The CAH Interdisciplinary Research Awards are funded by E&G dollars therefore, all state spending guidelines apply. Some prohibited purchases are non-travel related food, alcohol, catering, and personal items.

PIs must attach a summarized budget with any changes form the proposed budget listing total OPS, equipment, travel, and other expense categories. Justification is required for revisions over 20% of the proposal budget.

All award funds must be spent by May 31, 2008. Any unspent funds after that date will be lost.

The PI's home department is responsible for assisting the PI with administrative duties such as purchasing, and tracking of funds. Administrative staff should use department number 2301-0007 for requisitions, PCards, and UCF auxiliary unit charges. Over-expenditures beyond the award amount will be charged back to the lead PI's operations department.

Departments should forward applicable backup (POs, invoices, receipts, etc.) to Kristin Wetherbee in the CAH Dean's Office for approval and processing using the attached labels.

PIs must acknowledge the College of Arts & Humanities in publications, electronic medium, and printed matter for items funded by this award by using the statement, "This project is funded in part by the College of Arts & Humanities through the CAH Interdisciplinary Research Award."

All PIs must submit a final report within 30 days of project completion and no later than June 30, 2008. CAH will not approve any PTFs for new proposals until this report is received. The final report should include:

- Narrative of project results - 2 pages max
- Outside funding applied for in relation to this project - 1 page max
- Budget report - 1 page max
- Collateral material - 4 pages max

Awards cannot be spent until this agreement is returned and the budget summary is approved. My signature below indicates that I have read and agree to the award guidelines in this document.

[Signatures and dates]

Return to Paul Lartonoix in the CAH Dean's Office
CAH Interdisciplinary Research Award
Application Form
Due Date: October 15, 2007

Check the box for the award category that you are applying for:
☐ Research/Creative Projects Award    ☑ Grant/Contract Projects Award

List researchers involved in project:
A minimum of 3 different budget units required, 2 must be from the College of Arts and Humanities (CAH)

Ayako Yonetani, DMA  Music
Lead PI  CAH Budget Unit

Steve Flore, Ph.D.  Philosophy
Co-PI  CAH Budget Unit

Kiminobu Sugaya, Ph.D.  College of Medicine
Co-PI  UCF Dept. or Company

Co-PI  UCF Dept. or Company

Co-PI  UCF Dept. or Company

Lead PI signature: ____________________________

Proposal Requirements:
Proposals will be peer reviewed by a panel for selection. Awards will be distributed based on available dollars. Proposal packages must not exceed 20 pages and must include the following sections in the order listed below:

Section 1: Application - Completed CAH Interdisciplinary Research Award Application
Section 2: Research Problem or Activity - Statement of the problem or activity
Section 3: Research Project - The work to be accomplished and the associated time frame
Section 4: Budget - A budget detailing the kind and amount of expenditures to be made
Section 5: Future Plans - Provide evidence of the continuity of the work and/or the potential for future funding
Section 6: Vitas - Current vitas for the PI and Co-PIs; not to exceed 2 pages each
Section 7: Appendix (optional): Any additional information that you feel would be useful to the selection committee

Hand-deliver completed and signed application and 5 copies of the proposal to the CAH Research Office Located in the CAH Dean’s Office by 5:00 PM, October 15, 2007

Received by: ____________________________ Date: __________________________

☐ Accepted
☐ Declined
CAH Interdisciplinary Research Award Guidelines

The primary focus of these awards is to encourage research, creative and grant activities and to generate complete research projects that will enter the mainstream of research in a form that will continue to generate public interest and produce income for an extended period. These awards seek to fund selected interdisciplinary research and to encourage traditional grant applications.

These awards will be peer reviewed (panel) for selection and distributed based on available dollars. All proposals must include:

1. Statement of the problem or activity
2. Evidence of the continuity of the work
3. The work to be accomplished and the associated time frame
4. A budget detailing the kind and amount of expenditures to be made

The funds will be placed in the CAH Research Initiative account, an E&G department administered jointly by the PI's home department and the CAH Dean's Office. The money may be spent as non salary in the form of OPS for students, consultants or as Operation Funds for supplies, equipment or other resources. The funding may not be used for faculty buyouts, overloads, course releases, summer salaries, or food purchases.

