

JAMES CHARLES NIEH

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LABORATORY WEBSITE

<http://www.biology.ucsd.edu/labs/nieh/index.html>

TEACHING BEE WEBSITE (EDUCATIONAL OUTREACH)

<http://www-biology.ucsd.edu/labs/nieh/TeachingBee/teachingbee.htm>

EMPLOYMENT

- 2009-current Professor of Biology, Section of Ecology, Behavior and Evolution, Division of Biological Sciences, University of California San Diego, La Jolla, CA
- 2007-2009 Associate Professor of Biology, Section of Ecology, Behavior and Evolution, Division of Biological Sciences, University of California San Diego, La Jolla, CA
- 2001-2007 Assistant Professor of Biology, Section of Ecology, Behavior and Evolution, Division of Biological Sciences, University of California San Diego, La Jolla, CA
- 1998-2001 Harvard Junior Fellow, Harvard Society of Fellows, Organismic and Evolutionary Biology, Harvard University, Cambridge, MA 02138
- 1997-1998 NSF-NATO Postdoctoral Fellow, Department of Sociobiology and Behavioral Physiology, Universität Würzburg, Würzburg, Germany

EDUCATION

INSTITUTION & LOCATION	DEGREE RECEIVED	YEAR CONFERRED	FIELD OF STUDY
Cornell University Ithaca, New York	Doctor of Philosophy	1997	Neurobiology and Behavior
Harvard University Cambridge, Mass.	Bachelor of Art	1991	Organismic and Evolutionary Biology

PEER-REVIEWED RESEARCH PAPERS

(listed and numbered in reverse chronological order, *undergraduate and †minority coauthors)

- (47) Eckles, M., Roubik, D.W., and **Nieh, J.C.** (accepted) A stingless bee can use visual odometry to estimate both height and distance. **Journal of Experimental Biology.**

- (46) Eiri, D., and **Nieh, J.C.** (in press) A nicotinic acetylcholine receptor agonist affects honey bee sucrose responsiveness and decreases waggle dancing. **Journal of Experimental Biology**.
- (45) Nguyen, H., and **Nieh, J. C.** (2012) Colony and individual forager responses to food quality in the New World bumble bee, *Bombus occidentalis*. **Journal of Insect Behavior**. 25:60-69.
- (44) Sánchez, D., **Nieh, J. C.**, and Vandame, R. (2011) Visual and chemical cues provide redundant information in the multimodal recruitment system of the stingless bee *Scaptotrigona mexicana* (Apidae, Meliponini). **Insectes Sociaux**. 58:575-579.
- (43) Lichtenberg, E.M., Turrati, I. C., Hrncir, M., and **Nieh, J.C.** (2011) Olfactory eavesdropping by two competing stingless bee species. **Behavioral Ecology and Sociobiology**. 65: 763-774.
- (42) Sadler, N. and **Nieh, J. C.** (2011) Honey bee forager thoracic temperature is tuned to broad scale differences in recruitment motivation. **Journal of Experimental Biology**. 214: 469-475.
- (41) Johnson, B.R.[†], **Nieh, J.C.** (2010) Modeling the adaptive role of negative signaling in honey bee intraspecific competition. **Journal of Insect Behavior**. 23: 459-471.
- (40) Ramírez[†], S.R., **Nieh, J. C.**, Quental[†], T.B., Roubik, D.W., Imperatriz-Fonseca[†], V.L., and Pierce, N.E. (2010) Molecular phylogeny of the stingless bee genus *Melipona* (Hymenoptera: Apidae) and the evolution of recruitment communication in eusocial Apidae. **Molecular Phylogenetics and Evolution**. 56: 519-525.
- (39) **Nieh, J. C.** (2010) A negative feedback signal that is triggered by peril curbs honey bee recruitment. **Current Biology**. 20: 310-315.
- (38) Lau, C.W. & **Nieh, J.C.** (2010) Honey bee stop signal production under overcrowded feeder conditions. **Apidologie**. 41: 87-95.
- (37) Lichtenberg, E.M., Imperatriz-Fonseca[†], V.L., and **Nieh, J.C.** (2010) Behavioral suites mediate group-level foraging dynamics in communities of tropical stingless bees. **Insectes Sociaux**. 57: 105-113.
- (36) Hammer*, T.J., Hata*, C., & **Nieh, J.C.** (2009) Thermal learning in the honey bee, *Apis mellifera*. **Journal of Experimental Biology**. 212: 3928-3934.
- (35) Sánchez[†], D., **Nieh, J.C.**, León[†], A., & Vandame, R. (2009) Food recruitment information can spatially redirect employed stingless bee foragers. **Ethology**. 115: 1175-1181.
- (34) Toda*, N., Song*, J., & **Nieh, J.C.** (2009) Bumble bees exhibit the memory spacing effect. **Naturwissenschaften**. 96: 1185-1191.
- (33) Kuhn-Neto^{*†}, B., Contrera[†], F.A.L., Castro[†], M.S., & **Nieh, J.C.** (2009) Long distance foraging and recruitment by a stingless bee, *Melipona mandacaia*. **Apidologie**. 40: 472-480.

