
One-Page Summarized Curriculum Vitae

Dr. Dave J. Hayes

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

Email: dave.hayes@neuroscientist.ca
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 from 26 total)

Faculty Research Grant, Union College
Intellectual Enrichment Grant, Union College
CIHR Operating Grant
CIHR Postdoctoral Fellowship
NSERC Postgraduate Scholarship

4. PUBLICATIONS

31 publications total; 1000+ citations; h-index = 17
(6 first-author publications since 2015)

Affective circuitry alterations in patients with trigeminal
Neuralgia. *Frontiers in Neuroanatomy*. IF=3.27

Reward- and aversion-related processing in the brain.
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

Eight full courses (25 sections): Emotion, Self, and the Brain Seminar;
Behavioural Neuroscience; Cognitive Psychology; Sensation & Perception
with Lab; Statistical Methods in Psychology; Academic Research and
Writing; Biological Basis of Psychology; Brain & Behaviour

Partial courses/Guest: MCAT Preparation; Interfaculty Pain Curriculum;
Molecular Psychiatry; Physiology; Minds & Machines

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

6. TALKS (recent titles)

Negative childhood experiences alter aversive brain activity in adults
Exploring the elusive aversive brain: A translational approach
What can affective neuroscience learn from the arts?
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 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
Member, Canadian Association for Neuroscience
Member, Organization for Human Brain Mapping

Ad hoc reviewer for 22 journals
Grant reviewer: Netherlands Organisation for Scientific Research (NWO)
& Nova Scotia Health Authority Research Fund (NSHA RF)
Associate Editor, *Frontiers in Neuroanatomy*
PhD Thesis Committee Examiner

Consistently active in community service:
e.g. committee member for 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
Psychology Department & Neuroscience Program
Union College
Schenectady, NY, USA

Email: dave.hayes@neuroscientist.ca
Website: www.neuroscientist.ca

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 (26 total)

Awarded by	Award title	Date
Union College	Intellectual Enrichment Grant For conference: <i>Mental Health Awareness Through Art</i>	2017
Union College	Faculty Research Grant	2017
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)	Operating Grant Georg Northoff (PI), Dave J. Hayes (Postdoctoral Researcher and grant co-writer)	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 = 31 with 1000+ citations;

Google scholar h-index = 17; i10-index = 24; <http://bit.ly/2etYFij>

Conference presentations = 44

*indicates a trainee co-author

PEER-REVIEWED SUBMITTED ARTICLES

Hayes DJ., Northoff G. Conditioned place aversion in rats induced by multi-modal stimuli.

Hayes DJ., Chakravarty MM., Hodaie M. Editorial: Structural magnetic resonance imaging in functional neurosurgery: Using in vivo measures of brain structure to inform clinical care.

Anderson-Hanley C., Barcelos N., Zimmerman EA., Gillen RW., Dunnam M., Cohen BD., Yerokhin V., Miller KE., **Hayes DJ.**, Arciero PJ., Kramer AF. The aerobic and cognitive exercise study (ACES) for mild cognitive impairment (MCI): Neuropsychological, neurobiological, and neuroimaging outcomes of a randomized clinical trial.

PEER-REVIEWED PUBLICATIONS

31. **Hayes DJ.**, Chen DQ., Zhong J, **Lin A***, Behan B, Walker M, Hodaie M. 2017. Affective circuitry alterations in patients with trigeminal neuralgia. *Frontiers in Neuroanatomy*. IF = 3.27.

30. Chen DQ., Zhong J., **Hayes DJ.**, Behan B., Walker M., Hung P., Hodaie M. 2016. Merged tractography evaluation with selective automated group integrated tractography (SAGIT). *Frontiers in Neuroanatomy*. IF = 3.26.

29. 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 = 4.84.

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

28. **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.

27. **Hayes DJ**[‡], **Duncan NW**^{‡*}, 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.

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

25. **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.
24. **Hayes DJ[‡]**, Rosen A[‡], Chen DQ[‡], 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.
23. **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.
22. **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
21. 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
20. **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
19. 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
18. **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
17. 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
16. 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
15. **Hayes DJ.**, Northoff G. 2012. Common brain activations for painful and non-painful aversive stimuli. *BMC Neuroscience* 13:60. IF = 2.85
14. **Hayes DJ.**, Huxtable AG. 2012. Interpreting deactivations in neuroimaging. *Frontiers in Psychology (Cognitive Science)* 3:27. IF = 2.80
13. **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

12. **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
11. **Hayes DJ.**, Greenshaw AJ. 2011. 5-HT receptors and reward-related behaviour: A review. *Neuroscience and Biobehavioral Reviews* 35: 1419-49. IF = 10.28
10. Northoff G*, **Hayes DJ***. 2011. Is our self nothing but reward? *Biological Psychiatry* 69: 1019-25. ***Equal authorship**. IF = 9.47
09. 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
08. Alcaro A., Panksepp J., Witczak 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
07. **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>
06. **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
05. **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
04. **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
03. 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
02. 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.
01. 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

Miller D*, Valenzia P, **Hayes DJ.** Psychological factors correlated to individual locomotor improvement following spinal cord injury. Homecoming Conference, October 2017, Union College, Schenectady, NY, USA. (Poster presentation).

