

Ruei-Jen Abraham-Fan

415 Lane Rd, NR5 Rm G231, CVRC
Charlottesville, Virginia

Ph.D. in Cell Biology | 1996–2001
Institute of Biology, Lund University, Lund, Sweden

Postdoctoral Fellow | 2001–2002
Institute of Biomedical Science, Academia Sinica, Taiwan

B.Sc. in Psychology | 1988–1991
Department of Psychology, Fu Jen Catholic University, Taiwan

PROFESSIONAL EXPERIENCE

University of Virginia – Charlottesville, Virginia

Senior Laboratory Specialist, Lindner Laboratory
Cardiovascular Research Center (CVRC) | 2022–Present

Laboratory Manager / Senior Laboratory Specialist
Genomics Laboratory, Department of Biology | 2018–2022

Research Scientist
Department of Neurology | 2009–2011

Research Scientist,
Department of Molecular Physiology and Biological Physics | 2005–2006

Research Associate,
Department of Biology | 2002–2005

National Chung Hsing University – Taichung, Taiwan

Assistant Professor, Institute of Genomics and Bioinformatics | 2006–2009

Adjunct Assistant Professor, Institute of Genomics and Bioinformatics | 2010–2011

Eastern Mennonite University — Harrisonburg, Virginia

Adjunct Faculty | 2018

Charlottesville Homeschool Enrichment Center — Charlottesville, Virginia
Science Teacher | 2014–2019

Academia Sinica — Taipei, Taiwan
Research Assistant, Institute of Biomedical Science | 1992–1994

National Taiwan University — Taipei, Taiwan

Research Assistant, Department of Psychology | 1991–1992

Career / Family Leave

Parental Leave | 2011–2013

TEACHING EXPERIENCE

Molecules, Genetics and Cell Biology (Biol 225) | 2018

Cell Biology | 2012–2020

Basic Chemistry, Biochemistry, and Food Chemistry

Courses for students ages 9 and older | 2012–2020

Application of Biotechnology

Graduate course, National Chung Hsing University | 2006–2009

Cell Biology

Graduate and senior undergraduate levels, National Chung Hsing University | 2006–2009

Cellular Matrix and Confocal Microscopy

Graduate level, National Chung Hsing University | 2006–2009

INTERNATIONAL TEACHING & TRAINING

Instructor, Olympus Fluoview FV1000 Confocal Microscopy

International FRET (Fluorescence Resonance Energy Transfer) Workshop, University of Virginia, Charlottesville | March 9–13, 2010

Introduction to Bioinformatics

Science and Engineering programs, Institute of Bioinformatics, National Chung Hsing University | 2007–2009

Application of Nanotechnology in Biomedical Detection

Nanotechnology Center, National Chung Hsing University | 2007–2009

Molecular and Cell Biology: Cell Membrane Proteins and Protein Sorting

English-language graduate course, Institute of Biotechnology, National Chung Hsing University | 2006–2009

Cellular and Molecular Imaging

Graduate course, Institute of Bioinformatics, National Chung Hsing University | 2007–2009

Biotechnology Seminar

Graduate course, Institute of Biotechnology, National Chung Hsing University | 2006–2009

Confocal Microscopy and FRET Workshops

University of Virginia | October 2006; December 2007

Instructor, Olympus Fluoview FV1000 Confocal Microscopy

International FRET Workshop, University of Virginia, Charlottesville | March 7–11, 2006

Biol 320 — Behavioral Modular Laboratory

Department of Biology, University of Virginia | 2002–2003

Special Lecture: Chemical Ecology, Learning and Memory

Lund University, Sweden | Fall 1996

Neurophysiology Laboratory (Animal Ecology) | 1996–1997**Biological Statistics**

Province Taipei Hospital, Taiwan | 1989–1990

CONFERENCE ORGANIZATION**Planner and Lead Organizer**

International Symposium on Molecular Imaging and Fluorescence Resonance Energy Transfer Microscopy | 2007

Planner and Lead Organizer

Mini-Symposium on Molecular Imaging and FLIM/FRET Microscopy | 2008

FUNDING & AWARDS**Principal Investigator | 2009–2010**

Study of Danshen Extract, Magnesium Lithospermate B, on Preventing and Targeting Neurodegeneration in Cell Models for Parkinson's Disease by the Use of Molecular Imaging Techniques; Funding agency: National Chung Hsing University

