Annual Report

Neuroscience Research 2012

People
Our current Investigator roster is comprised of 24 faculty and 7 post-docs from 5 departments across 4 colleges. New members this year include Health & Kinesiology faculty Alberto Cordova, and postdocs Toma Marinov, Wondimu Teka, and Songquing Lu.

Advisory Board
Dan Johnston PhD, Professor & Director, Center for Learning & Memory, UT Austin.
James Roberts PhD, Ruth C. & Andrew G. Cowles Professor of Life Sciences, Trinity University.
David Weiss PhD, Professor & Director, Department of Physiology, UTHSCSA.

Steering Committee
Our voting members are Investigators who have current federal funding sponsored by the Institute. 2013 Roster: Gary Gaufo, Carlos Paladini, Fidel Santamaria, Kelly Suter, Todd Troyer, Nicole Wicha, and Charles Wilson.

Fiscal Snapshot

NIH & NSF Awards
Federal Awards received during NIH/NSF budget year 2012 totaled $3.29 million. See box, p. 3, for award details, and 2010-12 data in the Appendix, p. 8.
Our ongoing research expansion is best indexed by federal grant expenditures; in fiscal year 2012, the Institute posted an unprecedented $3.54 million in research expenditures, up from $1.08 million in our inception year of 2008. For a view of the intervening years, see our timeline of research expenditures in the Fiscal Snapshot section of the Appendix, p. 8.

Investigators vie for federal $ Following last year’s funding success (5 funded proposals), in FY11-12 our investigators submitted 9 proposals to federal agencies via Institute sponsorship (3 R21/Ratnam x2, Paladini, 2 NSF / Wicha, Wilson, 3 R01/Suter, Wicha x2, and a U01-Santamaria). 2 remain pending.

Research Support

Instrumentation Cores
The Institute now oversees two core facilities: the Neural Excitability Core, and the 2-Photon Microscopy Lab. Both are available for use by Neuroscience researchers at UTSA.
The Neural Excitability core is open to Investigators requiring fabrication and/or live animal implantation of optrodes or chronic multi-channel electrodes for neuroscience research applications. It was established in 2010 via funding from the San Antonio Life Sciences Institute Neuroscience Infrastructure program and has been extended in scope to support the development of optogenetic capacity under the NINDS UTSA SNRP grant.
The 2-Photon Microscopy Lab is comprised of two multi-photon imaging systems fully equipped for in vitro electrophysiology and live tissue imaging. Initially erected by the NCRR RCMI grant, the core is now fully supported and maintained by the Neurosciences Institute.

Weekly Mentorship
One of the flagship initiatives of the Neurosciences Institute remains our program of weekly research meetings. The meetings initially served faculty grant writing, ethics and mentoring, but have recently extended into a forum for students and postdocs to hone their grantsmanship skills.
Institute Activities

A Dynamic Lineup

In March, the Institute welcomed a distinguished panel for its fourth annual Research Symposium. This year’s theme, “Neural Dynamics & Coding,” united five acclaimed computational researchers presenting strategies for building biophysical models of neuronal spike data at various scales of analysis. On the panel were: Uri Eden (Boston U), Adrienne Fairhall (UW Seattle), Eric Shea-Brown (UW Seattle), and founder of Brain Corp and Scholarpedia, Eugene Izhikevich. Speaking among them was the symposium’s host and organizer, Institute Investigator and UTSA Dynamics expert, Todd Troyer. A podcast discussion hosted by our Director is available as part of the Neuroscientists Talk Shop Podcast series.

The symposium was attended by over 70 researchers, fellows, and students from the Neuroscience and Computer Science departments at both UTSA, UT Austin and the University of Houston.

Keeping it Hands On

In keeping with prior years, The Neurosciences Institute presented two workshops this year, both aimed at providing our faculty and trainees with robust analytic tools to mine both image and numerical data.

In January, Institute Investigator and Stats Professor DJ Ko held a two-part workshop on Statistics in Neuroscience and Data Mining. The course featured a unit on erroneous neurostatistical analyses, ways to visualize variability, and finally some aspects of machine learning and data mining that are pertinent to biological data sets. Trainees and faculty from both UTSA and UTHSCSA attended.

In May, Institute Investigator Colleen Witt hosted a workshop on live cell imaging, Analyzing Cell Morphology & Movement in 3D.

Of Birds and Brains

In April the Institute hosted a Distinguished Lecture for the Public by Duke Neurobiologist Erich Jarvis. Dr. Jarvis, who is also an investigator at the Howard Hughes Medical Institute, gave a lecture detailing his motor theory for the origin of vocal learning. Over 200 attended the lecture in the UTSA Grand Ballroom. In addition to his public lecture, Dr. Jarvis spent some time with our Neuro PhD and Undergraduate students to discuss scientific and career choices, and also recorded a podcast for NTS (see below).