- (32) Lichtenberg, E.M., Hrncir, M., & **Nieh**, J.C. (2009) A scientific note: Foragers deposit attractive scent marks in a stingless bee that does not communicate food location. **Apidologie**. 40: 1-2.
- (31) Kitaoka, T.K. & **Nieh**, J.C. (2009) Bumble bee pollen foraging regulation: role of pollen quality, storage levels, and odor. **Behavioral Ecology and Sociobiology**. 63: 501-510.
- (30) Renner, M.A. & **Nieh**, J.C. (2008) Bumble bee olfactory information flow and contact-based foraging activation. **Insectes Sociaux** 55: 417-424
- (29) Mapalad[†], K. S., Leu^{*}, D. & **Nieh**, J. C. (2008). Bumble bees heat up for high quality pollen. **Journal of Experimental Biology**, 211:2239-2242.
- (28) Eckles M. A., Wilson E. E., Holway D. A., and **Nieh**, J. C. (2008) Yellowjackets (*Vespa pensylvanica*) thermoregulate in response to changes in protein concentration. **Naturwissenschaften**. 95: 787-792.
- (27) Sánchez[†], D., **Nieh**, J., and Vandame, R. (2008) Experience-based interpretation of visual and chemical information in *Scaptotrigona mexicana* (Apidae, Meliponini). **Animal Behavior** 76: 407-414
- (26) Contrera[†], F. A. L. and J. C. **Nieh** (2007). Effect of forager-deposited odors on the intra-patch accuracy of recruitment in the stingless bees *Melipona panamica* and *Partamona peckolti* (Apidae, Meliponini). **Apidologie** 38:584-594
- (25) Contrera[†], F. A. L. and J. C. **Nieh**. (2007). The effect of ambient temperature on forager sound production and thoracic temperature in the stingless bee, *Melipona panamica*. **Behavioral Ecology and Sociobiology** 61:887-897.
- (24) **Nieh**, J. C., León[†], A., Cameron, S., and Vandame, R. (2006) Hot bumblebees at good food: thoracic temperature of feeding *Bombus wilmattae* foragers is tuned to sucrose concentration. **Journal of Experimental Biology** 209: 4185-4192.
- (23) Wilson ES, Holway D, **Nieh** JC (2006) Cold anesthesia decreases foraging recruitment in the New World bumblebee, *Bombus occidentalis*. **Journal of Apicultural Research** 45:169-172
- (22) **Nieh**, J. C. & Sánchez^{*†}, D. (2005) Effect of food quality and location on thoracic temperature in the stingless bee, *Melipona panamica*. **Journal of Experimental Biology** 208:3933-3943.
- (21) Saraiva, A. M., **Nieh**, J. C., Cartolano^{*†} Jr., E. A. (2005) EthoLog: a tool for data acquisition in behavioral studies. **2005 EFITA/WCCA Joint Congress on Information Technology in Agriculture**. 1, 1-7.
- (20) Contrera[†], F. A. L., Imperatriz-Fonseca[†], V. L., **Nieh**, J. C. (2005) Temporal and climatological influences on flight activity in *Trigona hyalinata* (Apidae, Meliponini). **Revista Tecnologia e Ambiente**. 10:35-43
- (19) **Nieh**, J. C., Kruizinga^{*}, K., Contrera[†], F. A. L., Barreto^{*†}, L. S. & Imperatriz-Fonseca[†], V. L. (2005) Effect of group size on the aggression strategy of an extirpating stingless bee, *Trigona spinipes*. **Insectes Sociaux**. 52, 1-8.
- (18) **Nieh**, J. C., Contrera[†], F. A. L., Yoon^{*}, R. R., Barreto^{*†}, L. S., & Imperatriz-Fonseca[†], V. L.

- (2004) Polarized short odor-trail recruitment communication by a stingless bee, *Trigona spinipes*. ***Behavioral Ecology and Sociobiology***, 56, 435-448.
- (17) Nieh, J. C., Barreto^{*†}, L. S., Contrera[†], F. A. L. & Imperatriz-Fonseca[†], V. L. (2004) Olfactory eavesdropping by a competitively foraging stingless bee, *Trigona spinipes*. ***Proceedings of the Royal Society of London B***, 271, 1633-1640.
- (16) Sánchez^{*†}, D., Nieh, J. C., Hénaut, Y., Cruz[†], L., & Vandame, R. (2004) High precision during food recruitment of experienced (reactivated) foragers in the stingless bee *Scaptotrigona mexicana* (Apidae, Meliponini). ***Naturwissenschaften***. 91, 346-349.
- (15) Nieh, J. C., Contrera[†], F. A. L. & Nogueira-Neto[†], P. (2003) Pulsed mass-recruitment by a stingless bee, *Trigona hyalinata*. ***Proceedings of the Royal Society of London B***, 270, 2191-2196.
- (14) Nieh, J. C., Contrera[†], F. A. L., Ramírez^{*†}, S. & Imperatriz-Fonseca[†], V. L. (2003) Variation in the ability to communicate 3-D resource location by stingless bees from different habitats. ***Animal Behaviour***, 66, 1129-1139.
- (13) Nieh, J. C., Contrera[†], F. A. L., Rangel^{*†}, J. & Imperatriz-Fonseca[†], V. L. (2003) Effect of food location and quality on recruitment sounds and success in two stingless bees, *Melipona mandacaia* and *Melipona bicolor*. ***Behavioral Ecology and Sociobiology***, 55, 87-94.
- (12) Nieh, J. C., Ramírez^{*†}, S. & Nogueira-Neto[†], P. (2003) Multi-source odor-marking of food by a stingless bee, *Melipona mandacaia*. ***Behavioral Ecology and Sociobiology***, 54, 578-586.
- (11) Nieh, J. C. & Tautz, J. (2000) Behavior-locked signal analysis reveals weak 200-300 Hz comb vibrations during the honeybee waggle dance. ***Journal of Experimental Biology***, 203, 1573-1579.
- (10) Nieh, J. C., Tautz, J., Spaethe, J. & Bartareau, T. (2000) The communication of food location by a primitive stingless bee, *Trigona carbonaria*. ***Zoology***, 102, 239-246.
- (9) Nieh, J. C. (1999) Stingless-bee communication. ***American Scientist***, 87, 428-435.
- (8) Nieh, J. C. & Roubik, D. W. (1998) Potential mechanisms for the communication of height and distance by a stingless bee, *Melipona panamica*. ***Behavioral Ecology and Sociobiology***, 43, 387-399.
- (7) Nieh, J. C. (1998) The food recruitment dance of the stingless bee, *Melipona panamica*. ***Behavioral Ecology and Sociobiology***, 43, 133-145.
- (6) Nieh, J. C. (1998) The honey bee shaking signal: function and design of a modulatory communication signal. ***Behavioral Ecology and Sociobiology***, 42, 23-36.
- (5) Nieh, J. C. (1998) The role of a scent beacon in the communication of food location in the stingless bee, *Melipona panamica*. ***Behavioral Ecology and Sociobiology***, 43, 47-58.
- (4) Nieh, J. C. & Roubik, D. W. (1995) A stingless bee (*Melipona panamica*) indicates food location without using a scent trail. ***Behavioral Ecology and Sociobiology***, 37, 63-70.
- (3) Nieh, J. C. (1993) The stop signal of honey bees: Reconsidering its message. ***Behavioral Ecology and Sociobiology***, 33, 51-56.
- (2) Runestad, J. A., Ruff, C. B., Nieh, J. C., Thorington, R. W., Jr. & Teaford, M. F. (1993) Radiographic estimation of long bone cross-sectional geometric properties. ***American Journal of Physical Anthropology***, 90, 207-213.

