

	Neuroscience NSCI 324		and Molecular Sciences
2009-2016	Research Associate (Neuroscience)	Queen's University	Centre for Neuroscience Studies
2009-2010	Research Assistant (Microbiology, Cancer)	Kingston General Hospital	Gastrointestinal Disease Research Unit

HONOURS AND AWARDS:

Total Value: \$322,000.00

2012-2015	Vanier Canada Graduate Scholarship (\$150,000.00)		
2012-2015	Canadian Institutes of Health Research (CIHR) Doctoral Research Award (\$105,000.00)		
2014	Gordon Wallace Swan Memorial Fellowship (\$2,000.00)		
2013	Abramsky Foundation Travel Award (\$1,200.00)		
2013	Gordon Research Conference Trainee Fellowship		
2013	Gordon Research Seminar Travel Award		
2013	Queen's University Graduate Scholarship (\$3,000.00)		
2013	Japanese Neuroscience Society Travel Award (127000 JPY/\$1,365.00)		
2012	Ontario Graduate Scholarship (\$15,000.00)		
2012	Gordon Wallace Swan Memorial Fellowship (\$2,000.00)		
2012	Canadian Society for Brain Behaviour and Cognitive Science Poster Award		
2011	Ontario Graduate Scholarship (\$15,000.00)		
2011	Queen's University Graduate Scholarship (\$3,000.00)		
2011	Gordon Conference Travel Award (\$500.00)		
2011	Abramsky Foundation Travel Award (\$1,200.00)		
2010	Canadian Institutes of Health Research (CIHR) Frederic Banting and Charles Best Canada Graduate Scholarship (\$18,500.00)		
	<ul style="list-style-type: none"> • National committee ranking: 2nd (top 0.49%) 		
2010	Queen's University Graduate Scholarship (\$3,000.00)		
2010	Queen's University Excellence Scholarship		
2006	Katherine Doyle Scholarship		
2006	Kathleen Van Der Hoeven Memorial Prize		

PROFESSIONAL CONTRIBUTION AND STANDING:

PUBLICATIONS:

Jantz JJ, Watanabe M, Levy R, Munoz DP (2017) Subthalamo-nigral signaling flexibly promotes passive and active behavioral control. *Nature Communications*, 8(1): 1039, doi: 10.1038/s41467-017-01023-3.

Jantz JJ, Molnar A, Alcaide R (2017) A brain-computer interface for extended reality control. *Proc. SIGGRAPH '17 VR Village, Los Angeles, CA, USA. DOI: 10.1145/3089269.3089290*

Jantz JJ (2016) Role of the frontal eye field, superior colliculus, and basal ganglia in flexible saccade behavior. *Diss. QSpace, Queen's University.*

Jantz JJ, Watanabe M (2013) Pallidal deep brain stimulation modulates afferent fibers, efferent fibers, and glia. *J Neurosci* 33(24): 9873-5, PMID: 23761881

Jantz JJ, Watanabe M, Everling S, Munoz DP (2013) Threshold mechanisms for saccade initiation in the frontal eye field and superior colliculus. *J Neurophysiol* 109(11):2767-80, PMID: 23486198.

Kelly J, Jantz JJ, Luco S, MacLeod RJ (2010) DKK-1, a secreted Wnt antagonist, activates the WNT5A receptor, Ror2, to stimulate non-canonical Wnt signaling in the intestine. *Gastroenterology* 138(5): S-256-S-256.

Jantz JJ, Marino RA, Gore JL, Johnston KD, Kobayashi Y, Levy R, Munoz DP (2017) Role of monkey basal ganglia outputs in flexible oculomotor control. *[in prep]*

ABSTRACTS AND CONFERENCE PRESENTATIONS:

Jantz JJ, Watanabe M, Levy R, Munoz DP (2016) Evidence for a task-dependent switch in healthy subthalamo-nigral basal ganglia signaling. *Japanese Neuroscience Society Annual Meeting.*

Jantz JJ, Watanabe M, Levy R, Munoz DP (2016) Evidence for a task-dependent switch in healthy subthalamo-nigral basal ganglia signaling. *Neural Control of Movement.*

Jantz JJ, Watanabe M, Levy R, Munoz DP (2016) Basal ganglia signaling flexibly promotes passive and active behavioral control. *Bruce Fund Trainee Seminar.*

