
One-Page Summarized Curriculum Vitae

Dr. Dave J. Hayes

Visiting Assistant Professor
Psychology Department & Neuroscience Program
Union College
Schenectady, NY, USA

Email: hayesd2@union.edu
Website: www.neuroscientist.ca

1. DEGREES

2009, PhD, Neuroscience, University of Alberta
2003, BSc, Neuroscience Specialist, University of Toronto

2. PROFESSIONAL EXPERIENCE

Visiting Assistant Professor, Psychology Department
& Neuroscience Program, Union College, Schenectady, NY

Research Associate, University Health Network, Toronto
Western Research Institute

Postdoctoral Fellowships: Universities of Ottawa,
Cambridge, and Toronto

3. AWARDS & GRANTS (selected)

Faculty Research Grant, Union College
Internal Education Foundation Grant, Union College
CIHR Operating Grant
CIHR Postdoctoral Fellowship
NSERC Postgraduate Scholarship

4. PUBLICATIONS (first-author, since 2015)

Reward- and aversion-related processing in the brain:
translational evidence for separate and shared circuits.
Frontiers in Systems Neuroscience. IF = 3.37.

Negative childhood experiences alter a prefrontal-insular-
motor cortical network in healthy adults: A rsfMRI-fMRI-MRS-
dMRI study. *Human Brain Mapping*. IF = 5.97.

GABAergic circuits underpin valuatative processing. 2015.
Frontiers in Systems Neuroscience. IF = 3.37.

Subcallosal cingulate connectivity patterns in anorexia nervosa
patients is different from healthy controls: A clinical multi-tensor
tractography study. *Brain Stimulation*. IF = 5.43.

A neuroimaging strategy for the three dimensional *in vivo*
anatomical visualization and characterization of insular gyri.
Stereotactic and Functional Neurosurgery. IF = 1.69.

5. TEACHING

Full courses: Behavioural Neuroscience, Cognitive Psychology,
Sensation & Perception with Lab, Statistical Methods in
Psychology, Academic Research and Writing, Biological Basis of
Psychology, Brain & Behaviour

Partial courses: MCAT Preparation, Interfaculty Pain Curriculum,
Molecular Psychiatry, Physiology

Trained and mentored over 50 students outside the classroom,
involving lab training, senior thesis project advising, and formal
mentoring

6. TALKS (recent titles)

Brain networks of negative affect
The marriage of psychology & neuroscience
Altered limbic white matter in trigeminal neuralgia
Brain connectivity in anorexia nervosa

7. PUBLIC ENGAGEMENT

Public talks in collaboration with Partners in Research and
Virtual Researcher on Call

Invited speaker and organizer for many panels & workshops:
e.g. The Next Steps Conference, Backpack to Briefcase,
Dinner@New, Do It for Daron: Is it just me?

8. AFFILIATIONS & ADDITIONAL EXPERIENCE

Fellow of the Royal Society of Arts, United Kingdom
Full Member of the Canadian Association for Neuroscience
Member, Organization for Human Brain Mapping

Ad hoc reviewer for 19 journals

Edited 2 peer-reviewed journal issues

PhD Thesis Committee Examiner

Have always been active in community service:

e.g. currently a committee member for the Jacob Bronowski
Memorial Series, University of Toronto;

Student Research Grant Committee, Union College;

Faculty advisor for Active Minds student group, Union College

Full Curriculum Vitae

Dr. Dave J. Hayes

Visiting Assistant Professor

Email: hayesd2@union.edu

Psychology Department & Neuroscience Program

Website: www.neuroscientist.ca

Union College

Schenectady, NY, USA

1. DEGREES

Ph.D., Neuroscience, University of Alberta, Canada

2009

Advisor: Dr. Andrew J. Greenshaw

Support from Natural Sciences and Engineering Research Council (NSERC) Graduate Award

B.Sc. (Hons), Neuroscience Specialist, University of Toronto, Canada

2003

Advisor: Dr. John S. Yeomans

Support from NSERC Undergraduate Research Award

2. PROFESSIONAL EXPERIENCE

Visiting Assistant Professor, Psychology Department & Neuroscience Program

2016-

Union College, Schenectady, New York, USA

Research Associate, University Health Network, Toronto Western Research Institute, Canada

2014-15

Lab Leader: Dr. Mojgan Hodaie

Postdoctoral Fellow, University of Toronto, Toronto Western Hospital, Canada

2013-14

Lab Leader: Dr. Mojgan Hodaie

Visiting Postdoctoral Associate, University of Cambridge, United Kingdom

2013

Lab Leader: Dr. Jeffrey W. Dalley and Dr. Trevor Robbins

Salary support from Canadian Institutes of Health Research (CIHR) Postdoctoral Fellowship

Postdoctoral Fellow, University of Ottawa, Institute of Mental Health Research (IMHR), Canada

2009-13

Lab Leader: Dr. Georg Northoff

Salary support from CIHR Postdoctoral Fellowship

3. AWARDS & GRANTS

Awarded by	Award title	Date
Union College	Dean's Discretionary Award	2016
Union College	Faculty Research Grant	2016
Union College	Internal Education Foundation Grant	2016
Canadian Institutes of Health Research (CIHR)	<p>Operating Grant</p> <p><i>Neural and biochemical correlates of resting state activity and emotional processing in major depressive disorder – multi-modal imaging (fMRI, MRS, and PET) during GABA- and glutamatergic intervention</i></p> <p>Georg Northoff (PI), Marcelo Berlim (Co-applicant), Julien Doyon (Co-applicant), Dave J. Hayes (Postdoctoral Researcher and grant co-writer)</p>	2011-2016