All CAH budget units are eligible to submit proposals. The awards seek to fund selected interdisciplinary research that encourages both grant proposals with an entrepreneurial focus and applied research projects that produce an end with continuing local, regional and national exposure. Theatrical performances with religious, historical and philosophical focus, visual art exhibitions that combine reading and music creative publishing ventures involving animation or films, or a combination of these forms are encouraged. Editions of novels, essays, or poems that celebrate our historical or literary heritage, and projects and proposals that inform and celebrate the application of humanistic methods to modern life are few examples of eligible applications content.

RESEARCH/CREATIVE PROJECTS AWARDS

- Monies will be awarded to teams composed from two or more CAH budget units who present completed proposals for existing grants to a panel of jurors.
- The panel will recommend to the Dean award amounts to be deposited in the CAH research initiative account.
- The panel will consider proposals that strengthen teaching and learning, support original scholarship, provide opportunities for lifelong learning, and provide access to cultural and educational resources.

GRANT/CONTRACT PROJECTS AWARDS

- Monies will be awarded to teams composed from at least two CAH budget units and a third party (a partner from a third UCF budget unit or a representative from an outside not-for-profit or commercial venue.
- The panel will recommend to the Dean award amounts to be deposited in the CAH research initiative account.
- The panel will consider actual applied research projects that have high probability for continuing exposure, continuing potential income generation, or the potential to receive external funding from private or federal sources.

Proposal Deadline: October 15, 2007 to the CAH Deans Office
Section 2: Research Problem or Activity

Until recently, most neuroscientists thought we were born with all the neurons we were ever going to have. As children we might produce some new neurons to help build the pathways - called neural circuits - that act as information highways between different areas of the brain. But scientists believed that once a neural circuit was in place, adding any new neurons would disrupt the flow of information and disable the brain's communication system.

In 1962, scientist Joseph Altman challenged this belief when he saw evidence of neurogenesis (the birth of neurons) in a region of the adult rat brain called the hippocampus. He later reported that newborn neurons migrated from their birthplace in the hippocampus to other parts of the brain. In 1979, another scientist, Michael Kaplan, confirmed Altman's findings in the rat brain, and in 1983 he found neural precursor cells in the forebrain of an adult monkey.

These discoveries about neurogenesis in the adult brain were surprising to other researchers who didn't think they could be true in humans. But in the early 1980s, a scientist trying to understand how birds learn to sing suggested that neuroscientists look again at neurogenesis in the adult brain and begin to see how it might make sense. In a series of experiments, Fernando Nottebohm and his research team showed that the numbers of neurons in the forebrains of male canaries dramatically increased during the mating season. This was the same time in which the birds had to learn new songs to attract females.

Why did these bird brains add neurons at such a critical time in learning? Nottebohm believed it was because fresh neurons helped store new song patterns within the neural circuits of the forebrain, the area of the brain that controls complex behaviors. These new neurons made learning possible. If birds made new neurons to help them remember and learn, the brains of mammals might too.

Other scientists believed these findings could not apply to mammals, but Elizabeth Gould later found evidence of newborn neurons in a distinct area of the brain in monkeys, and Fred Gage and Peter Eriksson showed that the adult human brain produced new neurons in a similar area.

For some neuroscientists, neurogenesis in the adult brain is still an unproven theory. But others think the evidence offers intriguing possibilities about the role of adult-generated neurons in learning and memory. However in our previous study supported by NIH, human neural stem cells migrated and differentiated into neurons and glia after transplantation into 24-month-old rat brains and significantly improved the cognitive functions of these animals (Qu et al., 2001).

There is increasing evidences that enriching the environment, including listening music can improve cognitive and motor deficits following a variety of brain injuries. When rats were repeatedly exposed to the complex music (Mozart Sonata (k. 448)), they completed the maze more rapidly and with fewer errors than the rats assigned to the other groups (minimalist music (a Philip Glass composition), white noise or silence) (Rauscher et al., 1998). This result suggests that exposure to complex music induces improved spatial-temporal learning in rats, resembling results found in humans. Taken
together with studies of music-induced neural plasticity, these results suggest a similar neurophysiological mechanism for the effects of music on spatial learning in rats and humans.

