receptors	<i>Konopka, Jim</i>	Microbiology/USB	Cadus	\$50,000
9. Pyridoxal-5-Phosphate (vitamin B6) as an Anticoagulant for Long-Term storage of Whole Blood, Platelets, and Additional Components	<i>Kornecki, Elizabeth</i>	Anatomy/Brooklyn		\$18,000
10. Development of 3D Virtual Colonoscopy	<i>Liang, Jerome</i>	Comp Sci-Radiology/USB		\$25,000
11. Colab View: Software for Medical Image Consultation, Collaboration and Recording	<i>Mishra, Prateek</i>	Comp Sci./USB		\$22,000
12. Utility of the Enzo Microplate Assay & In-Situ PCR in the Early Diagnosis & Monitoring of HIV-1 Disease	<i>Nuovo, Gerry</i>	Pathology/USB	EnzoBiochem	\$50,000
13. Development of Membrane-Based Helicobacter Diagnostic Kit	<i>Shaw, Robert</i>	Medicine/Northport	Enteric	\$20,000
14. Novel Metalloprotease Inhibitors	<i>Sieburth, Scott</i>	Chemistry/USB	Wyeth-Ayerst	\$50,000
15. Alternative Grafting Methods	<i>Simon, Marcia</i>	Oral Biology/USB		\$24,751
16. Development of Zinc Finger Binding Site Compounds Which Inhibit HIV Replication	<i>Steigbigel, Roy</i>	Infectious Disease/USB	Innova	\$31,640
17. Inhibitors of InhA: Novel Anti-Tubercular Drugs	<i>Tonge, Peter</i>	Chemistry/USB		\$20,000
			TOTAL:	\$611,291

Center hits the Web!!! • <http://life.bio.sunysb.edu/biotech/>

The Center for Biotechnology can now be found on the World Wide Web. Visitors can access information about Center programs, current events, research seminars, sponsored research projects, research facilities, New York biotechnology companies and other associated organizations.

A special feature of the Center's web site will be a career development service. Career opportunities at New York companies and research institutions will be posted on a regular basis. Anyone wishing to submit a recruitment "ad" should submit it in electronic format to rlewis@life.bio.sunysb.edu.

INTERNSHIP APPLICATIONS BEING ACCEPTED

The Center for Biotechnology is currently accepting applications for both the Undergraduate Internship Program and the Graduate Student Internship in Biotechnology and Patent Law program.

The undergraduate program places students who have completed their sophomore or junior year at local biotechnology companies for anywhere from one summer to two years. Students participate in company research programs under the direction of senior scientists, and learn first-hand about the corporate biotechnology environment. Participating companies include Collaborative Laboratories, Enteric Products, Nanoprobes, and Oncogene Sciences.

Undergraduates begin their internships at the start of the first summer session, and continue full-time through the summer. During the academic year, students work 15 hours per week. Students are paid a stipend, and can earn up to three credits per semester for the experience.

The graduate student internship program places interested graduate students at local intellectual property law firms for one to two semesters. Interns serve as liaisons between inventors in their field of expertise and the patent attorneys determining novelty of new inventions. Participants learn the value of intellectual property to both an academic and industrial career. Interns are expected to work 12 - 15 hours per week and are paid a stipend. Openings will be available for the Fall 1996 and Spring 1997 semesters in biotechnology, chemistry, computer science, and physics. Participating companies include Hoffman & Barron and Scully, Scott, Murphy & Presser.

*Applications can be picked up at the Center for Biotechnology,
130 Life Sciences Building.*

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Photo by Alwyn Fitzgerald

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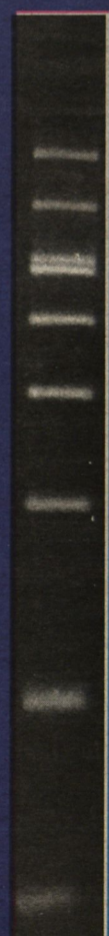
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