Toronto Western Research Institute	Nadler Speaker Award	2014
University Health Network, Office of Research Trainees	Travel Award	2014
CIHR	Postdoctoral Fellowship	2010-13
University of Ottawa, Faculty of Medicine	Award of Excellence in Postdoctoral Research	2012
Mathematics of Information Technology and Complex Systems (MITACS)	Elevate Strategic Fellowship	2010-11
University of Alberta, Centre for Neuroscience	Travel Award	2007
University of Alberta	Walter H Johns Graduate Fellowship	2007
University of Alberta	Walter H Johns Graduate Fellowship	2006

Canadian College of Neuropsychopharmacology	Travel Award	2006
NSERC	Postgraduate Scholarship	2005-08
University of Alberta	Walter H Johns Graduate Fellowship	2005
University of Alberta, Faculty of Graduate Studies and Research	J. Gordon Kaplan Travel Award	2005
University of Alberta, Graduate Students' Association	Professional Development Grant	2005
University of Alberta, Centre for Neuroscience	Graduate Studies and Research Scholarship	2005
Canadian College of Neuropsychopharmacology	Travel Award	2004

University of Alberta, Centre for Neuroscience	Graduate Studies and Research Scholarship	2004
NSERC	Undergraduate Student Research Award	2003
University of Toronto, New College	Gordon Cressy Student Leadership Award	2003
University of Toronto	Gratitude Chair Award	2003
University of Toronto, New College	Centennial Award for leadership and academics	2002

4. PUBLICATIONS

Publications = 30 with 750+ citations; Google scholar h-index = 16; i10-index = 20;

Conference presentations = 37

*indicates a trainee co-author

IN PREPARATION OR SUBMITTED WORK

Hayes DJ., Chen DQ., Behan B, Walker M, Zhong J, Hodaie M. Affective circuitry alterations in patients with trigeminal neuralgia. (Submitted)

Duncan NW., Wiebking C., **Hayes DJ.**, Zhang J., Gravel P., Reader AJ., Verhaeghe J., Kostikov AP., Schirmacher R., Northoff G. Cortical GABA_A receptors correlate with variability in neural activity: A combined fMRI/¹⁸F-flumazenil PET study. (Submitted)

Chen DQ., Dell'Acqua F., Rokem A., **Hayes DJ.**, Zhong J., Hodaie M. Optimal strategies for the co-registration of diffusion-weighted and T1 images using readily available intermediate scalar images. (Submitted)

PEER-REVIEWED PUBLICATIONS

Chen DQ., Zhong J., **Hayes DJ.**, Behan B., Walker M., Hung P., Hodaie M. Merged tractography evaluation with selective automated group integrated tractography (SAGIT). *Frontiers in Neuroanatomy*, In Press. IF = 3.26.

Chen DQ, DeSouza D, **Hayes DJ**, Davis KD, O'Connor P, Hodaie M. 2016. Diffusivity signatures characterize trigeminal neuralgia associated with multiple sclerosis. *Multiple Sclerosis Journal* 22: 51-63. IF = 4.67.

*Figure 2 was also accepted as the cover image of the journal.

Hayes DJ, Northoff G, Greenshaw AJ. 2015. Editorial: Reward- and aversion-related processing in the brain: translational evidence for separate and shared circuits. *Frontiers in Systems Neuroscience* 9:147. SJR Impact factor, IF = 3.37.

Duncan NW**, **Hayes DJ**[‡], Wiebking C, Tiret B, Pietruska K, Chen DQ, Rainville P, Marjańska M, Mohammid O, Doyon J, Hodaie M, Northoff G. 2015. Negative childhood experiences alter a prefrontal-insular-motor cortical network in healthy adults: A multimodal rsfMRI-fMRI-MRS-dMRI study. *Human Brain Mapping* 36: 4622-37. **‡ Equal authorship**. IF = 5.97.

Hayes DJ. GABAergic circuits underpin valuate processing. 2015. *Frontiers in Systems Neuroscience* 9:76. SJR Impact factor, IF = 3.37.

Hayes DJ., Lipsman N., **Chen DQ***, Woodside DB., Lozano A., Hodaie M. 2015. Subcallosal cingulate connectivity patterns in anorexia nervosa patients is different from healthy controls: A clinical multi-tensor tractography study. *Brain Stimulation* 8:758-68. IF = 5.43.

Rosen A[‡], Chen DQ[‡], **Hayes DJ**[‡], Davis KD, Hodaie M. 2015. A neuroimaging strategy for the three dimensional *in vivo* anatomical visualization and characterization of insular gyri. *Stereotactic and Functional Neurosurgery* 93: 255-64. ‡ **Equal authorship**. IF = 1.69.

Chen DQ.*, Strauss I., **Hayes DJ.**, Davis KD., Hodaie M. 2015. Age-related changes in diffusion tensor imaging metrics of fornix subregions in healthy humans. *Stereotactic and Functional Neurosurgery* 93: 151-9. IF = 1.69.