- (1) Allmon, W. D., **Nieh**, J. C. & Norris, R. D. (1990) Drilling and peeling of turreteline gastropods since the Late Cretaceous. *Palaeontology*, 33, 595-611.

REVIEWS & BOOK CHAPTERS (PEER-REVIEWED)

- (3) Goodale, E., Beauchamp, G., Magrath, R., **Nieh**, J.C. and Ruxton, G.D. (2010) Interspecific information transfer influences animal community structure. *Trends. Ecol. Evol.* 25(6):354-361.
- (2) **Nieh**, J. C. (2009) Convergent evolution of food recruitment mechanisms in bees and wasps. In *Organization of Insect Societies: From Genome to Sociocomplexity*, eds. J. Gadau and J. H. Fewell. Cambridge, Massachusetts: Harvard University Press. 266-288.
- (1) **Nieh**, J. C. (2004) Recruitment communication in stingless bees (Hymenoptera, Apidae, Meliponini). *Apidologie*, 35, 159-182.

BOOK REVIEWS & EDITORIALS (INVITED)

- (6) **Nieh**, J. C. (2012). Animal Behavior: the orphan rebellion. Dispatch. *Current Biology*: 22 (8) R280-281.
- (5) **Nieh**, J. C (2011) The evolution of honey bee communication: learning from Asian species. *Formosan Entomologist*. 31: 101-115.
- (4) Suwannapong, G., Benbow, M.E., and **Nieh**, J.C. (in press) Biology of Thai honey bees: natural history and threats. In: *Bees: Biology, Threats, and Colonies*. Editor: R. M. Florio, Nova Science Publishers, Inc., ISBN#: 978-1-61324-825-6.
- (3) Contrera, F. A. L, Couvillon, M. J., and **Nieh**, J.C. (2011). Editorial: Hymenopteran group foraging and transfer of information about resources. *Psyche* Article ID 392075, 2 pages, doi:10.1155/2011/392075
- (2) Rasmussen, C., **Nieh**, J. C. and Biesmeijer, J. C. (2010). Editorial: Foraging biology of neglected bee pollinators. *Psyche*, Article ID 134028, 2 pages, doi:10.1155/2010/134028.
- (1) **Nieh**, J. C. (2010) Review of Bumblebees: behavior, ecology, and conservation. *Second Edition*, by Dave Goulson. *Quarterly Review of Biology*, 85(3): 373.

OTHER PUBLICATIONS

- (2) Wade Robinson J, **Nieh JC**, and Goodale E (2012) Testing honey bee avoidance of predators: teaching science with bees. *The American Biology Teacher*, accepted.
- (1) Wade Robinson J, **Nieh JC**, and Goodale E (2011) *Pollinators in Peril: A High School Curriculum*. In this document, the authors (a high school teacher at San Diego High Tech High, a UCSD faculty member, and a postdoctoral researcher) create a high school science curriculum that addresses three National Science Standards (Inquiry, Life Science, and Science in Personal and Social Perspectives).

EDITORIAL SERVICE

- 2011-current Editor, *Apidologie*
- 2012 Guest Editor, *Psyche*, special issue on “Hymenopteran Collective Foraging and Information Transfer about Resources 2.”
- 2011 Guest Editor, *Psyche*, special issue on “Foraging biology of neglected bee pollinators.”
- 2010 Lead Guest Editor, *Psyche*, special issue on “Hymenopteran group foraging and transfer of information about resources.”

HONORS

- 2011 UCSD Panhellenic Council Outstanding Professor Award, La Jolla, California, USA
- 2011 San Diego Science Educator’s Association Excellence in University Teaching Award, San Diego, California, USA
- 2009 Academic Senate Distinguished Teaching Award, University of California San Diego, La Jolla, California, USA
- 2007 Faculty Mentor Award, University of California San Diego, La Jolla, California, USA
- 2001-2003 Heiligenberg Professor of Neuroethology, University of California San Diego, La Jolla, California, USA
- 1997-1998 Fulbright Fellowship: Universität Würzburg, Germany (declined for NSF-NATO)
- 1997 Hsien Wu and Daisy Yen Wu Scholarship Award, Cornell University, New York, USA
- 1996-1997 NSF Predoctoral Dissertation Improvement Grant, Cornell University, New York, USA
- 1992 Smithsonian Institution Short-term Fellow, Smithsonian Tropical Research Institute, Republic of Panama
- 1993 Sigma Xi research grant, Cornell University, New York, USA
- 1991-1996 Howard Hughes Predoctoral Fellowship, Cornell University, New York, USA
- 1991 Thomas Temple Hoopes Thesis Prize, Harvard University, Cambridge, Massachusetts, USA

- 1991 Blumberg Creative Science Award, Harvard University, Cambridge, Massachusetts, USA
- 1991 Graduated *Magna Cum Laude* from Harvard College, awarded *Summa Cum Laude* for Bachelor's thesis, Cambridge, Massachusetts, USA
- 1990 Ford Foundation Research Grant, Harvard University, Cambridge, Massachusetts, USA
- 1989, 1990 John Harvard Scholarship, Harvard University, Cambridge, Massachusetts, USA

