



**UNIVERSITY OF CALIFORNIA**  
**PRESIDENT'S MULTI-CAMPUS RESEARCH INITIATIVE**



University of California Multi-Campus Symposium on  
**Music**  
 in relation to  
**Brain Science, Medicine, & Education**

**Thursday October 1<sup>st</sup> – Saturday October 3<sup>rd</sup>**  
 Arnold Schoenberg Theatre, UCLA Herb Alpert School of Music Jan  
 Popper Theatre, UCLA Herb Alpert School of Music  
 445 Charles E Young Drive East, Los Angeles, CA

under the direction of  
 Mark Tramo MD PhD  
 &

University of California Music Experience Research Community Initiative (UC MERCI)

*UC Davis*  
 Petr Janata PhD

*UC Merced*  
 Ramesh Balasubramaniam PhD

*UC San Diego*  
 Sarah Creel PhD  
 John Iversen PhD  
 Scott Makeig PhD

*UC San Francisco*  
 Julene Johnson PhD

*UC Los Angeles*  
 Mark Tramo MD PhD

**UC Faculty**

Jeanne Bamberger PhD, *UCB*  
 Gerald Berke MD, *UCLA*  
 Greg Bryant PhD, *UCLA*  
 Ellen Carpenter PhD, *UCLA*  
 Tim Cooley PhD, *UCSB*  
 Robert Fink PhD, *UCLA*  
 Nina Eidsheim PhD, *UCLA*  
 Tim Gentner PhD, *UCSD*  
 Peter Krapp PhD, *UCI*  
 Henry Spiller PhD, *UCD*  
 Ruth Hellier-Tinoco PhD, *UCSB*  
 Gert Lanckriet PhD, *UCSD*

Scott Grafton MD, *UCSB*  
 Frank Heuser PhD, *UCLA*  
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 Marco Iacoboni MD PhD, *UCLA*  
 Gigi Johnson EdD, *UCLA*  
 Alexander Khalil PhD, *UCSD*  
 Paulo Chagas PhD, *UCR*  
 Roger Reynolds MM, *UCSD*  
 Luis Henao, *UCLA*  
 Oliver Jacobson BMT, *UCSF*  
 Joseph Klett PhD, *UCSC*  
 Martin Monti PhD, *UCLA*

Daniel Neuman PhD, *UCLA*  
 Neal Stulberg, *UCLA*  
 Raffi Tachdijan MD, *UCLA*  
 Carson Schütze, PhD, *UCLA*  
 Theresa Allison MD PhD, *UCSF*  
 Jayson Beaster-Jones PhD, *UCM*  
 Christian Mikutta MD, *UCB*  
 Roger Woods MD, *UCLA*  
 John Stern MD, *UCLA*  
 David Borgo PhD, *UCSD*  
 Gert Lanckriet PhD, *UCSD*  
 Steven Berman PhD, *UCLA*

In keeping with the goals of the UC President's Multi-Campus Research Initiatives, this inaugural UC MERCI Symposium convenes neuroscientists, health care professionals, educators, musicologists, and musicians from the University of California faculty whose research and educational activities focus on: 1) brain mechanisms mediating music perception and performance; 2) child cognitive development as it relates to music pedagogy and the effects of music experience on intellectual, emotional, and socio-cultural maturation; 3) applications of music to health maintenance and the treatment of pain, stress, disability, and isolation caused by diseases afflicting infant, child, adult, and elderly patient populations; 4) specialized health care for creative and performing artists; and 5) the development and application of innovative technologies and information resources for professionals and the general public.