Hayes DJ., Duncan NW.*, Xu J.*, Northoff G. 2014. A comparison of neural responses to appetitive and aversion stimuli in humans and other mammals. *Neuroscience & Biobehavioral Reviews* 45: 350-68. IF = 10.28

Wiebking C., Duncan NW., Tiret B., **Hayes DJ.**, Marjanska M., Doyon J., Bajbouj M., Northoff G. 2014. GABA in the insula – A predictor of the neural response to interoceptive awareness. *Neuroimage* 86: 10-18. IF = 6.13

Hayes DJ., Jupp B., Sawiak S., Merlo E., Caprioli D., Dalley JW. 2014. Brain γ -aminobutyric acid: a neglected role in impulsivity. *European Journal of Neuroscience* 39: 1921-32. IF = 3.67

Wiebking C., Duncan N.W., Qin P., **Hayes D.**, Lyttelton O., Gravel P., Reader A., Ernst J., Grimm S., Bajbouj M., Northoff G. 2014. External awareness and GABA receptors – a multimodal imaging study combining fMRI and [¹⁸F]flumazenil-PET. *Human Brain Mapping* 35: 173-84. IF = 6.92

Hayes DJ., Duncan NW.*, Wiebking C., Pietruska K., Qin P., Lang S., Gagnon J., Gravel P., Verhaeghe J., Kostikov A., Schirmacher R., Reader AJ., Doyon J., Rainville P., Northoff G. 2013. GABA_A receptors predict aversion-related brain responses: An fMRI-PET investigation in healthy humans. *Neuropsychopharmacology* 38: 1438-50. IF = 7.83

Duncan NW., Wiebking C., Tiret B., Marjańska M., **Hayes DJ.**, Lyttelton O., Doyon J., Northoff G. 2013. Glutamate concentration in the medial prefrontal cortex predicts resting-state cortical-subcortical functional connectivity in humans. *PLOS ONE* 8(4): e60312. IF = 3.53

Qin P., Duncan NW., Wiebking C., Gravel P., Lyttelton O., **Hayes DJ.**, Verhaeghe J., Kostikov A., Schirmacher R., Reader AJ., Northoff G. 2012. GABA_A receptors in visual and auditory cortex and neural activity changes during basic visual stimulation. *Frontiers in Human Neuroscience* 6: 337. IF = 2.90

Hayes DJ., Northoff G. 2012. Common brain activations for painful and non-painful aversive stimuli. *BMC Neuroscience* 13:60. IF = 2.85

Hayes DJ., Huxtable AG. 2012. Interpreting deactivations in neuroimaging. *Frontiers in Psychology (Cognitive Science)* 3:27. IF = 2.80

Hayes DJ., Hoang J.*, Greenshaw AJ. 2011. The role of nucleus accumbens shell GABA receptors on ventral tegmental area intracranial self-stimulation and a potential role for the 5-HT_{2C} receptor. *J Psychopharmacology* 25: 1661-75. IF = 2.81

Hayes DJ., Northoff G. 2011. Identifying a network of brain regions involved in aversion-related processing: a cross-species translational investigation. *Frontiers in Integrative Neuroscience* 5:49. SJR IF = 2.44

Hayes DJ., Greenshaw AJ. 2011. 5-HT receptors and reward-related behaviour: A review. *Neuroscience and Biobehavioral Reviews* 35: 1419-49. IF = 10.28

Northoff G*, **Hayes DJ***. 2011. Is our self nothing but reward? *Biological Psychiatry* 69: 1019-25. ***Equal authorship**. IF = 9.47

Northoff G., Duncan N., **Hayes DJ**. 2010. The brain and its resting state activity - Experimental and methodological implications. *Progress in Neurobiology* 92: 593-600. IF = 10.30

Alcaro A., Panksepp J., Wiczak J., **Hayes DJ.**, Northoff G. 2010. Is subcortical-cortical midline activity in depression mediated by glutamate and GABA? A cross-species translational approach. *Neuroscience and Biobehavioral Reviews* 34: 592-605. IF = 10.28

Hayes DJ. 2009. The role of the 5-HT_{2C} receptor in motivation and reward-related behaviour. Doctoral dissertation. University of Alberta Library repository, Library and Archives Canada. 368 leaves.
<http://www.collectionscanada.gc.ca/obj/thesescanada/vol2/002/NR55357.PDF>

Hayes DJ., Clements R., Greenshaw AJ. 2009. Effects of systemic and intra-nucleus accumbens 5-HT(2C) receptor compounds on ventral tegmental area self-stimulation thresholds in rats. *Psychopharmacology* 203: 579-88. IF = 3.99

Hayes DJ., **Graham DA.***, Greenshaw AJ. 2009. Effects of systemic 5-HT_{1B} receptor compounds on ventral tegmental area intracranial self-stimulation thresholds in rats. *European Journal of Pharmacology* 604: 74-8. IF = 2.68

Hayes DJ., Mosher TM., Greenshaw AJ. 2009. Differential effects of 5-HT_{2C} receptor activation by WAY 161503 on nicotine-induced place conditioning and locomotor activity in rats. *Behav Brain Res*, 197: 323-30. IF = 3.39

Biondo AM, Clements RLH, **Hayes DJ**, Eshpeter B, Greenshaw AJ. 2005. NMDA or AMPA/Kainate receptor blockade prevents acquisition of conditioned place preference induced by D2/3 dopamine receptor stimulation in rats. *Psychopharmacology* 179: 189-97. IF = 3.99

Mosher, T.M., **Hayes D.J.**, Greenshaw A.J. 2005. Differential effects of 5-HT_{2C} ligands on place conditioning and locomotor activity in rats. *European Journal of Pharmacology* 515: 107-16. IF = 2.68.