Research Output

The Institute in press

Institute faculty generated 82 publications in 2012 (see Investigators in Press). These include peer reviewed journal articles (77), invited reviews (4), and a book chapter.

Multimedia Neuroscience

The Institute continues to add to its Neurobiology Podcast series, Neuroscientists Talk Shop, which features prominent external Neuroscientists in scholarly discussion with a group of core UTSA Neurobiologists. Discussions are revelatory of a neuroscience research field in outlining history, the process behind the papers, and are a forum for speculation and critical analysis in the language that researchers naturally use. This year, 17 new episodes were recorded and are available at the iTunes Music Store, bringing the total number of episodes to 92. See box, p. 5, for details.

2012 Workshops

Statistics in Neuroscience & Data Mining

Presented by Institute Investigator Daijin Ko, SNRP Core Director, With Sudip Roy & Charles Wang, SNRP PhD students. Hosted in conjunction with the Department of Management Science & Statistics. 01.14 & 21.12

Analyzing Cell Morphology & Movement in 3D

Presented by Institute Investigator Colleen Witt, SNRP Core Director. 05.20.12

2012 Distinguished Public Lecture

ERICH JARVIS PHD

Associate Professor of Neurobiology, Duke University Medical Center Investigator, HHMI Learn Birdsong & the Neurobiology of Human Language 04.24.12

Below: Erich Jarvis (center) with host faculty, Institute Investigators Todd Troyer (left) and Nicole Wicha (right).
Branching Out

NEURO@UTSA

Undergraduate Neuroscience continues to grow at UTSA. The NEURO club, sponsored by the Mind Science Foundation has been meeting on a regular basis to discuss research opportunities at UTSA, how to prepare for grad school applications, and to consume cool content on brain science. Currently, they are putting together a team for the South Texas Brain Bowl, to be coached by Brian Derrick. Thanks to him and all faculty who have given their time to this initiative. Look for UTSA Undergraduate Neurobiology on Facebook, and help us recruit!

Hellos & Goodbyes

PhD Program News

Welcome to new Neurobiology PhD students Brigid Brown, Jorge Gomez, Dhruv Sharma, Clinton Taylor and Paul Wilson.

Congratulations to the two Neuro graduate students who successfully advanced to candidacy for the PhD in 2011-12: Soomin Song, and Anand Kulkarni. Soomin has wasted no time this year and submitted his thesis proposal as well, as did Angelique Blackburn, Julie Bland, and Michelle Valero.

A well done to Doug Grow for winning a competitive $25K University Teaching Fellowship through the UTSA Teaching & Learning Center, and to Jorge Gomez for being admitted to UTSA’s LSAMP Bridge to the Doctorate Program. Kudos to Julie Bland on two fronts: for selection of her poster to the Julius Axelrod Poster Session and concurrent travel award to the 2012 Society for Neuroscience Conference, and a win for best Neuroscience Poster at the COS Research Conference in October.

In alum news, 2010 grad Collin Lobb continues to build on his early success at UTSA with an independent NIH F32 grant in his postdoc at Emory. Collin was the recipient of an F31 as a PhD student at UTSA.

Finally, Best wishes to the PhD graduates of 2011-12 in their current research endeavors: Richard Goertz is currently finishing up projects in the Paladini lab as a postdoc, and Ruru Chen is a fellow at Emory University. Congratulations also to Michelle Valero, who defended just yesterday.

Faculty Kudos

Tenure & Promotions

Congratulations to Institute Investigator Gary Gauf for being awarded tenure and promotion to the rank of Associate Professor this year. Congratulations also to Institute Director Charles Wilson on being named a member of the Dana Alliance Brain Initiative.

Up Ahead in 2013

Symposium

Fidel Santamaria, organizer, Distinguished Public Lecture Rodolfo Llinas, NYU Med.
In current year

Publications1 2012 calendar year


24. Morelli L, **Perry G**, Tagliavini F. The contribution of the amyloid hypothesis to the understanding of Alzheimer’s disease.


42. Bonda DJ, Liu G, Men P, Perry G, Smith MA, Zhu X. Nanoparticle Delivery of Transition-Metal Chelators to the...
49. Oakes, and Reed Poorman.


1 Citations presented alphabetically by Institute Investigator. If multiple Institute authors, entry is alphabetized by the Investigator in final author position.