Anti-depressant treatment is known to increase stem cell population in the brain. Since it takes time to show the effect on the behavior, this increased number of stem cells and neurogenesis may play an important role in the therapeutic action. Music therapy is known to effective to treat depression. Although no study has been done to investigate correlation between stem cell population and depression, listening music may also reduce depression by increasing stem cell population in the brain.

Although music therapy may provide significant improvement in memory and mood, yet such mechanism of action is not clear. This may pose an important problem, because it is difficult to identify the target diseases for music therapy.

Our hypothesis is that music may improve memory impairment during aging by increasing neural stem cell population and neurogenesis. The rationale for the proposed research is that since (1) enriched environment, including listening music, improve cognition and mood, (2) learning process of singing in the birds involves generation of new neuronal circuit and (3) increasing neural stem cells improve mood, music may affecting brain function by neurogenesis.

The objectives of this project are to investigate relationship between listening music and cognitive function in aged population. Our long-range goal is to identify suitable music to prevent or treat memory impairment in aging.

Following the work of Thompson, Schellenberg, and Husain (2001) we will examine the effect of differing forms of music on listening. Additionally, we will compare this effect across young and old adults. Traditionally the effect of music on cognition has been examined on young adults. As such, our goal here is to not only determine the differential effect of listening on a varied set of cognitive tasks as well as on mood, but to also determine if these effects may vary by age.

This study will extend the research on music and cognition by: (1) examining effects on differing age groups; and (2) assessing any effects on differing types of cognitive tests. By varying the type of music (one hypothesized to increase arousal and mood and the other hypothesized to decrease arousal and mood), we will better understand the potential influence of music on varied forms of cognition and across differing age groups.

PREVIOUS STUDY
Fig. 1 Significant increase in the number of simple math problems solved in 30 sec was observed in the young (18-23) population after (red) as compare to before (blue) listing a music.

We have conducted two experiments to investigate effect of music on the frontal cortex brain function, with young (18-23) and aged (65+) populations. It has been reported that ability to solve simple math problems (e.g., 3+7=, 8-5=) are correlate with frontal cortex function of the brain. We found that significant increase in the number of problem solved in certain period of time after listening the music, which induces emotional excitement to the individuals, indicating that music cause excitement increased the frontal lobe brain function. Thus, in this proposal we will further investigate the brain function with using more detailed behavioral and brain function tests listing depressing or arousing music.

Section 3: Research Project

Participants

360 of subjects will participate in this study. Subjects will be drawn from UCF’s LIFE initiative.

Design

A 3 x 2 mixed (between-within) design will be used (see Table 1). The between-subjects variable will be listening condition (control: listening to story vs. listening to depressing classical music vs. listening to arousing classical music). The within-subjects variable will be type of test (visual, verbal, arithmetic).

<table>
<thead>
<tr>
<th>Listening Condition</th>
<th>Pre-test</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Visual</td>
<td>Verbal</td>
</tr>
<tr>
<td>Control</td>
<td>Group A</td>
<td>Group A</td>
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<tr>
<td></td>
<td>120</td>
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<tr>
<td>Depressing Classical Piece</td>
<td>Group B</td>
<td>Group B</td>
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<tr>
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<td>120</td>
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<tr>
<td>Arousing Classical Piece</td>
<td>Group C</td>
<td>Group C</td>
</tr>
<tr>
<td></td>
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<td>120</td>
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</tbody>
</table>
**Listening Stimuli**

Group A  White Noise
Group B  Schnitke: Cello Sonata, first movement
         Schnitke: Improvisation and Fugue, Largo
         Takemitsu: music from “Black Rain”
Group C  Satie: “Le Piccadilly” (1904)
         Haydn: Symphony No. 92 “Oxford”, last movement

**Testing Stimuli**

**Cognitive Battery**

Participants will be asked to complete a short battery of tests assessing differing cognitive abilities. This will include a subset of basic arithmetic questions, tests of visuo-spatial processing as assessed by visual transformation tests (e.g., the paper folding test; Part VI of the Guilford and Zimmerman battery, 1981) and spatial orientation tests (Part V of the Guilford-Zimmerman Aptitude Survey, 1981). Finally, a measure of verbal ability will be provided (Part 1, Verbal Comprehension of the Guilford-Zimmerman Aptitude Survey). Each of these tests will be randomly divided in half for the pre- and post-test administrations.