Wang, H., Ng, K., **Hayes, D.**, Gao, X., Forster, G., Blaha, C., and Yeomans, J. 2004. Decreased amphetamine-induced locomotion and improved latent inhibition in mice mutant for the M5 muscarinic receptor gene found in the human 15q schizophrenia region. *Neuropsychopharmacology*, 29: 2126-39. IF = 7.83

CONFERENCE ABSTRACTS

Hayes DJ, Terzian C, Vu J, Altman E, Arnold Z, Denney A, West E, Warren J, Dunnam M, Gillen R, Zimmerman, Barcelos N, Brickman A, Anderson-Hanley C. Neuroimaging correlates with cognition after exergaming in older adults: Preliminary MRI results from the ACE study. Annual meeting of the Society for Neuroscience Hudson-Berkshire Chapter, Carey Institute for Global Good, September 2016, Rensselaerville, NY. (Poster presentation).

Zhong J, Qixiang D, **Hayes DJ**, Leung K, Hung P, Hodaie M. Abnormal structural network topology in trigeminal neuralgia revealed by white matter tractography. Organization for Human Brain Mapping (OHBM), June 2016, Geneva, Switzerland. (Poster presentation).

Hayes D.J., **Chen D.Q.***, Behan B.T., **Walker M.***, Davis K.D., Hodaie M. Chronic neuropathic facial pain patients show increased fornix variability and fractional anisotropy. OHBM, June 2015, Hawaii, USA. (Poster presentation).

Hayes DJ, **Duncan NW***, Wiebking C, Tiret B, Pietruska K, Chen DQ, Rainville P, Marjanska M, Mohammid O, Doyon J, Hodaie M, Northoff G. Negative childhood experiences alter a prefrontal-insular-motor cortical network in healthy adults: A preliminary multimodal rsfMRI-fMRI-MRS-dMRI study. Canadian College of Neuropsychopharmacology, June 2015, Ottawa, Canada. (Poster presentation).

Hayes D.J., **Chen D.Q.***, Behan B.T., **Walker M.***, Davis K.D., Hodaie M. Altered limbic circuitry in patients with chronic neuropathic facial pain: A multi-tensor tractography neuroimaging study. Society for Biological Psychiatry, May 2015, Toronto, Canada. (Late-breaking poster presentation).

Foroutan F*, **Hayes DJ**, Chen DQ, Davis KD, Hodaie M. In vivo visualization of human cortico-cerebellar tracts using higher-order tractography. Society for Biological Psychiatry, May 2015, Toronto, Canada. (Late-breaking poster presentation).

Chen D.Q., **Hayes D.J.**, Zhong Z, Davis K.D., Hodaie M. Optimal strategies for the co-registration of diffusion-weighted and T1 images using readily available intermediate scalar images. Organization for Human Brain Mapping (OHBM), June 2015, Hawaii, USA. (Poster presentation).

Walker M.R.*, Levy R., Chen D.Q., **Hayes D.J.**, Behan B.T., Davis K.D., Hodaie M. Fornix subregions and hippocampal formations in humans and rhesus macaques. Organization for Human Brain Mapping (OHBM), June 2015, Hawaii, USA. (Poster presentation).

Foroutan F.*, Chen D.Q., **Hayes D.J.**, Behan B.T., Hodaie M. In vivo visualization of human cerebellar tracts using higher-order tractography techniques. International Society for Magnetic Resonance in Medicine. June 2015, Toronto, Canada. (Poster presentation).

Hayes D.J., Lipsman N., Woodside D.B., Lozano A., Chen D.Q., Hodaie M. Subcallosal cingulate connectivity patterns in anorexia nervosa patients undergoing deep brain electrode implantation compared to healthy controls: A multi-tensor tractography neuroimaging study. Organization for Human Brain Mapping (OHBM), June 2014, Hamburg, Germany. (Poster presentation).

Hayes D.J., **Duncan N.W.***, Wiebking C., Pietruska K., Lyttleton O., Qin P., Gagnon J., Gravel P., Verhaeghe J., Kostikov A.P., Schirrmacher R., Reader A., Doyon J., Rainville P., Northoff G. Aversion-related brain activity is context-dependent. Alexander von Humboldt Foundation, November 2-4, 2012, Humboldt Colloquium, Toronto, Canada (Invited poster presentation).

Hayes D.J., **Duncan N.W.***, Xu J., Zhang C., Northoff G. A translational exploration of basic reward- and aversion-related processing in the brain. Society for Neuroscience annual conference, October 13-17, 2012, New Orleans, USA (Poster presentation).

Wiebking C., Duncan N.W., Qin P., **Hayes D.J.**, Lyttleton O., Gravel P., Verhaeghe J., Kostikov A.P., Schirrmacher R., Reader A.J., Bajbouj M., Northoff, G. (2012, June) External awareness and GABA – A multimodal imaging study

combining fMRI and [18F]flumazenil-PET. 18th Annual Meeting of the Organization for Human Brain Mapping (OHBM), Beijing, China. (Poster presentation).