INVITED TALKS

- May 2012 Nieh JC, Cries in the hive: a vibrational signal triggered by danger inhibits superorganism recruitment. Seminar. University of California Davis Davis, California, USA.
- August 2010 Nieh JC, Triggered by peril: a negative feedback signal curbs collective action in a superorganism. International Union of Social Insect Scientists (IUSSI) XVI Congress, Symposium on "Communication and the integration of multiple information sources in colony organization", Copenhagen, Denmark.
- May 7, 2010 Nieh JC, Dangerous blossoms: a honey bee negative feedback signal indicates peril. University of California Irvine, Irvine, California, USA
- Sept 28, 2009 Nieh JC, Perils of pollination: attacks trigger a honey bee negative feedback signal. University of California Riverside, Riverside, California, USA
- June 3, 2009 Nieh JC, Stingless bee recruitment communication. University of California Los Angeles, Los Angeles, California, USA
- Nov 29, 2008 Nieh JC, Plenary speaker. 12th Insect Sound and Vibration Meeting. Alluring scents and sounds: stingless bee recruitment communication. Tours, France.
- Sept 22, 2008 Nieh JC, Recruitment communication in stingless bees, North Carolina State University, Raleigh, North Carolina, USA
- June 26, 2008 Nieh JC, Stingless bee competition and communication. Invited seminar speaker. El Colegio de la Frontera Sur, Tapachula, Chiapas, Mexico.
- December 9, 2007 Nieh JC, Parallel evolution of referential communication in eusocial bees. Invited symposium speaker. Entomological Society of America 55th Annual Meeting. San Diego, California, USA
- March 14, 2007 Nieh JC, The war of the flowers, espionage and evolution of referential communication. Invited talk. Harvard University, Cambridge, Massachusetts, USA

- October 27, 2006 Nieh JC, Evolution of recruitment communication in stingless bees. Invited talk. University of California Irvine, Irvine, California, USA
- February 19, 2005 Nieh JC and Sánchez D. Effect of sucrose concentration and food location on individual thermoregulation by a stingless bee, *Melipona panamica*. Southern California Animal Behaviorists 2005. University of California, Riverside, California, USA
- September 6-10, 2004 Nieh JC, Contrera FAL, Barreto, LS, Imperatriz-Fonseca VL Polarized short odor trail communication in a stingless bee, *Trigona spinipes*. Encontro Sobre Abelhas VI, Ribeirao Preto, São Paulo, Brasil
- June 12-16, 2004 Nieh JC, Barreto LS, Contrera FAL, and Imperatriz-Fonseca VL Olfactory eavesdropping in stingless bees. Animal Behavior Society XLI Meeting, Oaxaca, Mexico
- November 6-8, 2003 Nieh JC, Contrera FAL, Rangel J, and Imperatriz-Fonseca V. Excitable ancestors and functionally referential communication: effect of food quality and location on recruitment sounds and success in two stingless bees, *Melipona mandacaia* and *Melipona bicolor*. III Seminario Mesoamericano sobre Abejas sin Aguijón. Tapachula, Chiapas, Mexico
- July 19-23, 2003 Nieh JC, Contrera FAL, Rangel J, and Imperatriz-Fonseca V. Excitable ancestors and the evolution of referential communication in highly social bees. Animal Behavior Society Meeting, Boise State University, Idaho
- November 5, 2002 Nieh JC. The war of the flowers: competition, espionage, and the evolution of bee language. Invited talk. Biological Basis of Behavior Group Meeting 2002. University of Minnesota, St. Paul, Minnesota, USA
- September 4-7, 2002 Nieh JC, Contrera F, Ramírez, S., and Imperatriz-Fonseca V.L. Variation in height communication: testing three-dimensional location communication in the stingless bees, *Melipona mandacaia* and *Melipona bicolor*. Encontro Sobre Abelhas V, Ribeirao Preto, São Paulo, Brasil
- July 15, 2002 Nieh JC. The art of war: blitzkrieg communication by a stingless bee, *Trigona hyalinata*. Animal Behavior Society Meeting, Bloomington, Indiana, USA
- September 9, 2000 Nieh JC. The communication of 3-dimensional food location by a stingless bee, *Melipona panamica*. Encontro Sobre Abelhas, Ribeirao Preto, Sao Paulo, Brasil
- August 26, 1998 Nieh JC. Multiple communication channels: examples from two eusocial bees. 5th International Congress of Neuroethology, University of California, San Diego, San Diego, California, USA
- September 15, 1996 Nieh JC. A stingless bee, *Melipona panamica*, may use sound pulses to communicate the distance and canopy height of a food source. 10th

- International Insect Sound and Vibration Meeting in Woods Hole, Massachusetts, USA
- August 20, 1996 Nieh JC. The communication of three-dimensional food location by a stingless bee, *Melipona panamica*. Earl S. Tupper seminar series at the Smithsonian Tropical Research Institute in Panama City, Republic of Panama, USA
- May 20, 1995 Nieh JC. The role of pheromones in the food location communication system of *Melipona panamica*. Seminar. University of Utrecht, Netherlands
- August 12, 1994 Nieh JC. A stingless bee (*Melipona panamica*) indicates food location without using a scent trail. 1994 International Union of Social Insect Scientists Conference, Paris, France.

PUBLISHED ABSTRACTS

- Nieh JC (2010) Activated by danger, a negative feedback signal counteracts the honey bee waggle dance. Entomological Society of America, San Diego, California, USA
- Eiri D and Nieh JC (2010) Picky eaters and poor navigators: the pesticide imidacloprid alters honey bee (*Apis mellifera*) sucrose response thresholds and search distance estimation. 10th Annual North American Pollinator Protection Campaign Conference, Washington D.C., USA.
- Nieh JC (2008) Alluring scents and sounds: stingless bee recruitment communication. 12th Insect Sound and Vibration Meeting. Tours, France.
- Eckles MA and Nieh JC (2007) Distance measurement and canopy foraging in the stingless bee species, *Melipona panamica*. Southern California Animal Behaviorists Meeting. University of California Santa Barbara
- Nieh JC (2007) Parallel evolution of referential communication in eusocial bees. Invited symposium speaker. Entomological Society of America 55th Annual Meeting. San Diego, California, USA
- Contrera FA and Nieh JC (2006) Spatial precision of recruitment in the stingless bee *Melipona panamica* (Apidae, Meliponini). California Animal Behavior Symposium, University of California San Diego.
- Eckles MA and Nieh JC (2006) Optic flow use in bumble bees (*Bombus impatiens*). California Animal Behavior Symposium, University of California San Diego.
- Nieh JC and Sánchez D. (2005) Effect of sucrose concentration and food location on individual thermoregulation by a stingless bee, *Melipona panamica*. Southern California Animal Behaviorists 2005. University of California, Riverside, UCR Botanic Gardens
- Nieh JC, Contrera FAL, Barreto, LS, Imperatriz-Fonseca VL (2004) Polarized short odor trail communication in a stingless bee, *Trigona spinipes*. Encontro Sobre Abelhas VI, Ribeirao Preto, São Paulo, Brasil
- Nieh JC, Barreto LS, Contrera FAL, and Imperatriz-Fonseca VL (2004) Olfactory eavesdropping in stingless bees. Animal Behavior Society XLI Meeting, Oaxaca, Mexico
- Nieh JC, Contrera FAL, Rangel J, and Imperatriz-Fonseca V. (2003) Excitable ancestors and