Co-Principal Investigator | 2009–2010

Electroporation in Artificial Lipid Bilayers: Fundamental Study and Applications
Funding agency: Ministry of Education

Principal Investigator | 2006–2009

Effect of Tea Extracts EGCG and Theaflavin on Gap Junctions in Normal and Cancer Cells
Funding agency: National Science Council

Travel Grant | 2000

Faculty of Natural Sciences and Mathematics, Lund University — Entomology Conference, USA

Travel Grant | 1998

Royal Physiographic Society (Kungliga Fysiografiska Sällskapet) — Neuroscience Meeting, Los Angeles, USA

Travel Grant | 1997

Royal Physiographic Society (Kungliga Fysiografiska Sällskapet) — Neuroscience Meeting,
New Orleans, USA

Travel Grant | 1996

Faculty of Natural Sciences and Mathematics, Lund University — Entomology Conference,
Florence, Italy

RESEARCH MENTORING**I-Yen Ting, M.Sc. | 2011**

Institute of Genomics and Bioinformatics

Thesis: *Study on Fluorescence Association Rules and Artificial Neural Network*

Shu-Han Ko, M.Sc. | 2009

Department of Life Science, National Chung Hsing University

Thesis: *Protective Effect of Magnesium Lithospermate B (MLB) Prevents 6-Hydroxydopamine-Induced SH-SY5Y Cell Death*

Yu-Ping Chou, M.Sc. | 2008

Institute of Biotechnology, National Chung Hsing University

Thesis: *EGCG and Theaflavin Affect the Expression of Membrane Adhesion Proteins in Human Lung Cancer Cells (A549, H838)*

Ya-Chin Hou, M.Sc. | 2008

Institute of Biotechnology, National Chung Hsing University

Thesis: *The Neuroprotective Effects of Danshen Extract, Magnesium Lithospermate B, and Ouabain*

SCHOLARLY & PROFESSIONAL SOCIETIES

- Society for Neuroscience, USA
 - Society for Asia Pacific Biotechnology
 - Society for Neuroscience, Taiwan
 - Society for Physiology, Taiwan
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COMMUNITY INVOLVEMENT**Coach, FIRST Tech Challenge Robotics Teams**

Albemarle High School | 2015–2020

Parent Council Representative

Albemarle High School | 2016–2017

Parent Council Representative

V.L. Murray Elementary School | 2017–2019

President, PATSO (Parents and Teachers Support Organization)

Henley Middle School | 2014–2015

Vice President, PATSO

Henley Middle School | 2013–2014

Volunteer

Charlottesville Food Bank | 2002–Present

PUBLICATIONS

Gholson BA, Morello M, Capdeville S, Belcik JT, Hodovan J, Choi Y, **Abraham-Fan RJ**, Nguyen KP, Davidson BP, Powers J, Lindner JR. (2026). Ultrasound cavitation of microbubbles augments limb perfusion and promotes ulcer healing in chronic limb-threatening ischemia. *JACC: Cardiovascular Imaging*. 2026 Aug 4. S1936-878X(26)00349-9. doi:10.1016/j.jcmg.2026.06.009. Epub ahead of print. PMID: 42554561.

Belcik JT, Xie A, Qie Y, Giraud D, **Abraham-Fan RJ**, Varli O, Powers J, Lindner JR. (2025). Influence of microbubble properties and carrier frequency on ultrasound cavitation-induced flow augmentation. *Journal of the American Society of Echocardiography*. 39(2):179–187. doi:10.1016/j.echo.2025.09.004. PMID: 40957503; PMCID: PMC12477536.

*Schwalbe DC, *Stornetta DS, ***Abraham-Fan RJ**, Souza GM, Jalil M, Crook ME, Campbell JN, Abbott SBG. (2024). Molecular organization of autonomic, respiratory, and spinally-projecting neurons in the mouse ventrolateral medulla. *Journal of Neuroscience*. 44(31). doi:10.1523/JNEUROSCI.2211-23.2024. *These authors contributed equally.