Qin, P., Duncan, N.W., Wiebking, C., **Hayes, D.J.**, Northoff, G. (2012, June) GABAA receptors and the transition from resting-state to stimulus induced activity. 18th Annual Meeting of the Organization for Human Brain Mapping (OHBM), Beijing, China. (Poster presentation).

Hayes DJ., Northoff G. 2012. Common brain activations for painful and non-painful aversive stimuli. Canadian College of Neuropsychopharmacology and Canadian Association for Neuroscience conference in Vancouver, British Columbia, Canada (2 poster presentations).

Hayes DJ., Northoff G. The overlap in brain regions involved in pain- and non-pain-related processing. 4th Annual University of Ottawa, IMHR Young Researchers' Conference, March 2012. (Poster presentation).

Hayes DJ., Northoff G. Brain regions involved in aversion-related processing: A cross-species translational investigation. Human Brain Mapping Conference, June 26-30, Quebec City, Quebec, Canada. (Poster presentation).

Hayes DJ., Northoff G. Aversion-related brain processing: A translational review. Canadian College of Neuropsychopharmacology, May 20-23, 2011, Montreal, Quebec, Canada. (Poster presentation).

Hayes DJ., **Hoang J.***, Greenshaw AJ. The role of nucleus accumbens shell GABA receptors on ventral tegmental area intracranial self-stimulation in rats and a potential role for the 5-HT_{2C} receptor. Canadian College of Neuropsychopharmacology, May 20-23, 2011, Montreal, Quebec, Canada. (Poster presentation).

Hayes DJ., Greenshaw AJ. Brain serotonin receptors and reward behaviour. University of Ottawa Postdoctoral Research Day, April 1st, 2011. (Poster presentation).

Hayes DJ., Northoff G. A translational investigation of aversion-related brain processing. University of Ottawa Postdoctoral Research Day, April 1st, 2011. (Poster presentation).

Hayes DJ., **Hoang J.***, Greenshaw AJ. Nucleus accumbens shell GABA receptors mediate rewarding brain stimulation in rats and a potential role for the 5-HT_{2C} receptor. 2nd Annual University of Ottawa, Institute of Mental Health Research (IMHR) Young Researchers' Conference, March 26th, 2010. (Poster presentation).

Hayes DJ., **Hoang J.***, Greenshaw AJ. GABA receptors in the nucleus accumbens shell mediate ventral tegmental area intracranial self-stimulation and may be associated with 5-HT_{2C} receptor-mediated decreases in reward. University of Ottawa Postdoctoral Research Day, March 12th, 2010. (Poster presentation).

Hayes DJ., **Hoang J.***, Greenshaw AJ. Behavioural effects of 5-HT_{2C} and GABA A receptor activation in brain stimulation reward and locomotor activity. University of Alberta Neuroscience Research Day, November 14th, 2007. (Poster presentation).

Hayes DJ., **Hoang J.***, Greenshaw AJ. Effects of serotonin 2C and GABA A receptor ligands in brain stimulation reward and locomotor activity. European College of Neuropsychopharmacology, Vienna, Austria, October 13-17, 2007, in the Journal of European Neuropsychopharmacology, 17 (4): S278 (Poster presentation).

Hayes, D.J., Hoang, J.*, & Greenshaw, A.J. A comparison of 5-HT_{2C} and GABA_A receptor activity in brain stimulation reward and locomotor activity. Canadian College of Neuropsychopharmacology Abstracts, Banff, Alberta, June 15-18, 2007. (Poster presentation).

Hayes, D.J., Graham D.A.*, Greenshaw, A.J. 2006. Serotonin 1B receptor activation decreases brain self-stimulation in rats: first evidence for a specific receptor role. Canadian College of Neuropsychopharmacology Abstracts, Chicago, Illinois, July 9-14, 2006 (Poster presentation).

Hayes, D.J., Graham D.A.*, Greenshaw, A.J. 2006. Putative role of the serotonin 1B receptor in brain self-stimulation reward in rats. Psychiatry Research Day, University of Alberta, May 29th, 2006 (Oral presentation).

Hayes D., Greenshaw A.J. Nicotine-induced locomotion, but not place conditioning, is blocked by serotonin 2C receptor activation in rats. University of Alberta Neuroscience Research Day, November 2005 (Poster presentation).

Hayes D., Greenshaw A.J. Serotonin 2C receptor activation blocks nicotine-induced locomotion but not place conditioning in rats. Canadian College of Neuropsychopharmacology Abstracts, St. John's, Newfoundland, July 2005 (Poster presentation).

Hayes D., Greenshaw A.J. 5-HT_{2C} receptor-related changes in nicotine-induced locomotion and conditioned place preference in rats. Annual Flor-Henry Lectures, Edmonton, Alberta, May 2005 (Poster presentation).

Hayes, D., Greenshaw, A.J. Changes in VTA self-stimulation thresholds in rats using specific 5-HT_{2C} receptor ligands. Canadian College of Neuropsychopharmacology Abstracts, Kingston, Ontario, May 2004 (Poster presentation).

D. Hayes, A.J. Greenshaw. 5-HT_{2C} receptor-related changes in VTA self-stimulation thresholds in rats. Neuroscience Research Day Abstracts, University of Alberta, November 2004 (Poster presentation).

D. Hayes, A.J. Greenshaw. Changes in VTA self-stimulation thresholds in rats using specific 5-HT_{2C} receptor ligands. Psychiatry Research Day Abstracts, University of Alberta, September 2004 (Poster presentation).