Lin A*, Chen DQ, Hodaie M, **Hayes DJ**. Limbic grey matter alterations in patients with trigeminal neuralgia. Canadian Association for Neuroscience, June 2017, Montreal, Canada. (Poster presentation).

Lin A*, Chen DQ, Hodaie M, **Hayes DJ**. Limbic grey matter alterations in patients with trigeminal neuralgia. Steinmetz Symposium, May 2017, Union College, Schenectady, NY, USA. (Poster presentation).

Testo A*, Duncan NW, **Hayes DJ**. An examination of the relationship between grey matter and depression and anxiety scores. Steinmetz Symposium, May 2017, Union College, Schenectady, NY, USA. (Oral presentation).

Price A*, Oxley Z, **Hayes DJ**. The effect of emotion regulation on turnout rates among youth voters. Steinmetz Symposium, May 2017, Union College, Schenectady, NY, USA. (Oral presentation).

Dionisos C*, **Rice P***, **Hayes DJ**, Catravas P. Tricks of the mind: The binaural observation and exploration of the scale illusion. Steinmetz Symposium, May 2017, Union College, Schenectady, NY, USA. (Oral presentation).

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. Altered pain white matter connectivity patterns in trigeminal neuralgia revealed by multivariate pattern classification. International Association for the Study of Pain (IASP), September 2016, Yokohama, Japan. (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., Schirmacher 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., Schirmacher 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, DJ., Hoang, J.*, & Greenshaw, AJ. 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

INSTRUCTOR (8 full courses, 25 sections total)

Union College, Psychology Department & Neuroscience Program

- Seminar: Emotion, Brain, & the Self (PSY 420; 2 sections) 2017
Senior seminar exploring current neuroscience and psychology topics in emotion, well-being, and mental disorders affecting emotion and sense of self
- Behavioural Neuroscience (PSY 210; 7 sections; 2 sections for “Leadership In Medicine” Program) 2016-17
Introductory neuroscience covering: cellular anatomy/function, neuroanatomy, neuroendocrinology, methods, sensation & perception, emotion, brain rhythms, neuropsychopathology/mental health
- Cognitive Psychology: Attention & Memory (PSY 220; 3 sections) 2016-17
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

- Academic Research and Writing (ARW 250), 2014
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

- Biological Basis of Psychology (Psyc 104; 7 sections) 2006-08
Covering introductory: psychological history, methods, neuroanatomy, neuroendocrinology, learning, memory, sensation & perception, emotion, consciousness
- Brain & Behaviour with Laboratory (Psyc 275; 2 sections) 2007-08
Covering: neuroanatomy (with dissection), methods, sensation & perception, hormones & sex, emotion, reward & addiction, neuropathology, psychiatric disorders

INSTRUCTOR (Guest lectures and partial courses taught)

- MCAT Preparation Course (2 sections) 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)
- Minds & Machines (Philosophy 265), Guest Lecturer, Union College 2017
- 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 been the principal advisor for 6 Honor's student theses.

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

"Redefining Mental Health: Clinical Neuroscience & Technology" Union College Academy for Lifelong Learning, Invited lecture	2017
"Negative childhood experiences alter aversive brain activity in adults" Union College, Psychology Department Speaker Series and Honors Colloquium, Invited lecture	2017
"What can affective neuroscience learn from the arts and humanities?" <i>Trauma, Mental Health, & the Arts</i> Conference, Columbia University and World Health Organization (WHO), Global Mental Health Program	2017
"The elusive aversive brain: A translational approach" University of New Brunswick, Saint John, Department of Psychology, Invited lecture	2017
"Brain networks of negative affect"	2015
"The marriage of psychology & neuroscience: A brief historical account" Union College, Department of Psychology, invited lectures	2015
"Altered limbic white matter in trigeminal neuralgia" Toronto Western Hospital, Neuroimaging Rounds, Invited lecture	2015
"Brain connectivity in anorexia nervosa patients is different than healthy controls: A neuroimaging study looking at white matter tracts" (*Nadler Speaker Award) Toronto Western Research Institute, Research Day, Invited lecture	2014
"Brain correlates of negative affect" University Health Network, Toronto Western Research Institute Speaker Series, Invited lecture	2014
"GABA in aversion-related brain activity: Converging evidence from humans and other animals" University of Cambridge, Department of Psychology Seminar, Invited lecture	2013
"Aversion-related brain function in humans and animals" Toronto Western Hospital, Neuroimaging Rounds, Invited lecture	2012