Jantz JJ, Watanabe M, Munoz DP, Levy R (2015) Beta oscillations between the subthalamic nucleus and substantia nigra pars reticulata during automatic and voluntary movement. *Soc Neurosci Abstr.*

Jantz JJ, Watanabe M, Munoz DP, Levy R (2015) Beta oscillations between the subthalamic nucleus and substantia nigra pars reticulata during automatic and voluntary movement. *Gordon Research Conference on Eye Movements.*

Jantz JJ, Watanabe M, Munoz DP, Levy R (2015) Beta oscillations between the subthalamic nucleus and substantia nigra pars reticulata during automatic and voluntary movement. *Gordon Research Seminar on Eye Movements.*

- Jantz JJ, Watanabe M, Munoz DP, Levy R (2015) Basal ganglia signaling flexibly promotes passive and active behavioral control. *Neural Control of Movement*.
- Jantz JJ (2014) Practical implications of visual salience. *Quality Begins With Me*, Covidien Inc (Medtronic Inc).
- Jantz JJ, Watanabe M, Munoz DP, Levy R (2014) Functional connectivity of the subthalamic nucleus and substantia nigra pars reticulata depends on behavior. *Canadian Association for Neuroscience*.
- Jantz JJ, Watanabe M, Munoz DP, Levy R (2014) Functional connectivity of the subthalamic nucleus and substantia nigra pars reticulata changes during flexible motor control. *Neural Control of Movement*.
- Jantz JJ, Watanabe M, Munoz DP, Levy R (2014) Functional connectivity of the subthalamic nucleus and substantia nigra pars reticulata changes during flexible action control. *Soc Neurosci Abstr*.
- Jantz JJ, Watanabe M, Munoz DP, Levy R (2013) Altered network state of the subthalamic nucleus and substantia nigra pars reticulata between spontaneous and purposive saccades. *Soc Neurosci Abstr*.
- Jantz JJ, Watanabe M, Munoz DP (2013) Differential influence of subthalamic nucleus and substantia nigra on spontaneous and purposive saccades. *Gordon Research Conference*.
- Jantz JJ, Watanabe M, Munoz DP (2013) Differential influence of subthalamic nucleus and substantia nigra on spontaneous and purposive saccades. *Gordon Research Seminar*.
- Jantz JJ, Watanabe M, Munoz DP (2013) Probing the influence of the basal ganglia on saccades during different cognitive tasks. *Gordon Research Seminar*.
- Jantz JJ, Watanabe M, Munoz DP (2013) Differential influence of subthalamic nucleus and substantia nigra pars reticulata on spontaneous and purposive saccades. *Japanese Neuroscience Society Annual Meeting*.
- Jantz JJ, Watanabe M, Munoz DP (2013) Differential influence of subthalamic nucleus and substantia nigra pars reticulata on spontaneous and purposive saccades. *International Exchange Meeting for Young Researchers, Japan*.
- Jantz JJ, Watanabe M, Munoz DP (2013) Probing the influence of basal ganglia input and output stages during different cognitive demands using saccades. *Japanese Neuroscience Society Satellite Meeting*.
- Jantz JJ, Watanabe M, Munoz DP (2013) Differential influence of subthalamic nucleus and substantia nigra on spontaneous and purposive saccades. *Health Science Research Day, Queen's University*.