Ng, K., **Hayes, D.**, Rothenburg, L., Forster, G., Wang, H., Yeomans, J. Improved latent inhibition learning and reduced amphetamine-induced locomotion in M5 muscarinic receptor knockout mice. Annual Neuroscience Poster Day, Program in Neuroscience, Toronto, March 2003. (Poster presentation).

Yeomans, J.S., Ng, K., **Hayes, D.**, Forster, G., Blaha, C.D., Wang, H. Improvement in latent inhibition learning, but reduction in amphetamine-induced locomotion, in M5 muscarinic knockout mice. Society for Neuroscience Abstracts, November 2003. (Poster presentation).

K. Ng, **D. Hayes**, G. Forster, H. Wang, J. Yeomans. Improved latent inhibition learning in M5 muscarinic knockout mice. Canadian College of Neuropsychopharmacology Annual Meeting, Montreal, June 2003. (Poster presentation).

5. TEACHING EXPERIENCE

INSTRUCTOR (FULL COURSES)

Union College, Psychology Department & Neuroscience Program

- Behavioural Neuroscience (PSY 210; 3 sections) 2016
Introductory neuroscience covering: cellular anatomy/function, neuroanatomy, neuroendocrinology, methods, sensation & perception, emotion, brain rhythms, neuropsychopathology/mental health
- Cognitive Psychology: Attention & Memory (PSY 220) 2016
Introductory cognitive psychology covering: history, methods, and conceptual advancements, sensation & perception, attention, learning & memory, emotion
- Sensation & Perception with Laboratory (PSY 313) 2016
Course covering: research methods, neuroanatomy, visual/auditory/haptic/olfactory/gustatory neuroscience and behaviour, including a weekly 2-hour lab
- Statistical Methods in Psychology (PSY 200; 2 sections) 2016
Introductory course covering: research design, distributions, standardized scoring, regression, correlation, sampling & probability, hypothesis testing, t-tests, ANOVA (one- and two-way)

Seneca @ York, Toronto, Ontario, Canada

2014

- Academic Research and Writing (ARW 250),
Introduction to the discovery and communication of ideas. Course covered topics such as:
How to research, write and present ideas effectively, thinking and reading critically, thesis development
Required for all second-year diploma-undergraduate transfer students in School of Liberal Arts.

Grant MacEwan University, Edmonton, Alberta, Canada

2006-08

- Biological Basis of Psychology (Psyc 104)
Taught 7 sections covering introductory: psychological history, methods, neuroanatomy, neuroendocrinology, learning, memory, sensation & perception, emotion, consciousness
- Brain & Behaviour (Psyc 275)
Taught 2 sections with a lab covering: neuroanatomy (with dissection), methods, sensation & perception, hormones & sex, emotion, reward & addiction, neuropathology, psychiatric disorders

INSTRUCTOR (OTHER)

MCAT Preparation Course	2016
8 hours on Brain, Behaviour, & Mental Health content covering material from MCAT Section 1 (Biological and Biochemical Foundations of Living Systems) and Section 3 (Psychological, Social, and Biological Foundations of Behaviour)	
Interfaculty Pain Curriculum facilitator, University of Toronto	2015
Invited to facilitate case-studies over 3 days for students across 7 health professional faculties	
Molecular Psychiatry (NSC5106), Graduate level seminar course, Guest lecturer, University of Ottawa	2011
Physiology (Physio210), Undergraduate level, Teaching Assistant, University of Alberta	2005-07
Teaching & Learning Effectiveness Sessions, Session participant, University of Alberta	2003-04

LABORATORY TRAINING & MENTORSHIP

I have been involved in the supervision of laboratory training & projects for **over 25 students** as well as **over 25 other students** outside the lab environment (see Mentorship section below), including the supervision and assessment of numerous Honor's Thesis Projects.

I have provided training on techniques involving behaviour (e.g. intracranial electrical brain stimulation, drug-induced place conditioning, locomotor activity, prepulse inhibition, latent inhibition), rodent neurosurgery, drug preparation and administration (including systemic and intracranial drug injections), human neuroimaging analysis (e.g. SPM, multileveled kernel density analysis), statistical analysis (e.g. SPSS and appropriate analytical techniques), human and rodent experimental design and implementation, results presentation, and manuscript writing. I have co-authored numerous peer-reviewed papers with many of these trainees (indicated in red and with an asterisk in the publication section).

MENTORSHIP OF JUNIOR COLLEAGUES

Psychology Department Undergraduate Advisor, Union College	2016-
Faculty Advisor, Active Minds student group, Union College	2016-
Psychology Department Mentorship Program, University of Toronto	2014-
Neuroscience Undergraduate Mentor, New College, University of Toronto	2011-
WP Wagner Secondary School Science Mentor, Outreach Program, Edmonton	2003-06
Nellie McClung Middle School Mentor and Science Fair Judge, Outreach, Edmonton	2003-05
Student Alumni Association Undergraduate Mentor, University of Toronto	2000-03