The Symposium opens on Thursday October 1<sup>st</sup> with a public education event for a general audience with broad interests in music, including students and faculty in UC undergraduate, graduate, and professional schools. Distinguished guest lecturer Dr. Robert Freeman, former head of the Eastman School of Music, New England Conservatory of Music, and the College of Fine Arts at the University of Texas at Austin from 1972 to 2006, delivers a Keynote with insights from his book, *The Crisis of Classical Music in America: Lessons from a Life in the Education of Musicians*. The importance of interdisciplinary research and education to the real-world success of our nation's 10,000-plus U.S. music school graduates each year is addressed. Dr. Scott Makeig, UC MERCI Director, follows with an outline of the broad objectives and specific aims of the UC President's Planning Grant to develop a multi-campus, interdisciplinary initiative in music research and education. After a brief intermission, MERCI Co-Director Dr. Mark Tramo provides an overview of functional brain organization that explores candidate neural mechanisms mediating emotional responses to music and physiological processes that may underlie music's power to ameliorate pain and stress caused by physical and mental illness. Maestro Neal Stulberg then discusses and demonstrates some complexities in assessing how music's emotion and meaning are communicated by performers and received by listeners. The public event concludes with a series of performances by

graduate and undergraduate students from the UCLA Herb Alpert School of Music. A reception for UC faculty and students follows at the Music School.

Friday October 2<sup>nd</sup> is devoted to a series of workshops featuring “bullet talks” by over two dozen UC faculty. Workshops are organized into four clusters: 1) *Music, Health, & Medicine*; 2) *Music, Mind, & Brain*; 3) *Music, Development, & Education*; and 4) *Music, Technology, & Informatics*. Friday evening is the Faculty-Student Dinner and Poster Session at the UCLA Faculty Center across the street from the Music School.

Most of Saturday October 3<sup>rd</sup> is earmarked for Faculty-Student break-out sessions that bring researchers with overlapping interests together and kindle multi-campus research collaborations. The Symposium culminates with a discussion of potential research projects adumbrated in the breakout sessions and a timetable for achieving the goals of the present UC MERCI Planning Grant in anticipation of future applications for research funding and curriculum development.

## Thursday OCTOBER 1, 2015

### *Schoenberg Theatre*

5:00-7:00P

Registration

## I. INTRODUCTION

7:00 – 7:10 PM

Welcome

**Daniel Neuman, PhD**

UCLA Dept of Ethnomusicology  
Whilom Provost & Executive Vice Chancellor

7:10 – 8:00 PM

**Keynote**

**The Crisis of Classical Music in America &  
the Promise of Interdisciplinary Music  
Education & Research**

**Robert Freeman, PhD**

University of Texas, Austin  
Whilom Dean & Regents Professor  
College of Fine Arts

8:00 – 8:15 PM

**The UC President’s MERCI Initiative:  
Planning Grant Aims & Symposium Objectives**

**Scott Makeig, PhD**

UCSD Inst for Neural Computation  
UC MERCI, Director

8:15-8:30 PM

**Intermission**

8:30 – 9:00 PM

**Functional Brain Organization in Relation  
to Emotion & Meaning in Music**

**Mark Tramo, MD PhD**

UCLA Depts of Neurology & Ethnomusicology  
UC MERCI, Co-Director

9:00 – 9:50 PM

**Measuring Music’s Impact:  
A Performer’s Perspective**

**Neal Stulberg**

UCLA Chair, Dept of Music  
Director, Orchestral Studies  
*with performances by*  
Charles Tyler, cello  
Farzad Amoozegar-Fassie, setar  
Timothy Oh, alto saxophone  
Hanmohamed Nashir Amin, double