- Watanabe M, Jantz JJ, Munoz DP (2013) Probing the impact of electrical stimulation across the basal ganglia using saccades. *Neural Control of Movement*.
- Jantz JJ, Watanabe M, Munoz DP (2012) Comparing subthalamic nucleus and substantia nigra pars reticulata electrical stimulation. *Canadian Society for Brain, Behaviour and Cognitive Science*.
- Jantz JJ, Watanabe M, Munoz DP (2012) Comparing subthalamic nucleus and substantia nigra pars reticulata electrical stimulation. *Canadian Association for Neuroscience*.
- Jantz JJ, Watanabe M, Everling S, Munoz DP (2011) No fixed threshold for saccade initiation in the frontal eye field and superior colliculus. *Canadian Physiological Society*.
- Jantz JJ, Watanabe M, Munoz DP (2011) Subthalamic nucleus electrical microstimulation produces contralateral saccade bias. *Movement Disorder Society International Meeting*.
- Jantz JJ, Watanabe M, Munoz DP (2011) Subthalamic nucleus and substantia nigra electrical microstimulation produces opposing saccade direction bias. *Gordon Research Conference*.
- Jantz JJ, Watanabe M, Munoz DP (2011) Influence of subthalamic nucleus and substantia nigra activation on saccade initiation. *Soc Neurosci Abstr*.
- Jantz JJ, Watanabe M, Everling S, Munoz DP (2010) Variable vs constant threshold for saccade initiation in the frontal eye field. *Neuroscience Research Day*.
- Jantz JJ, Watanabe M, Munoz DP (2010) Variable vs constant threshold for saccade initiation in gap/overlap task in the frontal eye field and superior colliculus. *Soc Neurosci Abstr*.
- Kelly J, Jantz JJ, Luco S, MacLeod RJ (2010) Dkk-1, a secreted Wnt antagonist, activates the Wnt5a receptor Ror2 to stimulate non-canonical Wnt signaling in the intestine. *New Orleans Digestive Disease Week*.
- Jantz JJ, MacLeod RJ (2010) A novel agonist of the Ror2 tyrosine kinase receptor in intestinal epithelia. *Inquiry@Queen's*.
- Jantz JJ, MacLeod RJ (2009) Ror2 and Wnt5a/Ror2 mediated production of CDX2: Barrett's esophagus vs the intestine. *Canadian Undergraduate Conference on Health Care*.

INVITED CONFERENCE (ORAL) PRESENTATIONS:

- 2017 Society for Neuroscience Conference (Washington, DC) “A hybrid brain-computer interface for virtual and augmented reality control”
- 2016 Bruce Fund Trainee Seminar (Queen's University, Kingston ON) “Basal ganglia signaling flexibly promotes passive and active behavioral control”
- 2015 Neural Control of Movement (Charleston, SC, USA) “Basal ganglia signaling flexibly promotes passive and active behavioral control”

- 2014 Covidien/Medtronic Inc “Quality Begins With Me” (Gananoque, ON) “*Practical implications of visual salience*”
- 2013 Gordon Research Seminar on Eye Movements (Easton MA, USA) “*Probing the influence of the basal ganglia on saccades during different cognitive tasks*”
- 2013 Japanese Neuroscience Society Satellite Meeting (Okazaki, Japan) “*Probing the influence of basal ganglia input and output stages during different cognitive demands using saccades*”
- 2011 Canadian Action and Perception Network (CAPnet) / Canadian Physiological Society (Sainte Adèle, QC) “*No fixed threshold for saccade initiation in the frontal eye field and superior colliculus*”

SELECTED ACADEMIC MEDIA COVERAGE AND INTERVIEWS:

<http://www.neurosci.jayjantz.com/media>

PRODUCTS INVENTED OR BROUGHT TO MARKET:

BBC News, 2018

<http://www.bbc.com/news/business-42894312>

The Economist, Cover Story, 2018

<https://www.economist.com/printedition/2018-01-06>

The Economist, 2018

https://www.economist.com/technology-quarterly/2018-01-06/thought-experiments?lipi=urn%3Ali%3Apage%3Ad_flagship3_profile_view_base_treasury%3B2AYbiuNKQ9WXk3QyYhTLuA%3D%3D

IEEE Spectrum, 2017

https://spectrum.ieee.org/semiconductors/devices/the-first-mindcontrolled-vr-game-will-hit-arcades-in-2018?lipi=urn%3Ali%3Apage%3Ad_flagship3_profile_view_base_treasury%3BdZomoTtpSKi%2BA1jIR6qZjA%3D%3D

MIT Technology Review, 2017

https://www.technologyreview.com/s/609334/brain-controlled-typing-may-be-the-killer-advance-that-ar-needs/?lipi=urn%3Ali%3Apage%3Ad_flagship3_profile_view_base_treasury%3Be7pyF7GnRTqy%2FYMsp69ubQ%3D%3D

New York Times, 2017

https://www.nytimes.com/2017/11/13/business/dealbook/five-technologies-that-will-rock-your-world.html?lipi=urn%3Ali%3Apage%3Ad_flagship3_profile_view_base_treasury%3BmVrBhyfpRJ23EzPEW1o7RA%3D%3D