6. TALKS

“Brain networks of negative affect”	2015
“The marriage of psychology & neuroscience: A brief historical account” Union College, Department of Psychology, invited lectures	
“Altered limbic white matter in trigeminal neuralgia”	2015
Toronto Western Hospital, Neuroimaging Rounds, Invited lecture	
“Brain connectivity in anorexia nervosa patients is different than healthy controls: A neuroimaging study looking at white matter tracts” (*Nadler Speaker Award)	2014
Toronto Western Research Institute, Research Day, Invited lecture	
“Brain correlates of negative affect”	2014
University Health Network, Toronto Western Research Institute Speaker Series, Invited lecture	
“GABA in aversion-related brain activity: Converging evidence from humans and other animals”	2013
University of Cambridge, Department of Psychology Seminar, Invited lecture	
“Aversion-related brain function in humans and animals”	2012
Toronto Western Hospital, Neuroimaging Rounds, Invited lecture	
“Animal models in psychiatry: concepts & issues”	2012
University of Ottawa, IMHR, Young Researchers’ Conference Workshop, Invited lecture	
“Strategies for effective scholarship writing”	2011
University of Ottawa, IMHR, Young Researchers’ Conference Workshop, Invited lecture	
“Studying aversion: A translational approach”	2010
University of Ottawa, IMHR, Young Researchers’ Forum, Invited lecture	
“The role of GABA and glutamate in aversion-related circuitry”	2010
University of Ottawa, IMHR, Neurolunch Forum, Invited lecture	
“The role of the 5-HT _{2c} receptor in reward-related behaviour”	2009
University of Alberta, Centre for Neuroscience	
“Putative role of the serotonin 1B receptor in brain self-stimulation reward in rats”	2006
Psychiatry Research Day, University of Alberta, Selected lecture	
“Serotonin 5-HT _{2c} receptors: possible role in mesolimbic reward in rats”	2004
Canadian Spring Conference on Brain & Behaviour, Fernie, B.C.	

7. PUBLIC ENGAGEMENT

PUBLIC TALKS

Partners in Research, Invited cross-Canada Live Webcast	2016
“The affective brain”: speaking about affect and emotion in behaviour and brains	
Virtual Researcher on Call (VROC), Invited lecture, Westwind public school, Alberta	2013
“Games and the brain”: speaking about the effects of video games on the brain	
Virtual Researcher on Call (VROC), Invited lecture, Heart Lake secondary school, Alberta	2012
“Exploring the brain”: speaking about my experience as a neuroscientist	
Virtual Researcher on Call (VROC), Invited lecture, Toronto District School Board	2012
Introduced Toronto high school teachers to VROC	
VROC, Invited lecture, NorKam secondary, Kamloops, B.C.	2011
“Brain travels”: I delivered the first live internet lecture in Kamloops for this group http://bit.ly/jsNzPR	
Jasper Place High School, Invited lecture, Edmonton	2007
“What Isn’t Neuroscience: your brain in the 21 st century”	
Pfizer Discovery Day in Health Sciences, Invited lecture, Edmonton area high school students	2007
“The Illusive Brain”	
Archbishop MacDonald High School, Invited lecture, Edmonton	2005
“Reinventing the World: Illusions & the Brain”	
The Canadian Medical Hall of Fame/Pfizer Discovery Day in Health Sciences, Invited lecture	2005
“Illusions & the Brain”	

University of Alberta, Open House Forums "The Rewarding Brain: Insights on Human Behaviours"	2005
 PANELS & WORKSHOPS	
The Next Steps Conference, University of Toronto, Invited panelist for 'Working in Medical Sciences' session organized by Alumni Relations, the Career Centre, and the Faculty of Arts & Science	2015
Interfaculty Pain Curriculum facilitator, University of Toronto, Invited facilitator for interfaculty group sessions on medical pain cases involving students from Medicine, Dentistry, Nursing, Occupational Health, Pharmacy, Physical Therapy	2015
Department of Cognitive Science, University of Toronto, Invited panelist (1 of 3) for "B2B: Backpack to Briefcase" showcasing different career paths to and/or from the cognitive sciences	2014
Dinner@New, New College, University of Toronto Invited dinner guest of honour, New College neuroscience undergraduate mentorship program	2012
Royal Ottawa Health Care Group, Do It For Daron: Is it just me? campaign, Expert panelist A panel of experts (neuroscientist, addictions councilor, psychologist, person with lived-experience) speaking to groups of 200-300 high school students from the greater Ottawa area Awards received for this campaign: Canadian Community Relations Campaign of the Year, International Association of Business Communicators (IABC), Award of Excellence	2011-12
University of Alberta, Brain Bee, Expert panelist and presenter "Sleeping & Dreaming" & "Emotions vs. Intelligence"	2007
WP Wagner Secondary School, Invited chair and expert panelist, Edmonton "Road into the Brain"	2007

Alberta Heritage Foundation for Medical Research, Workshop, Edmonton	2007
“The Rewarding Brain”: Providing tools for high school teachers to teach neuroscience	
WP Wagner Secondary School, Invited chair and expert panelist, Edmonton	2006
“Road into the Brain”	
Let’s Talk Science Workshop, Jasper Place High School, Edmonton	2005
“University, Research & Neuroscience”: Introducing high school students to neuroscience	
www.letstalkscience.ca	
HYRS High School Teachers Program, Workshop, Edmonton	2005
“Teaching Neuroscience”: Providing tools for high school teachers to teach neuroscience	
 PUBLIC WRITING	
Office of Research Trainee (ORT) Times Magazine, University Health Network	2014
“Dave Hayes’ Researcher Highlight: A comparison of neural responses to appetitive and aversive stimuli in humans and other animals”	
Tête-à-Tête, Royal Ottawa Mental Health Centre publication	2012
“The emotional brain” written by Heather Lang	
Capital News Online, Carleton University news magazine	2012
“Damage control: PTSD and the brain” (multimedia news piece) written by Ari Altstedter	
http://bit.ly/JPGQ5a	
National Myalgic Encephalomyelitis & Fibromyalgia Action Network	2008
“The Science of CFS: Myth busting”, Quest Newsletter, Issues No. 77 & 78, editor and consultant	
“Piecing Pain Together – Understanding Pain in Fibromyalgia”, Quest Newsletter Issue 75, writer	
www.mefmaction.com	
Publication of Neuroscience Students (PoNS), University of Alberta	2004-05
Writer and editor for this newsletter	