- functionally referential communication: effect of food quality and location on recruitment sounds and success in two stingless bees, *Melipona mandacaia* and *Melipona bicolor*. III Seminario Mesoamericano sobre Abejas sin Aguijón. Tapachula, Chiapas, Mexico
- Nieh JC, Contrera FAL, Rangel J, and Imperatriz-Fonseca V. (2003) Excitable ancestors and the evolution of referential communication in highly social bees. Animal Behavior Society XL Meeting, Boise State University, Idaho
- Nieh JC. (2002) The art of war: blitzkrieg communication by a stingless bee, *Trigona hyalinata*. Animal Behavior Society Meeting, Bloomington, Indiana, United States.
- Nieh J, Contrera F, Ramírez, S., and Imperatriz-Fonseca V.L. (2002) Variation in height communication: testing three-dimensional location communication in the stingless bees, *Melipona mandacaia* and *Melipona bicolor*. Anais do Encontro Sobre Abelhas V, Ribeirao Preto, Sao Paulo, Brasil
- Nieh J (2000) The communication of 3-dimensional food location by a stingless bee, *Melipona panamica*.
- Nieh J (1998) Multiple communication channels: examples from two eusocial bees. Fifth International Congress of Neuroethology Abstracts.
- Nieh J (1998) The communication of height and distance by a stingless bee, *Melipona panamica*. Proceedings of the 26th Göttingen Neurobiology Conference 1998, Vol 1. Eds. Norbert Elsner and Rüdiger Wehner. Georg Thieme Verlag. Stuttgart
- Nieh J (1996) A stingless bee, *Melipona panamica*, may use sounds to communicate the location of a food source. 10th International Insect Sound and Vibration Meeting Abstracts. Woods Hole, Massachusetts

OUTREACH & SYNERGISTIC ACTIVITIES

- May 14, 2012 Senior faculty participant, NSF CAREER information session for Biology faculty. UCSD, La Jolla, California.
- April 12, 2012 Rancho Santa Fe Garden Club: "The great bee die-off: a crisis of colony health and contamination" Rancho Santa Fe, California.
- April 7, 2012 "The things students learn at UC San Diego," presentation to prospective students and their parents at Charting the Course: College Planning for Future Tritons. UCSD, La Jolla, California.
- Feb 27, 2012 UCSD International House, "Mysterious bee maladies?" Presentation as part of an event exploring the importance of honey bees. The Great Hall, iHouse, La Jolla, California.
- Feb 6, 2012 Fleet Science Center Senior Mondays, "What's up with those bees?" Fleet Science Center, Balboa Park, San Diego, California.
- Jan 16, 2012 San Diego Beekeeping Society Presentation, "Effects of pesticides and pathogens on honey bee health. Casa de Balboa, San Diego, California.
- Oct 22, 2011 Idyllwild Garden Club Talk, "What's up with those bees?" Caine Learning Centre, Idyllwild, California.
- Aug-Nov 2011 Worked with High Tech High students, teacher Jesse Wade-Robinson, and postdoctoral fellow, Eben Goodale to develop science curriculum based on honey bee foraging and bee ecology.

- July-Aug 2011 Mentored two latino high school students through the Harvey Mudd Upward Bound Program at UCSD and two additional students from San Diego area high schools.
- May 3, 2011 Perspectives on Science Lecture, Nazarene University, "The secret lives of bees." Lecture designed for science teachers and the general public.
- April 19, 2011 Educational talk given to UCSD library employee staff (UCSD Biomedical Library Lunchtime Seminar Series): "The decline and fall of bees: pollinators in peril."
- April 16, 2011 Panel member in the Food Justice Forum for the UCSD Green Open House.
- March 10, 2011 Rotary Club Speaker, outreach talk about honey bee health, La Jolla, CA
- Feb 11, 2011 Outreach talk to high school teachers and students participating in a program, "Sensible Smells" designed to teach the scientific method through practical examples, in a variety of fields, focused on olfaction.
- Jan 24, 2011 Outreach and enrichment talk followed by laboratory demonstration given to UCSD Academic Personnel Services on the importance of bees as pollinators, their general biology, and threats they face.
- Dec 10, 2010 San Diego Horticultural Society speaker, outreach talk on honey bee biology and Colony Collapse Disorder.
- Oct 28, 2010 Outreach talk on honey bees given to the Village Garden Club, La Jolla, CA.
- Oct 13, 2010 Outreach talk given to the San Diego Social Services League (The hidden lives and language of bees).
- Oct 9, 2010 Outreach talk on local bees ("Those amazing bees: the secret lives of honey bees") given to the Torrey Pines Docent Society, La Jolla, CA.
- Oct 7, 2010 Muir College Honors Seminar talk (The hidden lives and language of bees).
- Sept 30, 2010 Attended and recruited for the UCSD Division of Biological Sciences at the SACNAS underrepresented and minority student conference.
- July-Aug 2010 Mentored two latino high school students through the Harvey Mudd Upward Bound Program at UCSD.
- July 26, 2010 Educational outreach through public radio (KPBS) interview, "UCSD Scientists Researching Vanishing Honey Bees" with Ed Joyce (<http://www.kpbs.org/news/2010/jul/26/ucsd-scientists-researching-vanishing-honey-bees/>).
- July 13, 2010 Educational outreach through public radio (KPBS) interview on "Living with Africanized Bees in San Diego" with Tom Fudge (<http://www.kpbs.org/news/2010/jul/13/living-africanized-bees-san-diego/>).
- May 25, 2010 Served as a moderator at the annual UCSD Faculty Mentor Program Symposium.
- 2010-2011 Working with the **BioBridge** program at UCSD that teaches science to underprivileged high school students. Specifically, helped with a kit designed to teach students about the differences in the morphology and size bee pollinators and how this relates to the environments in which they are found.