Engadget, 2017

https://www.engadget.com/2017/11/29/htc-vive-x-invests-in-neurable/?lipi=urn%3Ali%3Apage%3Ad_flagship3_profile_view_base_treasury%3BxwFOY%2FpJQAqJJ1OioDzjgQ%3D%3D

Toronto Star, 2017

https://www.pressreader.com/canada/toronto-star/20170902/281904478320357?lipi=urn%3Ali%3Apage%3Ad_flagship3_profile_view_base_treasury%3BdBg0C%2BDETxWfH4RtnJ4s3A%3D%3D

Venture Beat, 2017

https://venturebeat.com/2017/11/29/htc-invests-in-26-new-ar-vr-startups-through-its-vive-x-accelerator/?lipi=urn%3Ali%3Apage%3Ad_flagship3_profile_view_base_treasury%3BjS0YZH2gR7672UcaCh5awA%3D%3D

SlashDot, 2017

https://hardware.slashdot.org/story/17/08/27/2015242/a-game-you-control-with-your-mind?lipi=urn%3Ali%3Apage%3Ad_flagship3_profile_view_base_treasury%3B70F2gZgsSkaCHyvfb0MaPw%3D%3D

New York Times, 2017

https://www.nytimes.com/2017/08/27/technology/thought-control-virtual-reality.html?mcubz=0&lipi=urn%3Ali%3Apage%3Ad_flagship3_profile_view_base_treasury%3Bt6K%2FIqT6QPWxpgOV4qC7LQ%3D%3D

DesignNews, 2017

https://www.designnews.com/electronics-test/neurable-wants-let-you-control-any-device-your-mind/46156199157357?lipi=urn%253Ali%253Apage%253Ad_flagship3_profile_view_base_treasury%253Bu6MY4UJTQmWSO3l%252FLZwGmg%253D%253D&lipi=urn%3Ali%3Apage%3Ad_flagship3_profile_view_base_treasury%3BSDsT3BzhSh2tPeAK3hlPXw%3D%3D

MIT Technology Review, 2017

https://www.technologyreview.com/s/608574/mind-controlled-vr-game-really-works/?lipi=urn%253Ali%253Apage%253Ad_flagship3_profile_view_base_treasury%253BNhx2rl0bTCSHS%252BSYxzE4hA%253D%253D&lipi=urn%3Ali%3Apage%3Ad_flagship3_profile_view_base_treasury%3BgioWfnXYQ5uKutKz2ziQEg%3D%3D

IEEE Spectrum, 2017

https://spectrum.ieee.org/the-human-os/biomedical/bionics/brainy-startup-neurable-unveils-the-worlds-first-braincontrolled-vr-game?lipi=urn%253Ali%253Apage%253Ad_flagship3_profile_view_base_treasury%253BNC3hekSSRC%252BtdSFeHWrKAg%253D%253D&lipi=urn%3Ali%3Apage%3Ad_flagship3_profile_view_base_treasury%3B44TY4UukRQK%2BheGqqeINWQ%3D%3D

PROFILE FEATURES:

Queen's Gazette, 2017

<http://www.queensu.ca/gazette/media/news-release-queens-university-researchers-show-how-eye-movement-could-help-diagnose-diseases>

Queen's University Press, 2013

http://www.queensu.ca/gazette/mc_administrator/content/music-shapes-phd-students-life-and-research

MarketWatch (The Wall Street Journal), 2012

<http://www.marketwatch.com/story/government-of-canada-celebrates-latest-recipients-of-prestigious-graduate-scholarships-2012-08-30>

Yahoo! Finance, 2012

<http://finance.yahoo.com/news/government-canada-celebrates-latest-recipients-140000579.html>

Government of Canada, 2012

<http://www.vanier.gc.ca/eng/nr-co/nr-co-20120830.aspx>

MarketWire, 2012

<http://www.marketwire.com/press-release/-1696161.htm>

Queen's University Press, 2012

<http://www.queensu.ca/sgs/news/archives/2012/scholars.html>

The Whig Extra Newspaper, 2012

<http://virtual.thewhig.com/doc/Kingston-Whig-Standard/whigextrasept7/2012090501/4.html#4>

CKWS TV, 2012

<http://www.ckwstv.com/news/kingston/story.aspx?ID=1765684>

98.3 FLY FM, 2012

<http://www.983flyfm.com/theflyfm/vanier-scholarships-to-be-awarded-today-to-5-queens-researchers/>

Kingston This Week Newspaper, 2012

<http://eedition.kingstonthisweek.com/doc/Kingston-This-Week/kingstonthisweekjul12/2012071101/13.html#12>

Whig Standard Newspaper, 2012

<http://www.thewhig.com/2012/08/30/doctoral-students-receive-huge-funding-boost>

RESEARCH SUPPORT:

Total value: \$224,915.00

EXTERNAL RESEARCH FUNDING AS PRINCIPAL INVESTIGATOR:

Awarded.