8. PROFESSIONAL AFFILIATIONS AND ADDITIONAL EXPERIENCE

AFFILIATIONS (currently active)

Royal Society of Arts, Fellow

Association for the internationally renowned society dedicated to finding interdisciplinary solutions to social challenges.

<https://www.thersa.org/>

Canadian Association for Neuroscience, Full Member

Association for neuroscientists in Canada

<http://can-acn.org/>

Organization for Human Brain Mapping, Junior Member

Association for neuroimagers internationally

www.humanbrainmapping.org

AFFILIATIONS (active over last 5 years)

Canadian College of Neuropsychopharmacology, General Member

Association for basic and clinical neuropsychopharmacology researchers in Canada

www.ccnp.ca

Science & Technology Awareness Network, Member

Network for organizations/individuals committed to improving science literacy in Canada

www.scienceandtechnologynetwork.ca

Society for Neuroscience, Regular Member

Association for neuroscientists internationally

www.sfn.org

Canadian Pain Society, Member

Association for pain researchers and clinicians in Canada

<http://www.canadianpainsociety.ca>

University of Toronto Centre for the Study of Pain

Interdisciplinary association for pain researchers and clinicians in Toronto

<http://sites.utoronto.ca/pain/>

REVIEWER EXPERIENCE

Ad hoc reviewer for 19 peer-reviewed journals to date:

Biological Psychiatry; BMC Research Notes; BMC Psychiatry; Brain Structure and Function; Canadian Journal of Physiology and Pharmacology; Frontiers in Psychology: Educational Psychology; Frontiers in Psychology: Emotion Science; Frontiers in Systems Neuroscience; Frontiers in Human Neuroscience; Journal of Cognitive Science; Journal of Neuropsychiatric Genetics; Neuroimage: Clinical; Neuropsychobiology; Neuroscience and Biobehavioral Reviews; PLoS ONE; Quarterly Journal of Experimental Psychology; Social Cognitive & Affective Neuroscience; The World Journal of Biological Psychiatry

Institute of Mental Health Research, Young Researchers' Conference abstract referee 2011-12

Organization for Human Brain Mapping, Annual international conference abstract referee 2010-11,14-16

EDITORIAL EXPERIENCE

Guest Associate Editor: Frontiers in Neuroanatomy (IF = 3.5) 2014-15

Special topic title: "Structural magnetic resonance imaging in functional neurosurgery:
Using in vivo measures of brain structure to inform clinical care"

Guest Associate Editor: Frontiers in Systems Neuroscience (SJR IF = 3.4) 2013-14

Special topic title: "Reward- and aversion-related processing in the brain:
translational evidence for separate and shared circuits"

COMMITTEE EXPERIENCE

Committee member, Jacob Bronowski Memorial Lecture Series 2016-17

New College, University of Toronto, Toronto, Canada

Psychology Department Representative, Student Research Grant Committee 2016-17

Union College, Schenectady, NY, USA

Ph.D. Thesis Committee Examiner: “An investigation of intrinsic brain properties through multimodal imaging in humans” by Niall W. Duncan, Carleton University, Ottawa, Canada Although unusual for a Fellow, I was invited to be the member from the University of Ottawa.	2012
Canadian College of Neuropsychopharmacology Environmental/Green subcommittee	2011
Institute of Mental Health Research (IMHR), Young Researchers’ Forum Committee www.young-researchers.com	2011
Alberta Graduate Council, Chair Represented >14,000 students at Alberta universities to provincial government and stakeholders www.albertagrads.ca	2007-08
University of Alberta, Health Services Advisory Group, Student Representative and Chair Represented >7000 graduate students to improve university health services	2006-08
University of Alberta, Neuroscience Graduate Students’ Association, President Represented neuroscience graduate students to program and university administration	2005
Canadian College of Neuropsychopharmacology Council, Junior Councillor Represented trainee members on the CCNP Council	2004-07
University of Toronto, Neuroscience Undergraduate Students’ Association Executive Member Represented neuroscience undergraduate students to program and university administration	2001-02

EVENT COORDINATION EXPERIENCE

IMHR, Mind, Brain & Neuroethics Forum, Developer and Organizer A monthly forum for national and international invited speakers to communicate their research to a broader student, researcher, clinical, layperson audience	2009-12
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- IMHR, Young Researchers' Annual Conference, Executive Committee 2011-12
An annual conference for Canadian trainees (postdoctoral researchers and graduate and undergraduate students) to communicate their brain-related research findings
- IMHR, Young Researchers' Forum, Committee member 2011
A monthly forum for trainees within the IMHR to share and discuss their research findings