- May 5, 2010 Warren College Faculty Speaker Series presentation to undergraduates: "The lives of bees: a journey into the superorganism."
- April 29, 2010 Interviewed by campus Triton television for their program, "Office Hours," that allows students to learn more about UCSD faculty, what and why they teach, and what they research.
- April 27, 2010 Present talk on "Perils and hidden language of honey bees" to the Osher Lifelong Learning Institute at UCSD, an outreach group that works closely with the campus senior community.
- April 24, 2010 Served as a research session moderator for the 23rd Annual UCSD Undergraduate Research Conference.
- April 10, 2010 Minority student outreach. Organized the 2010 ORBS conference. Theme: expanding research opportunities: the future. UCSD, La Jolla, CA.
- June 27, 2009 Scientific outreach. Presentation on the "Secret lives of honeybees" for the San Diego Beekeepers Meetup Group, UCSD, La Jolla, CA.
- March 24, 2009 Scientific outreach. Presentation on the "Secret life of honeybees" for the San Diego Master Gardener's Association, Balboa Park, San Diego, CA.
- January 22, 2009 Scientific outreach. Talk given as part of the "Nature Matters" series at the San Diego Natural History Museum. "Life and death among the flowers: the perils and secret language of bees". Balboa Park, San Diego, CA
- January 20, 2009 Outreach. Featured guest on the local public radio show, "These Days" (KPBS) to discuss research on bee communication, eavesdropping, and the importance of native pollinators.
- July 11, 2008 Scientific outreach. Presentation on "Evolution of communication in neotropical pollinators" to the annual UCSD Latin American Journalists Science Training, UCSD, Institute of the Americas, La Jolla, CA.
- April 18, 2008 Outreach. Appeared on Episode 1712, "Cut flowers" of the Home and Garden Television (HGTV) network show "Gardening by the Yard" to explain the importance of honey bees as pollinators, aspects of their basic biology, and discuss the recent concern over declines in honeybee populations.
- Jan 15, 2008 Scientific outreach. Presentation of laboratory research activities to the High School Research Education Program of Los Angeles Children's Hospital.
- Sept 17-19, 2007 Met with U.S. members of Congress to reinforce the importance of sustaining and increasing funding for basic science infrastructure.
- 2005 Led an Expanding Your Horizons Workshop for junior high school and high school students at UCSD. The workshop used materials developed through the Teaching Bee website to teach students about the ecological role of honey bees and their role as an invasive New World species.
- 2006 Hosted the annual California Animal Behavior Symposium at the University of California San Diego.
- 2005-2006 Public school teacher outreach and curriculum development. (a) Working with Walter Solomon, sixth grade teacher at the Preuss School, on an inquiry project studying the efficacy of web science teaching through videos and interactive media. (b) Developing specific web-based content for sixth graders

- at the Preuss School to correspond with San Diego and California state standards on teaching evolutionary and the scientific method.
- 2005-current Scientific outreach. Developed the "Teaching Bee" website on the ecology and behavior of native pollinators with exercises designed for students and teachers ranging from elementary school through college. Concepts taught include the scientific method and specifics about the role of bees as pollinators and elementary statistics. The mission of this site is to improve international awareness of native pollinators.
- 2005-2008 Local outreach. Sponsoring undergraduate interns working at Hubbs-Seaworld Research Institute through the Academic Internship Program at UCSD.
- April 2, 2005 *War of the flowers: competition and aggression in stingless bees*. Workshop presented at the Expanding Your Horizons San Diego conference for female junior high school and high school students interested in math, science, and technology. Topic: role of pollinators and bee competition in tropical ecosystems. Presentation focused on teaching exploration through the scientific method.
- Oct. 16, 2004 Organized first ORBS (Opportunities for Research in the Behavioral Sciences) Symposium. Theme: Strengths, resources, and needs in San Diego. Conference attended by students, teachers, and faculty from three universities, two community colleges, two high schools, and five minority education programs in San Diego
- 2003-2004 Collaboration with scientists at the University of São Paulo Polytechnic institute to develop Etholog software for use by field research and Brazilian and American students interested in the collecting computerized observations of animal behavior. Software presented at the Encontro Sobre Abejas Conference in Ribeirao Preto, Brazil.
- 2002-2004 Mentor for Preuss High School student science fair projects.
- April 2002 Outreach service as a judge and on alumni panel to the Junior Science and Humanities Symposium.
- 2002-current Development of programs to allow minority students from K-12 (Preuss School) and students from 2-year colleges serving underrepresented groups in the sciences (ORBS: Opportunities for Research in the Behavioral Sciences) to gain research experience in the field of Animal Behavior.
- 2001-2002 Participation as mentor and panelist in the UCSD McNair Program, encouraging minority undergraduate research leading to graduate studies.
- 2000-current Technology transfer (acoustic and video recording technology and techniques) with Brazilian and Mexican colleagues, including the development of protocols simplifying and integrating computerized video and sound analysis of animal behavior.

COLLABORATORS & OTHER AFFILIATIONS

Collaborators

Bartareau, Tad: Department of Zoology, James Cook University of North Queensland
 Imperatriz-Fonseca, Vera L: Departamento de Ecologia, Universidade de São Paulo
 Nogueira-Neto, Paulo: Departamento de Ecologia, Universidade de São Paulo
 Roubik, David: Smithsonian Tropical Research Institute
 Spaethe, Johannes: Lehrstuhl für Vergleichende Physiologie, Universität Würzburg
 Suwannapong, Guntima: Department of Biology, Burapha University, Thailand
 Tautz, Juergen: Lehrstuhl für Vergleichende Physiologie, Universität Würzburg

Graduate advisors:

Gilbert, Cole: Section of Neurobiology & Behavior, Cornell University
 Hoy, Ron: Section of Neurobiology & Behavior, Cornell University
 Reeve, Hudson Kern: Section of Neurobiology & Behavior, Cornell University
 Seeley, Tom: Section of Neurobiology & Behavior, Cornell University

Postdoctoral sponsors:

Pierce, Naomi: Department of Organismic & Evolutionary Biology, Harvard University
 Tautz, Juergen: Lehrstuhl für Vergleichende Physiologie, Universität Würzburg