2017-2018	National Science Foundation (NSF) SBIR Phase I	\$224,915.00	“A hybrid brain-computer interface for virtual and augmented reality”
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CONTRIBUTIONS TO THE PROFESSION:

EXTERNAL REFEREE FOR:

Journal of Neurophysiology

Journal of Neuroscience

Journal of Neuroscience Methods

Cerebral Cortex

CONFERENCES ORGANIZED:

2015-2017	<u>Chair</u> , Gordon Research Seminar on Eye Movements, Lewiston MA, USA
2015	<u>Discussion Leader</u> , Gordon Research Seminar on Eye Movements, Watham MA, USA “ <i>Subcortical Contributions to Eye Movements</i> ”
2011-2015	<u>Program Committee</u> , Gordon Research Seminar on Eye Movements

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS:

- Society for Neuroscience
- Canadian Association for Neuroscience
- Society for Neural Control of Movement
- Japanese Society for Neuroscience
- Gordon Research Conferences (GRS and GRC) on Eye Movements

TEACHING:

UNDERGRADUATE COURSES

(a) Queen's University, Department of Biomedical and Molecular Sciences

<u>Year</u>	<u>Course</u>		
2014	NSCI 324	(Systems Neuroscience)	Guest Lecturer
2011-2014	NSCI 324	(Systems Neuroscience)	TA/Lecturer – 2 hrs x 8 wks/yr
2012	BIOL 102	(Introductory Biology of Organisms)	Tutor – 2 hrs x 12 wks

INSTRUCTOR

(a) Renaissance School of Music

2012-2013 Music Performance and Theory Teacher, Woodwinds (soprano/alto/tenor saxophone, clarinet, flute)

(b) Centre Stage School of Music, Kingston ON

2012-2013 Music Performance and Theory Teacher, Woodwinds (soprano/alto/tenor saxophone, clarinet, flute)

STUDENTS SUPERVISED OR TRAINED:

2017	Adam Behrens	<u>Supervised:</u> Intern, Data Science. MBA student at Harvard University. Experiment: Affective state emotion detection platform.
2017	Rohan Hundia	<u>Supervised:</u> Intern, Data Science. Computer Science student at University of Oxford, UK. Experiment: Artifact detection platform.
2017	Molly Phillips	<u>Supervised:</u> Intern, Neuroscience. Undergraduate student, Elon University. Experiment: EEG data collection and brain-computer interfaces.
2017	Richa Singh	<u>Supervised:</u> Intern, Machine Learning. Machine learning and statistics undergraduate student, Carnegie Mellon University. Experiment: Semi-supervised learning classification algorithm design, EEG data.
2017	Viswanath Pulle	<u>Supervised:</u> Intern, Machine Learning. MSc machine learning, University of Massachusetts, Lowell. Experiment: Unsupervised

learning classification algorithm design, EEG data.

2014 Ian Prescott Training: Postdoctoral researcher. PhD Neuroscience.
Experiment: Neurophysiology, basal ganglia single neuron recording, non-human primate, globus pallidus and substantia nigra.

2012-2013 50+ students private instruction, music performance and theory

PROFESSIONAL EXPERIENCE:

2017 to present Principal Scientist, Neuroscience and Data Science
Principal Investigator, Frontier Technology Lab
Neurable Inc
25 First St., Cambridge MA, 01803

Head of research, Principal Investigator for Neurable's Frontier Technology Lab. Awarded federal funding as PI from the National Science Foundation (SBIR). Responsible for the research and discovery of human physiological and neuronal signals that can be used as appropriate biological markers for a human-machine interface system, and robust real-time detection using machine learning techniques. This position requires an elaborate understanding of functional anatomy, human physiology, neuroscience, and machine learning. The position's essential duties and responsibilities include the following:

- Study human biological data about relationships between voluntary behavior and covert or overt predictive signals observable in physiological processes
- Design and program (Python) predictive algorithms and machine learning techniques to process and analyze neural data
- Communicate test results to business collaborators, the scientific community, and/or general public, and represent the company in a technical capacity at conferences
- Prepare scientific grants or impact reports for industry, government, or publication
- Plan and administer biological research programs for Neurable Inc., or for those involving collaborations with government, research firms, medical industries, or manufacturing firms as necessary; includes IRB ethics proposals

2017 to present Research Affiliate (Neuroscience)
Centre for Neuroscience Studies
Queen's University, Kingston ON Canada

Reporting to the Director of the Centre for Neuroscience at Queen's University. Research interests include systems neuroscience and subcortical signaling pathways during healthy

behavior and neurodegenerative disorder conditions. Applied machine learning, data science, and signal processing techniques to model neural activity recorded *in vivo* during awake behavior.

2017 Biological Data Scientist
Neurable Inc
25 First St., Cambridge MA, 01803

Responsible for the research and discovery of human physiological and neuronal signals that can be used as appropriate biological markers for a human-machine interface system, and robust real-time detection using machine learning techniques. This position applies high performance machine learning algorithms with an understanding of neuroscience, human physiology, and functional anatomy.

2016 to 2017 Postdoctoral Fellow
Centre for Neuroscience Studies
Queen's University, Kingston ON Canada

Member of the Queen's Eye Movement Laboratory; used saccadic (fast) eye movements as a behavioral indicator of neural signaling in key cortical and subcortical pathways. Created a spiking neural networks model paired with *in vivo* neural activity, to investigate at high temporal resolution the shifts in networked activity across multiple brain regions related to flexible behavior.

2015 to 2017 Chair
Gordon Research Seminar on Eye Movements
Bates College, Lewiston MA

Elected as Chair to run the 2017 Gordon Research Seminar on Eye Movements. Responsible for organizing the funding, program committee, all sessions, talks, and poster presenters in collaboration with the Co-Chair.

2014 Guest Lecturer
Department of Biomedical and Molecular Sciences
Queen's University, Kingston ON Canada

Third year undergraduate course for Life Sciences and Psychology students (NSCI 324 Systems Neuroscience). Lectured on subcortical anatomy, systems neuroscience signaling pathways, and the voluntary control of behavior. Created and delivered course material.

2009 to 2016

Research Associate (Neuroscience)
Centre for Neuroscience Studies
Queen's University, Kingston ON Canada

Research interests include systems neuroscience, *in vivo* electrophysiology, non-human primate, eye movement control, and neural recording during awake behavior. Investigated basal ganglia (subcortical) signaling during healthy and disorder (MPTP Parkinson's disease model) conditions. Prepared injectable amyloid β -derived diffusible ligands (ADDLs) from amyloid β monomers to develop the first primate Alzheimer's disease model. Formally trained in electrophysiological recording and analysis (extracellular single unit, local field potential, deep brain stimulation, multi-electrode recording), surgical technique, and HPLC.

2009 to 2010

Research Assistant (Microbiology, Cancer)
Kingston General Hospital
Gastrointestinal Disease Research Unit

Research interests include human physiology, microbiology, biochemistry, and specifically Wnt canonical and non-canonical signaling pathways (which exist in both the enteric and central nervous systems). Demonstrated how the intestinal regulatory protein CDX2 is increased by both Wnt5a/Ror2 and Ror2 alone, and defined the difference in microbiological signaling between these two pathways, with implications to Barrett's esophagus and intestinal adenocarcinoma. Maintained human adenocarcinoma cell lines with sterile microbiological technique, performed PCR, Western blotting, and transient transfection of plasmid and siRNA.

HIGHLIGHTED RESEARCH SKILLS:

- Neuroscience
- Research
- Data Science
- Machine Learning
- Programming (Python, Matlab, FieldTrip, C, GitLab, 7 others)
- *In vivo* non-human primate electrophysiology (extracellular single unit recording, local field potential, multi-electrode)
- Eye Tracking
- EEG
- Brain-computer interfaces
- Pharmacological microinjections
- Electrical stimulation, deep brain stimulation
- Neurosurgery and surgical technique
- PCR

- Western blot
- Sterile microbiological technique
- Maintaining human cell lines
- Microscopy
- Transient transfection of plasmid & siRNA
- HPLC