### *Music School Green Room #1230*

10:00 – 11:00 PM

**UC Faculty & Student Reception**

Friday OCTOBER 2, 2015

*Popper Theatre*

8:30-9:00 AM

Registration

**II. MUSIC, HEALTH, & MEDICINE**

9:00-9:06 AM

Introduction

**Julene Johnson PhD  
& Mark Tramo, MD PhD**  
UC MERCI, Co-Directors

9:06-9:18 AM

Music & Well-Being

**Julene Johnson, PhD**  
UCSF Inst for Health & Aging

9:18-9:30 AM

Music, Well-Being & Collective Behavior:  
Interpersonal Synchrony

**Alexander Khalil, PhD**  
UCSD Dept of Cognitive Science

9:30-9:42 AM

Music, Well-Being & Collective Behavior:  
Music Performance & Empathy

**Jason Beaster-Jones, PhD**  
UCM Dept of History & World Culture

9:42-9:54 AM

Music, Well-Being & Collective Behavior:  
Singing

**Nina Eidsheim, PhD**  
UCLA Dept of Musicology

9:54-10:06 AM

*Refreshments*

10:06-10:18 AM

Voice Production & Perception in Health & Illness

**Gerald Berke, MD**  
UCLA, Dept of Otolaryngology  
Voice Center for Medicine & the Arts, Director

10:18-10:30 AM

Healing, the Arts, & Complementary Medicine

**Ping Ho, MA MPH**  
UCLA Arts & Healing, Director

10:30-10:42 AM

Designing Prospective, Randomized-Controlled  
Clinical Trials with Music as a Treatment  
Intervention