Postdoctoral advisor to:

Eben Goodale, Postdoctoral Fellow (pending)
 Brian Johnson, Postdoctoral Fellow, UCSD (2008, 2009)
 Felipe Contrera, Postdoctoral Fellow, UCSD (2006)

MANUSCRIPTS REVIEWED FOR

Animal Behaviour
Apidologie
Behavioral Ecology
Behavioral Ecology and Sociobiology
Current Biology
Insectes Sociaux
Journal of Apicultural Research
Journal of Asia-Pacific Entomology
Journal of Chemical Ecology
Journal of Comparative Physiology A
Journal of Experimental Biology
Journal of Insect Behavior
Journal of Insect Science
Naturwissenschaften
Proceedings of the Royal Society of London, Series B
Public Library of Science Biology (PLoS Biology)

BOOKS REVIEWED FOR:

Quarterly Review of Biology
 Prentice Hall
 Sinauer Associates
 W. W. Norton & Company

PROFESSIONAL SOCIETIES

2008-current Sigma Xi
 2007-current Entomological Society of America
 2004-2005 Animal Behavior Society, Latin American Affairs Committee
 2002-2003 Animal Behavior Society, Public Affairs Committee
 2002-current Animal Behavior Society, General Member
 1999-2001 Harvard Society of Fellows, Junior Fellow

TEACHING

Undergraduate Courses

2003-current Animal Communication Lab (BIEB 167), sole instructor
 2002-current Animal Behavior and Communication (BIEB 166), sole instructor
 2001-current Independent Research (BISP 199), instructor of one section

Graduate Courses

2008 Spring Research Discussion Group in Advanced Evolutionary Biology (BGRD 220), sole instructor
 2008 Winter Research Discussion Group in Molecular and Cell Biology (BGRD 216), instructor of one section
 2008 Winter Apprentice Teaching (BGGN 500), instructor of one section
 2007-current Research Discussion Group in Behavioral Ecology (BGRD 221), sole instructor
 2003-current Advanced Experimental Methods in Biology (BGGN 271), sole instructor
 2003-current Research Conference (BGGN 297), co-taught
 2003-current Thesis Research in Biology (BGGN 299), sole instructor

MENTORSHIP

[†]*underrepresented researcher*

Postdoctoral fellows

2010-2011 Eben Goodale
 2005-2006 **Felipe A. L. Contrera**[†]
 2008-2009 **Brian Johnson**[†]

Doctoral students

2005-current Megan Eckles, EBE, UCSD, primary advisor
 2005-current Elinor Lichtenberg, EBE, UCSD, primary advisor
 2007-current Sarah Leonhardt, Lehrstuhl für Vergleichende Physiologie, Universität Würzburg, committee member
 2004-current Erin Wilson (advisory committee member)
 2004-2006 **Daniel Sánchez**[†] (advisory committee member, El Colegio de la Frontera Sur)

Masters students

2011-current Allison Bray, primary advisor
 2011-current Spencer Huey, primary advisor
 2011-current Lee BenVau, primary advisor
 2010-current Tyler-Jack McCullough, primary advisor
 2010-current Brian Park, primary advisor

2010 Eduard Deneke, UCSD, primary advisor
 2009-2011 Daren Eiri, UCSD, primary advisor
 2009-2011 Jessica Hagbery, UCSD, primary advisor
 2006-2009 Daniel Su, EBE, UCSD, primary advisor
 2006-2008 Traci Kitaoka, EBE, UCSD, primary advisor
 2005-2007 Michelle Renner, EBE, UCSD, primary advisor
 2005-2007 Constantine Lau, EBE, UCSD, primary advisor
 2004-2006 **Katherine Mapalad**[†], EBE, UCSD, primary advisor
 2003-2005 Nik Sadler, EBE, UCSD, primary advisor
 2003-2005 Hien Nguyen, EBE, UCSD, primary advisor

2006-2008 Eri Suzuki, EBE, UCSD, committee member
 2005-2007 Crystal Grover, EBE, UCSD, committee member
 2004-2006 Alison Cook, EBE, UCSD, committee member
 2004-2005 Stephanie Glenn, EBE, UCSD, committee member
 2002-2004 Jennifer Zee, EBE, UCSD, committee member
 2001-2002 Melissa Newman, EBE, UCSD, committee member
 2001-2002 Lee, Andrea, EBE, UCSD, committee member
 2001-2002 Taylor, Nicolle, EBE, UCSD, committee member

Students advised[†]*underrepresented students*

2012 Annika Nabors, Mohindra Mandrakini, Nicole Yen, Lindsay Shield, Spencer Huey, Lee BenVau, William Tang, Sabrina Seik-Ismael, Elizabeth Reid Wainscoat, Sabhyata Sharma, Jacalyn Ho, Emerson Lin, Assal Parsa, Alan Yu, Pierre Lau, Matthew Endler (*up to Spring 2012*).

2011 Erin Hourigan, Spencer Huey, **Maureen D' Souza-Anjo**[†], Lee BenVau, Janini Sivasaran, Cristee Hutchinson, William Wong, Wendy Luk, Michelle Tieu, Emerson Lin, Peter DePaulo, Rudolf Scherban, **Nathaniel Peterson**[†] (African American), **Susana Sanchez**[†], Davin Reece Packer, Albert Lowe, Neha Vaingankar, **Alex Tablante**[†] (Latino), **Francisco Rodriguez**[†], **Leonardo Huerta**[†], Chieh-Wen Chien, Spencer Huey, Pierre Lau, Lan Lan, Kevin Vidaurre, Sabhyata Sharma, William Tang, Sprina Shen.