Koya O, Packwood W, Varlamov O, Muller M, Xie A, Wu M, **Abraham-Fan RJ**, López JA, Lindner JR. (2023). Elevated low-density lipoprotein cholesterol increases microvascular endothelial von Willebrand factor and thromboinflammation after myocardial infarction. *Arteriosclerosis, Thrombosis, and Vascular Biology*. doi:10.1161/ATVBAHA.122.318884.

Tang Q, Godschall E, Brennan CD, Zhang Q, **Abraham-Fan RJ**, Güngül TB, Onoharigho R, Buyukaksakal A, Salinas R, Sajonia IR, Olivieri JJ, Calhan Y, Deppmann CD, Podyma B, Güler AD. (2023). Leptin receptor neurons in the dorsomedial hypothalamus input to the circadian feeding network. *Science Advances*. 9(34). doi:10.1126/sciadv.adh9670.

Liu Y, Savier EL, DePiero VJ, Chen C, Schwalbe DC, **Abraham-Fan RJ**, Chen H, Campbell JN, Cang J. (2023). Mapping visual functions onto molecular cell types in the mouse superior colliculus. *Neuron*. doi:10.1016/j.neuron.2023.03036.

Tang Q, Godschall E, Brennan CD, Zang Q, **Abraham-Fan RJ**, Williams SP, Güngül TB, Onoharigho R, Buyukaksakal A, Salinas R, Olivieri JJ, Deppmann CD, Campbell JN, Podyma B, Güler AD. (2023). A leptin-responsive hypothalamic circuit inputs to the circadian feeding network. *bioRxiv*. doi:10.1101/2023.02.24.529901.

Coverdell TC, **Abraham-Fan RJ**, Wu C, Abbott SGB, Campbell JN. (2022). Genetic coding of an esophageal motor circuit. *Cell Reports*. 39:110962.

Coverdell TC, **Abraham-Fan RJ**, Abbott SGB, Campbell JN. (2021). Control of heart rate by nucleus ambiguus cardiovagal neurons. *The FASEB Journal*. 35(S1). doi:10.1096/fasebj.2021.35.S1.02769.

Chen YC, Jinn TR, Chung TY, Li FY, **Fan RJ**, Tzen JT. (2010). Magnesium lithospermate B extracted from *Salvia miltiorrhiza* elevates intracellular Ca²⁺ level in SH-SY5Y cells. *Acta Pharmacologica Sinica*. 31:923–929.

Fan RJ, Kung JC, Olausson BA, Shyu BC. (2009). Nocifensive behavior components evoked by brief laser pulses are mediated by C fibers. *Physiology & Behavior*. 98:108–117.

Hou MH, Lu WJ, Huang CY, **Fan RJ**, Yuann JM. (2009). Effects of polyamines on the DNA-reactive properties of dimeric mithramycin complexed with cobalt (II): implications for anticancer therapy. *Biochemistry*. 48:4691–4698.

Lin TW, Lo CJ, **Fan RJ**, Lai SY, Lin YC, Lo CW, Wang AH-J, Wang MY. (2007). Chicken heat shock protein 90 is a component of cellular receptor complex for infectious bursal disease virus. *Journal of Virology*. 81:8730–8741.

Fan RJ, Friesen WO. (2006). Characterization of central axon terminals of putative stretch receptors in leeches. *Journal of Comparative Neurology*. 494:290–302.

Fan RJ, Marin-Burgin A, French KA, Friesen WO. (2005). A dye mixture (Neurobiotin and Alexa 488) reveals extensive dye-coupling among swim-related neurons in leeches; physiology confirms the connections. *Journal of Comparative Physiology A*. 191:1157–1171.

Shyu BC, Chai SC, Kung JC, **Fan RJ**. (2003). A quantitative method for assessing the affective component of pain: conditioned response associated with CO2 laser-induced nocifensive reaction. *Brain Research Protocols*. 12:1–9.

Kung JC, Su NM, **Fan RJ**, Chai SC, Shyu BC. (2003). Contribution of the anterior cingulate cortex to laser-pain conditioning in rats. *Brain Research*. 970:58–72.

Fan RJ, Hansson BS. (2001). Olfactory discrimination conditioning in the moth *Spodoptera littoralis*. *Physiology & Behavior*. 72:159–165.