**Affective Battery**

Measures of state and trait anxiety will be administered prior to and following the listening conditions along with measures of mood and arousal. The Spielberger State-Trait Anxiety Inventory for Adults will be administered to assess temporary feelings of “state anxiety” and distinguish that from longer-term “trait anxiety”. Participants’ state of arousal and their mood will be assessed using the Profile of Mood States (POMS) - Short Form (McNair, Lorr, & Droppleman, 1992). Using a set of adjectives and a 5-point scale (with not at all and extremely as the anchors) this determines levels of arousal (e.g., lively, energetic) and mood (e.g., sad, discouraged).

**Music Listening Preference Scale**

Participants will be administered a short set of questions assessing their music listening preferences.

**Functional MRI test**

In our preliminary study, we found that some people responded to the music and show improvement in the performance while others did not respond. To investigate the difference between these people, we will investigate the brain function using functional MRI (Florida Hospital). After identifying the responder and the nonresponder, we will
Select 2 people from each group and conduct a study to see which part of the brain is responding to the particular music given to them during the performance tests. This will give us information on which part of the brain activation is important to improve the behavioral performances and also serve as preliminary results to apply future external grants for funding.

REFERENCES


Section 4: Budget

1. Compensation for the research subject: $5 x 360 people x 2 times = $3,600
   (Usually compensation goes more than $60 for one time. However, this is significantly reduced amount because people in the UCF Life program would like to support our study.

2. Cost for the usage of MRI machine at the Florida Hospital $2500

3. Cost for presentation of music to a research subject
   - Amplifier $540
   - Speakers $680
   - CD-R blank CD $153

4. Paper for test $72

5. Pen for test $75

6. Laser Toner Cartridges $98
   (Referred Office Depot site)

7. Undergraduate Research Assistants (2)
   Full time, summer semester $1500 x 2 = $3000

TOTAL $10718
Section 5: Future Plans.

We will aggressively seek for external funding by apply grants such as NAMM FOUNDATION Scientific Grant and National Institute of Health grant. In those applications we will expand the functional MRI study to investigate effect of listing a variety of music on the brain function. After finding which type of music is the most effective to improve the brain function in the normal aged subjects, we will apply the knowledge to treat cognitively impaired subjects, such as Alzheimer’s disease with a collaboration of Florida Hospital and Orlando Regional Health Care. We will also use the experimental data to teach Honor’s interdisciplinary course, “Music and Brain.”
Ayako Yonetani, DMA
Violinist
Professor

4855 Aguila Place
Orlando, FL 32828-6512
Tel/Fax (407) 823-6190 (W)
yonetani@mail.ucf.edu

Education
D.M.A., Juilliard School 1993
M.M., Juilliard School 1987
B.M., Juilliard School 1986
• Major Teachers
   The late Miss Dorothy DeLay 1983-1993
   Mr. Hyo Kang 1983-1990

Teaching Experience
Professor of Violin/Viola
University of Central Florida 2007-Present
Associate Professor of Violin/Viola
University of Central Florida 1998-2007
Assistant Professor of Violin/Viola
University of Central Florida 1993-1998
Jay and Doris Christopher endowed Chair of Strings
Lutheran Summer Music Academy and Festival 2003-Present

Performance Experience
Solo Recitals
“Ayako at Polasek” Concert Series, Winter Park, FL 2005-Present
Recital at Tsuda College, Tokyo Japan 2006
Penn State University, PA 2005
University of Houston, TX 2005
Bunka Kaikan, Alt Hall, Tokyo and Kyoto, *reviewed 2002
Dame Myra Hess Concert Series in Chicago *broadcast 2001

Solo Concerti with Orchestra
Dr. Stella Sung Double Concerto 2005
“Shabyt” competition Gala Concert, Astana City, Kazakhstan 2003
Vivaldi “Four Seasons” 2003
Orlando Philharmonic Orchestra, Set of 3 concerts, *broadcast 2003
Brandenburg Concerto 2003
Kloil Sinfonietta Tokyo, Tokyo 2001
Sibelius Concerto 2001
Charlotte Symphony Orchestra, *reviewed 2001
Mendelssohn Concerto 2001
Ostrava Music Festival, Czech Republic 2001
Zilina Spring Music Festival, Slovak Republic 2001