**Mark Tramo, MD PhD**  
UCLA Depts of Neurology & Ethnomusicology

10:42-10:54 AM

Music for Autism and Other Chronic  
Childhood Illnesses

**Raffi Tachdjian, MD MPH**  
UCLA Depts of Medicine & Pediatrics

10:54-11:06 AM

*Refreshments*

*11:06–11:18 AM*

**Music for Pain & Anxiety in Children**

**Oliver Jacobson, BMT**

UCSF Children's Hospital Music Therapy

*11:18–11:30 AM*

**Music for Elders with Neurodegenerative Diseases**

**Teresa Allison, MD PhD**

UCSF Dept of Geriatrics

*11:30–11:50 AM*

**Q&A/Discussion**

**UC Faculty & Students**

*11:50A–1:12 PM*

**Lunch**

### **III. MUSIC, MIND, & BRAIN**

*1:12–1:18 PM*

**Introduction**

**John Iversen, PhD &**

**Petr Janata, PhD**

UC MERCI, Co-Directors

*1:18–1:30 PM*

**Music, Empathy, & Mirror Neurons**

**Marco Iacoboni, MD PhD**

UCLA Dept of Psychiatry & Biobehavioral Sciences

*1:30–1:42 PM*

**Music, Emotion, & Cooperativity**

**Greg Bryant, PhD**

UCLA Dept of Communication Studies

*1:42–1:54 PM*

**Sensorimotor Synchronization & Rhythmic Coordination**

**Ramesh Balasubramaniam, PhD**

UCM Dept of Cognitive & Information Sciences

*1:54–2:06 PM*

**Cortical Electrophysiology of Rhythm Perception & Production**

**John Iversen, Ph.D.**

UCSD Inst for Neural Computation

*2:06–2:18 PM*

**Refreshments**

*2:18–2:30 PM*

**Electrophysiological, Hemodynamic, & Behavioral Correlates of Musicogenic Seizures**

**John Stern, MD**

UCLA Dept of Neurology

*2:30–2:42 PM*

**Electrophysiological Responses to Music in Human Auditory Cortex**

**Christian Mikutta, PhD**

UCB Neuroscience Inst

*2:42–2:54 PM*

**Electrophysiological Responses to Tones & Vocalizations in Macaque Auditory Cortex**

**Mark Tramo, MD PhD**

UCLA Depts of Neurology & Ethnomusicology

*2:54-3:06 PM*

**Electrophysiological Correlates of Song Learning & Recognition in Starling Auditory Forebrain**

**Tim Gentner, PhD**  
UCSD Dept of Psychology

*3:06-3:18 PM*

**Music-Evoked Remembering in the Age of Big Data**

**Petr Janata, PhD**  
UCD Dept of Psychology

*3:18-3:38 PM*

**Q&A/Discussion**

**UC Faculty & Students**

*3:38-3:50 PM*

**Refreshments**

## **IV. MUSIC, DEVELOPMENT, & EDUCATION**

*3:50-3:56 PM*

**Introduction**

**Sarah Creel, PhD**  
UC MERCI, Co-Director

*3:56-4:08 PM*

**Development of the Musical Mind**

**Jeanne Bamberger, PhD**  
UCB Dept of Music

*4:08-4:20 PM*

**Specificity for Musical Memories During Development**

**Sarah Creel, PhD**  
UCSD Dept of Cognitive Science

*4:20-4:32 PM*

**Implicit Learning & Music Competence: Cultural & Biological Influences**

**Henry Spiller, PhD**  
UCD Dept of Music

*4:32-4:44 PM*

**Music Training, Cognitive Development, & Brain Development**

**John Iversen, PhD**  
UCSD Inst for Neural Computation

*4:44-4:56 PM*

**Refreshments**

*4:56-5:08 PM*

**Genetics & Molecular Biology of Music Competence & Aptitude**

**Ellen Carpenter, PhD**  
UCLA Dept of Psychiatry & Biobehavioral Sciences

*5:08-5:20 PM*

**Skill Acquisition, Music Performance & Brain Plasticity**

**Scott Grafton, MD**  
UCSB Dept of Psychology

*5:20-5:36 PM*

**Skill Acquisition & Music Pedagogy**

**Frank Heuser, PhD**  
UCLA Dept of Music

*5:36-5:48 PM*  
**Music Performance & Symbolic Processing**

**Carson Schütze, PhD**  
UCLA Dept of Linguistics

*5:48-6:00 PM*  
**UC-México Arts & Culture Working Group**

**Ruth Hellier-Tinoco, PhD**  
UCSB Dept of Music

*6:00-6:20 PM*  
**Q&A/Discussion**

### *Faculty Center, Sequoia Room*

*6:30-8:00 PM*  
**UC Faculty-Student Dinner**

*8:00-9:00 PM*  
**Poster Session**

### *Music School Green Room #1230*

*9:00-10:00 PM*  
**UC MERCI Board Meeting**

**Saturday OCTOBER 3, 2015**

### *Popper Theatre*

## **V. MUSIC, TECHNOLOGY, & INFORMATICS**

*9:00-9:06 AM*  
**Introduction**

**Ramesh Balasubramaniam, PhD**  
UC MERCI Co-Director

*9:06-9:18 AM*  
**Music Technology, Design, & Implementation:  
How We Create, Collaborate, & Consume**

**Gigi Johnson, EdD**  
UCLA Music Innovation Ctr, Director

*9:18-9:30 AM*  
**Search & Recommendation from Millions of  
Songs & Videos**

**Gert Lankiert, PhD**  
UCSD Dept of Computer & Electrical  
Engineering

*9:30-9:42 AM*  
**Interdisciplinary Collaboration in Audiovisual &  
Multimedia Composition & Performance**

**Paulo Chagas, PhD**  
UCR Dept of Music

9:42-9:54 AM

**The Interaction of Scientific & Artistic  
Imagination: Perceptual Studies & the Making of  
Music**

**Roger Reynolds**  
UCSD Dept of Music

9:54 -10:14 AM

**Q&A/Discussion**

**UC Faculty & Students**

## **VI. WORKSHOPS**

### *Popper Theatre*

9:54 -10:06 AM

**Workshop Organization & Goals**

**Scott Makeig, PhD**  
UC MERCI, Director

*Classrooms 1354, 1402, 1420, 1421  
Choral Room 1325*

10:14-1:00 PM

**Breakout Sessions**

**UC Faculty & Students**

### *Courtyard*

1:00-2:00 PM

**Faculty/Student Lunch**

### *Popper Theatre*

2:00 – 3:00 PM

**Session Summaries & Plans for 2016**

**Scott Makeig, PhD**  
UC MERCI, Director

3:00 PM

**Adjourn**