Fan RJ, Anderson P, Hansson B. (1997). Behavioural analysis of olfactory conditioning in the moth *Spodoptera littoralis* (Boisd.) (Lepidoptera: Noctuidae). *Journal of Experimental Biology*. 200:2969–2976.

Fan RJ, Shyu BC, Hsiao S. (1995). Analysis of nocifensive behavior induced in rats by CO2 laser pulse stimulation. *Physiology & Behavior*. 57:1131–1137.

Hsiao S, **Fan RJ**. (1993). Additivity of taste-specific effects of sucrose and quinine: microstructural analysis of ingestive behavior in rats. *Behavioral Neuroscience*. 107:317–326.

Peer Review Book Chapter

Fan RJ, Shyu BC. (2008). The affective components of pain: the measurement of laser-pain conditioning in rats and the involvement of the anterior cingulate cortex. In: *Nociceptive and Neuropathic Pain: Mechanisms and Treatments*. Research Signpost, India.

THESIS

Fan RJ. *Learning and Memory in Moths: Plasticity in Behavior and Neurophysiology*. Lund, Sweden: KFS AB. ISBN 91-7105-146-5.

CONFERENCE ABSTRACTS

Fan RJ, Gookin HP. (2010). Cell type-specific alteration of GABA-mediated synaptic inhibition during the prolonged seizures of status epilepticus. Poster presented at the 40th Annual Meeting of the Society for Neuroscience, San Diego, USA.

Fan RJ, Friesen WO. (2004). Dye mixtures (Alexa 488 and Neurobiotin) reveal extensive dye coupling among swim-related neurons in leeches. Poster presented at the 34th Annual Meeting of the Society for Neuroscience, San Diego, USA.

Fan RJ, Friesen WO. (2003). Morphological and physiological characterization of stretch receptors in leech. Poster presented at the 33rd Annual Meeting of the Society for Neuroscience, New Orleans, USA.

Fan RJ, Friesen WO. (2003). Morphological and physiological characterization of stretch receptors in leech. Oral presentation at the 29th Annual ECNN Meeting, Woods Hole, USA.

Friesen WO, Woodford RL, Fan RJ. (2002). Control of swimming movement by sensory feedback. Poster presented at the 32nd Annual Meeting of the Society for Neuroscience, Orlando, USA.

Fan RJ, Hansson SB. (2000). Subesophageal ganglion modulated output information in moth olfactory conditioning. Poster presented at the XXI International Congress of Entomology, Iguassu Falls, Brazil.

Fan RJ, Hansson SB. (1998). Olfactory and gustatory information processing in the subesophageal ganglion of the moth *Spodoptera littoralis*: a preliminary study. Poster presented at the 28th Annual Meeting of the Society for Neuroscience, Los Angeles, USA.

Fan RJ, Hansson SB. (1998). Temporal effects on olfactory discriminative conditioning in the moth *Spodoptera littoralis*. Poster presented at Neuroscience Day, Lund, Sweden.

Fan RJ, Hansson SB. (1998). Effects of CS+/CS- sequence and interval on discrimination in the moth *Spodoptera littoralis* (Lepidoptera: Noctuidae). Poster presented at the 26th Göttingen Neurobiology Conference, Göttingen, Germany.

Fan RJ, Hansson SB. (1997). Olfactory memory and conditional discrimination in the moth *Spodoptera littoralis* (Lepidoptera: Noctuidae). Poster presented at the 27th Annual Meeting of the Society for Neuroscience, New Orleans, USA.

Fan RJ, Hansson SB. (1997). Associative memory and discriminative ability in the moth *Spodoptera littoralis* (Lepidoptera: Noctuidae). Poster presented at the 25th Göttingen Neurobiology Conference, Göttingen, Germany.

Fan RJ, Anderson P, Hansson B. (1996). Olfactory conditioning of the proboscis extension reflex in the moth *Spodoptera littoralis* (Lepidoptera: Noctuidae). Poster presented at the XX International Congress of Entomology, Florence, Italy.

Fan RJ, Anderson P, Hansson B. (1995). Olfactory conditioning of the proboscis extension reflex in the female *Spodoptera littoralis* (Lepidoptera: Noctuidae). Poster presented at the 4th European Symposium on Insect Taste and Olfaction, Höör, Sweden.