Panel Discussion, Neural Dynamics & Coding Symposium 2012. Episode #82 of the NTS Podcast.
Institute Investigators & Affiliations

<table>
<thead>
<tr>
<th>Faculty</th>
<th>College</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jim Bower</td>
<td>Science</td>
<td>Biology</td>
</tr>
<tr>
<td>Alberto Cordova</td>
<td>Education</td>
<td>Health &amp; Kinesiology</td>
</tr>
<tr>
<td>Orkid Coskuner</td>
<td>Science</td>
<td>Chemistry</td>
</tr>
<tr>
<td>Thomas Coyle</td>
<td>COLFA</td>
<td>Psychology</td>
</tr>
<tr>
<td>Brian Derrick</td>
<td>Science</td>
<td>Biology</td>
</tr>
<tr>
<td>Gary Gaufu</td>
<td>Science</td>
<td>Biology</td>
</tr>
<tr>
<td>William Haskins</td>
<td>Science</td>
<td>Chemistry</td>
</tr>
<tr>
<td>David Jaffe</td>
<td>Science</td>
<td>Biology</td>
</tr>
<tr>
<td>Daijin Ko</td>
<td>Business</td>
<td>Statistics</td>
</tr>
<tr>
<td>Annie Lin</td>
<td>Science</td>
<td>Biology</td>
</tr>
<tr>
<td>Deborah Mangold</td>
<td>COLFA</td>
<td>Psychology</td>
</tr>
<tr>
<td>Carlos Paladini</td>
<td>Science</td>
<td>Biology</td>
</tr>
<tr>
<td>George Perry</td>
<td>Science</td>
<td>Biology</td>
</tr>
<tr>
<td>Rama Ratnam</td>
<td>Science</td>
<td>Biology</td>
</tr>
<tr>
<td>Robert Renthall</td>
<td>Science</td>
<td>Biology</td>
</tr>
<tr>
<td>Kay Robbins</td>
<td>Science</td>
<td>Computer Science</td>
</tr>
<tr>
<td>Donald A. Robin</td>
<td>Honors</td>
<td>Honors</td>
</tr>
<tr>
<td>Fidel Santamaria</td>
<td>Science</td>
<td>Biology</td>
</tr>
<tr>
<td>David Senseman</td>
<td>Science</td>
<td>Biology</td>
</tr>
<tr>
<td>Kelly Suter</td>
<td>Science</td>
<td>Biology</td>
</tr>
<tr>
<td>Todd Troyer</td>
<td>Science</td>
<td>Biology</td>
</tr>
<tr>
<td>Nicole Wicha</td>
<td>Science</td>
<td>Biology</td>
</tr>
<tr>
<td>Charles Wilson</td>
<td>Science</td>
<td>Biology</td>
</tr>
<tr>
<td>Colleen Witt</td>
<td>Science</td>
<td>Physics</td>
</tr>
</tbody>
</table>

Post-doc Fellows

<table>
<thead>
<tr>
<th>Name</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joseph Beatty</td>
<td>Wilson</td>
</tr>
<tr>
<td>Gerard Beaudoin III</td>
<td>Paladini</td>
</tr>
<tr>
<td>Ramana Dodla</td>
<td>Wilson</td>
</tr>
<tr>
<td>Michael Farries</td>
<td>Wilson</td>
</tr>
<tr>
<td>Songquing Lu</td>
<td>Santamaria</td>
</tr>
<tr>
<td>Toma Marinov</td>
<td>Santamaria</td>
</tr>
<tr>
<td>Wondimu Teka</td>
<td>Santamaria</td>
</tr>
</tbody>
</table>

Neurosciences Institute Sponsored Grants 2010-12

<table>
<thead>
<tr>
<th>PI</th>
<th>Grant</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaufo</td>
<td>NIH 5R01NS072458</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>NIH 5U54NS060658 proj 1</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>NIH 5R01AG03213</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Ko</td>
<td>NIH 5U54NS060658 core B</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Paladini</td>
<td>NIH 5R01DA030530</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIH 5R01MH079276</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>NIH 5U54NS060658 proj 2</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Ratnam</td>
<td>NIH 5R03DC009050</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Santamaria</td>
<td>NSF EF 1137897</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Senseman</td>
<td>NSF EF 0634588</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Suter</td>
<td>NIH 5R01HD045436</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>NIH 5R01HD060818</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>NIH 5R01HD060818-01S1</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Troyer</td>
<td>NSF IOS 951310</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Wicha</td>
<td>NIH 5R03HD060756</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Wilson</td>
<td>NIH 5R01NS072197</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIH 5R37NS037760</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>NIH 5U54NS060658</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>NIH 5U54NS060658-01S1</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>NIH 5U54NS060658-01S2</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>NIH 5P50NS047085</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Witt</td>
<td>NIH 5U54NS060658 coreA</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

X denotes active period

Fiscal Snapshot

Institute Expenditures since inception, in $millions. Dollar amounts indicate expenses from federal grant accounts (Source, UTSA VPR/Grants & Accounting).

Institute federal award income 2010-12, in $millions. Dollar amounts indicate total costs awarded to UTSA (Source, projectreporter.nih.gov and nsf.gov/awardsearch).

Please contact salma.quraishi@utsa.edu asap if any data has been misrepresented or omitted from this report.

The University of Texas at San Antonio Neurosciences Institute
http://neuroscience.utsa.edu