Chamber Music Experience
Orlando Chamber Soloists 2003-Present
Omega String Quartet 2003-Present
Kloil Sinfonietta Tokyo 1994-Present
Publications

Book

The Japanese translation of Barbara Lourie Sand’s
Teaching Genius: Dorothy DeLay and the Making of a Musician
(Amadeus Press) Ongaku no Tomo, Tokyo, currently in the 4th reprint

Article

“Miss Dorothy DeLay Memorial”
Ongaku Gendai (Japan) June 2002

“My Slovak/Czech Trip”
Ongaku Gendai (Japan) September 2001

“The 50th Anniversary of the Aspen Music Festival and School”
Ongaku Gendai (Japan) November 1999

Discography

Prokofiev: Kioi Sinfonietta Tokyo. Symphony No. 1 “Classical Symphony” etc
Ayako Yonetani and the Slovak State Philharmonic
Mendelssohn and Tchaikovsky violin concerto
Milky Way Classics, 8253465527，“chosen as “CD of the Month” by 90.7, WMFE
Kioi Sinfonietta Tokyo December Live Concert
Maestro & solo cellist, Mario Brunello, Victor, Japan VICC-60394
Jarmit Haenchen and Otaka Tadaaki cond, Columbia Music Entertainment Japan, 2003
Kioi Sinfonietta Tokyo: Kioi Hall Live. Mozart, Grieg, and Ravel
Otaka Tadaaki, conductor
Nippon Steel Arts Foundation, 2002.
Takemitsu-How slow the wind
Kioi Sinfonietta Tokyo
Christian Lindberg, solo trombone, BIS SACD 1078
Kioi Sinfonietta Tokyo Live.
Respighi and Haydn Symphony
Otaka Tadaaki, conductor. Japan Columbia, 1999

Honors and Awards

Elected an honorary Henry Crown Fellow at the Aspen Institute 2006
Selected as an official Artist for Florida State Touring Program 2006-2008
Research Incentive Award 2003
University of Central Florida
Excellence in Undergraduate Teaching Award 1997
University of Central Florida

Grant

State of Florida Artist Enhancement Grant 2007-2008
CAH Interdisciplinary Research Award 2007
United Arts Professional Development Grant for Individual Artist 2007
STEPHENV M. FIORE - BIOGRAPHICAL SKETCH

Professional Preparation

<table>
<thead>
<tr>
<th>Institution</th>
<th>Major</th>
<th>Degree and Year</th>
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<tr>
<td>Montgomery College</td>
<td>Business Administration</td>
<td>A.A. 1986</td>
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<td>University of Maryland</td>
<td>Marketing</td>
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<tr>
<td>University of Maryland</td>
<td>Psychology</td>
<td>B.A. 1991</td>
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<tr>
<td>University of Pittsburgh</td>
<td>Cognitive Psychology</td>
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<tr>
<td>University of Pittsburgh</td>
<td>Cognitive Psychology</td>
<td>Ph.D. 2000</td>
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Appointments

2005-present Assistant Professor, Cognitive Sciences Program, Department of Philosophy, University of Central Florida, University of Central Florida, Orlando, FL
2007-present Director, Cognitive Sciences Laboratory, Institute for Simulation and Training, University of Central Florida, Orlando, FL
2002-2007 Director, Consortium for Research in Adaptive Distributed Learning Environments, Institute for Simulation and Training, University of Central Florida, Orlando, FL
1998-2002 Research Scientist, Team Performance Laboratory, Department of Psychology, University of Central Florida, Orlando, FL
1992-1998 Lab Coordinator, Learning Research and Development Center, University of Pittsburgh, Pittsburgh, PA

Background/General Experience

Dr. Fiore has over 15 years of experience in cognitive science research, conducting a mix of basic and applied studies in learning, memory, and problem solving in individuals and in teams. He is faculty with the Cognitive Science program in the Department of Philosophy and the Institute for Simulation and Training. Dr. Fiore's responsibilities include devising and creating both large and small scale research programs as well as implementing laboratory studies in human cognition. Since 1999, Dr. Fiore has been PI or Co-PI on over $6 million in federally funded research. He currently is PI on a grant from the Office of Naval Research investigating problem solving in teams and PI on a grant from the Department of Homeland Security to understand training and the development of perceptual expertise. Dr. Fiore is Co-PI on a grant from the National Science Foundation to investigate the use of simulations as an aid to decision making in environmental economics. He is also a Co-PI an Office of Naval Research grant involving the study of collaboration in complex networked environments. He has produced over 100 scholarly publications including edited volumes on Distance Learning and on Team Cognition.