2010 Allison Bray, Jenna Castle, Alice Chung, Dave Ikeda, Liz Miller, Brian Park, Mi Jin Park, Kimberley Sawyer, Yarden Schosberg, Ryan Seely, Jee Soo Shin, Jimin Lee, Taun Chau, Kimduy Pham Nguyen, Jack McCullough, Michael Minto, James Shon, Jessica Young, Alex Portanova, Dean Doan, Kevin Johnston, Sijin Park, Marie McClellan-Heck, Catherine Lomonaco, Cristee Hutchinson, **Mari Hoshi**[†] (Peruvian), **Vera Rodriguez**[†], **Jesus Castellanos**[†]

2009 Kyle Burks, Adam Bussell, Blake Conley, Omer Friedman, Jessica Hagberry, Juliana Johnson, Eun Bee Koh, Kate Kleespies, Steve Loh, Joe Matten, **Michelle Perales**[†], Sarah Pfeil, **Michelle Delgado**[†], Sui Pong Wong, Janani Sivasankaran, Daphne Li

2008 Allison Bray, Joe Cheng, Angel I-Jou Leu, Anthony Stein, Robert Banko, Shannon Jarrell, Seyed Saharid, Rubeka Alam, Amy Lin, Wendy Lee, Theresa Kim, Toby Hammer, Matthew Kater, Gabe Tran, Randy Yu, Amir Saadati, Pegah Tehrani, Masha Raykman, Daren Eiri

- 2007 Kathryn Wedemeyer, Claire Wainwright, Jennifer C. Tsai, Gabriel Tran, Kim Tong, Nicholas Toda, Dan Su, **Joseph M. Soriano**[†], Jeremy Song, Caroline Slagle, Danny Le, Lacey Lavigna, Min Sea Ki, Nicholas Huynh, Aubrey Michelle Kelly, Stephanie Ching
- 2006 Omid Zebarjadi, An Teng, Peter Tang, Reena Tabita, Ashley Spooner, Nuelma Patio, Jessica Parkyn, Kelsey Parisi, Sophie Levy, Daniel Leu, John Eric Lee, Vinita Khilnani, Amy Havens, Joëlle Fournier, Lindsey Engle, Alvin Cho, Diana Chen, Michelle Scott, Andrea Ross, **Sonia Reveco**[†], Traci Kitaoka, Shawn Kessler, Haley Hunter-Zinck, Curtis Campbell Hata, Prema Hampapur, Tobin J. Hammer, Kimberly Fong
- 2005 Laura Stamm, Jeremy Song, Michelle Renner, Constantine Lau, Peter Tang, Kenneth Choi, Brian Huh, Dylan Voeller
- 2004 John Kim, Shaza Hanafy, Renee Lafrenz, **Katherine Mapalad**[†], Lloyd He, Megan Eckles, Amy Lin, Catherine Nguyen, Hien Nguyen, Kenneth Choi, Xu He, Jennifer Sawada, **Danny Garcia**[†], John Kim, Eri Suzuki, Kelly Enright, Paula Park
- 2003 Heather Hoover, Kim Hong, Anthony Massarweh, Nik Sadler, Krista Krach, T. J. Heibel, Lloyd He, **E. A. Cartolano Jr.**[†]
- 2002 Debbie Shann, Vincent Allan, Kathleen Hentz, **Jasmine Mayo**[†], Ryan Yoon, Erin Smith, Jennifer Schofield, Kristin Kruizinga, Chelsea Kunst, Melinda Connors
- 2001 Tina Beck, **Juliana Rangel**[†]
- 2000 **Santiago Ramirez**[†]

*ORBS (Opportunities for Research in the Behavioral Sciences) students advised
(high school to community college minority student education program)*

- 2011 **Nathaniel Peterson** (High Tech High School)
- 2011 **Susana Sanchez**[†] (High Tech High School)
- 2011 Neha Vaingankar (Mt. Carmel High School)
- 2011 **Francisco Rodriguez**[†] (High School) *with HMC Upward Bound Program*
- 2011 **Leonardo Huerta**[†] (High School) *with HMC Upward Bound Program*
- 2010 **Jesus Castellanos**[†] (High School) *with HMC Upward Bound Program*
- 2010 **Vera Rodriguez**[†] (High School) *with HMC Upward Bound Program*
- 2010 Lily Greenberg-Call (Middle School)
- 2010 Marci Stovall (San Diego City College)
- 2010 Sebastian Law (San Diego City College)
- 2010 Lee BenVau (Grossmont Community College)
- 2009 Joe Matten (Canyon Crest Academy High School)
- 2008 Katherine Oludunfe (San Diego City College)
- 2008 Anthony Stein (San Diego City College)
- 2008 Robert Banko (San Diego City College)
- 2008 Shannon Jarrell (San Diego City College)
- 2007 Shawna McCullough (San Diego City College)
- 2007 Natalie Reed (San Diego City College)

2005 Michael Winchester (San Diego City College)
 2005 Kimberly Hoyt (San Diego City College)
 2004 Mirona Constantinescue (San Diego City College)
 2003 **Maria Bernal**[†] (Southwestern College)
 2003 **Zerlina Santillanes**[†] (Southwestern College)
 2003 **Praschila Mistry**[†] (Southwestern College)
 2003 **David laea**[†] (Preuss High School)
 2003 **Trisha Rama**[†] (Preuss High School)

UNIVERSITY SERVICE

2011-current Member of the LGBT Resource Centre Advisory Board
 2011-current Member of the Senate Undergraduate Council Committee
 2010-current Member of the Division of Biological Sciences Biology Field Station
 Committee
 2010-current Member of Senate-Administration Task Force on Non-resident Enrollment
 2009-current Academic Senate, Committee on Distinguished Teaching
 2009-current Vice Chairman, Section of Ecology, Behavior, and Evolution, Division of
 Biological Sciences
 2009-2012 Division of Biological Sciences Divisional Retreat Committee
 2008-current Division of Biological Sciences Diversity Committee
 2007-2008 Biology Undergraduate Honors Thesis Advisor
 2006-2008 Computer Committee, Division of Biological Sciences
 2002-current CAPE (Class and Professor Evaluations) Faculty Advisory Committee
 2001-2009 Costa Rican UC Education Abroad Tropical Biology Program
 2002-2003 Division of Biological Sciences Graduate Admission Committee
 2001-2001 Division of Biological Sciences Graduate Recruitment Committee

ADDITIONAL CONTRIBUTIONS TO DIVERSITY

March 1, 2012 Served as a panelist on the QuEST Career Panel (Queer Engineers,
 Scientists, and Technical Professionals) at event to answer questions about
 the experiences and recommendations of queer professionals and faculty for
 students and postdocs.
 2011-current Member of the LGBT Resource Center Advisory Board