Selected Publications

Books - Edited Volumes

Journal Special Issues Co-edited

Peer-reviewed Journals — Selected Articles (last 4 years)

* Current Student or Former Student Co-authors


**Selected Book Chapters (last 2 years)**


* Current Student or Former Student Co-authors
BIOGRAgal SKETCH
Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person. DO NOT EXCEED FOUR PAGES.

NAME
Sugaya, Kiminobu, Ph.D.

POSITION TITLE
Professor of Molecular Biology

ERA COMMONS USER NAME
ksugaya

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science University of Tokyo, Tokyo, JAPAN</td>
<td>BS</td>
<td>1979-1983</td>
<td>Pharmacology</td>
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<tr>
<td>Science University of Tokyo, Tokyo, JAPAN</td>
<td>MS</td>
<td>1983-1985</td>
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<tr>
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<td>1985-1988</td>
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<tr>
<td>Southern Illinois University, Springfield, IL</td>
<td>Post-doc</td>
<td>1988-1989</td>
<td>Neurochemistry</td>
</tr>
<tr>
<td>Mayo Clinic, Jacksonville, FL, USA</td>
<td>Post-doc</td>
<td>1992-1994</td>
<td>Molecular Biology</td>
</tr>
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A. Positions

2007- Present Professor with Tenure, Burnett School of Biomedical Sciences, College of Medicine, University of Central Florida, Orlando, FL
2006- CSO and Co-founder, Neocytex Biopharma, Inc., Orlando, FL
2006- Chair of Neuroscience Consortium for Central Florida
2005- Council of the Florida Center for Universal Research to Eradicate Disease
2004- Professor with Tenure, Biomolecular Science Center, Burnett College of Biomedical Sciences, University of Central Florida, Orlando, FL
2002-2004 Associate Professor with Tenure, Department of Psychiatry, UIC, Chicago, IL
2002-2004 Associate Professor with Tenure, Department of Physiology and Biophysics, UIC, Chicago, IL
2003-2004 Adjunct Professor of Ophthalmology, Department of Ophthalmology, UIC, Chicago, IL
2003- Adjunct Professor of Bioengineering, Department of Bioengineering, UIC, Chicago, IL
2001-2002 Adjunct Assistant Professor of Ophthalmology, Department of Ophthalmology, UIC, Chicago, IL
2000-2002 Assistant Professor, Department of Psychiatry, University of Illinois at Chicago, Chicago, IL
1999-2002 Assistant Professor, Department of Physiology and Biophysics, UIC, Chicago, IL
1997-1999 Research Assistant Professor, Department of Psychiatry, Univ. of Illinois at Chicago, Chicago, IL
1997 Assistant Professor, Pharmacology, Mayo Clinic Jacksonville, Jacksonville, FL
1994-1997 Associate Consultant, Neuropharmacology, Mayo Clinic Jacksonville, Jacksonville, FL
1993-1994 Research Associate, Neuropharmacology, Mayo Clinic Jacksonville, Jacksonville, FL
1982-1993 Research Fellow, Neuropharmacology, Mayo Clinic Jacksonville, Jacksonville, FL
1989-1992 Full-time Lecturer, Division of Aging and Intractable Diseases, Research Institute for Biosciences, Science University of Tokyo, Noda, Chiba, Japan

PROFESSIONAL SOCIETIES:
Society for Neuroscience, American Association for the Advancement of Science, The Association for Research In Vision and Ophthalmology, Sigma XI

MANUSCRIPT REVIEWER

GRANT REVIEWER
Alzheimer Association Research Grant, Medical Research Council (England)
NIH add hoc and BSCT Member, Guy's & St Thomas' Charitable Foundation research grant (England)
B. Publications (selected from 81 publications)