“Animal models in psychiatry: concepts & issues” University of Ottawa, IMHR, Young Researchers’ Conference Workshop, Invited lecture	2012
“Strategies for effective scholarship writing” University of Ottawa, IMHR, Young Researchers’ Conference Workshop, Invited lecture	2011
“Studying aversion: A translational approach” University of Ottawa, IMHR, Young Researchers’ Forum, Invited lecture	2010
“The role of GABA and glutamate in aversion-related circuitry” University of Ottawa, IMHR, Neurolunch Forum, Invited lecture	2010
“The role of the 5-HT _{2c} receptor in reward-related behaviour” University of Alberta, Centre for Neuroscience	2009
“Putative role of the serotonin 1B receptor in brain self-stimulation reward in rats” Psychiatry Research Day, University of Alberta, Selected lecture	2006
“Serotonin 5-HT _{2c} receptors: possible role in mesolimbic reward in rats” Canadian Spring Conference on Brain & Behaviour, Fernie, B.C.	2004

7. PUBLIC ENGAGEMENT

PUBLIC TALKS

Partners in Research, Invited cross-Canada Live Webcast “The affective brain”: speaking about affect and emotion in behaviour and brains	2016
Alumni Speaker Series, Invited lecture, New College, University of Toronto “Why do I need a brain?”	2015
Virtual Researcher on Call (VROC), Invited lecture, Westwind public school, Alberta “Games and the brain”: speaking about the effects of video games on the brain	2013
Virtual Researcher on Call (VROC), Invited lecture, Heart Lake secondary school, Alberta “Exploring the brain”: speaking about my experience as a neuroscientist	2012
Virtual Researcher on Call (VROC), Invited lecture, Toronto District School Board Introduced Toronto high school teachers to VROC	2012
VROC, Invited lecture, NorKam secondary, Kamloops, B.C. “Brain travels”: I delivered the first live internet lecture in Kamloops for this group	2011
Jasper Place High School, Invited lecture, Edmonton “What Isn’t Neuroscience: your brain in the 21 st century”	2007
Pfizer Discovery Day in Health Sciences, Invited lecture, Edmonton area high school students “The Illusive Brain”	2007
Archbishop MacDonald High School, Invited lecture, Edmonton “Reinventing the World: Illusions & the Brain”	2005
The Canadian Medical Hall of Fame/Pfizer Discovery Day in Health Sciences, Invited lecture “Illusions & the Brain”	2005
University of Alberta, Open House Forums “The Rewarding Brain: Insights on Human Behaviours”	2005

PANELS & WORKSHOPS

Undergraduate Research Office, Union College How to Get a Student Research Grant Workshop	2017
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New Faculty Orientation, Union College	2017
Invited panelist for 'Advice from junior faculty to new faculty' session organized by Office of Dean of Academic Departments and Programs	
The Next Steps Conference, University of Toronto,	2015
Invited panelist for 'Working in Medical Sciences' session organized by Alumni Relations, the Career Centre, and the Faculty of Arts & Science	
Interfaculty Pain Curriculum facilitator, University of Toronto,	2015
Invited facilitator for interfaculty group sessions on medical pain cases involving students from Medicine, Dentistry, Nursing, Occupational Health, Pharmacy, Physical Therapy	
Department of Cognitive Science, University of Toronto,	2014
Invited panelist (1 of 3) for "B2B: Backpack to Briefcase" showcasing different career paths to and/or from the cognitive sciences	
Dinner@New, New College, University of Toronto	2012
Invited dinner guest of honour, New College neuroscience undergraduate mentorship program	
Royal Ottawa Health Care Group, Do It For Daron: Is it just me? campaign, Expert panelist	2011-12
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	
University of Alberta, Brain Bee, Expert panelist and presenter	2007
"Sleeping & Dreaming" & "Emotions vs. Intelligence"	
WP Wagner Secondary School, Invited chair and expert panelist, Edmonton	2007
"Road into the Brain"	
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	
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	
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	
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.

Canadian Association for Neuroscience, Full Member

Association for neuroscientists in Canada

Organization for Human Brain Mapping, Junior Member

Association for neuroimagers internationally

National Center for Faculty Development & Diversity, Member

Independent national organization dedicated to providing external professional development

AFFILIATIONS (active over last 5 years)

Canadian College of Neuropsychopharmacology, General Member

Association for basic and clinical neuropsychopharmacology researchers in Canada

Science & Technology Awareness Network, Member

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

Society for Neuroscience, Regular Member

Association for neuroscientists internationally

Canadian Pain Society, Member

Association for pain researchers and clinicians in Canada

University of Toronto Centre for the Study of Pain

Interdisciplinary association for pain researchers and clinicians in Toronto

REVIEWER

Grant Reviewer, Nova Scotia Health Authority Research Fund Committee 2017

Grant Reviewer, Netherlands Organisation for Scientific Research (NWO) 2017

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

Ad hoc reviewer for 23 peer-reviewed journals to date:

Biological Psychiatry; BMC Research Notes; BMC Psychiatry; Brain Connectivity; Brain Structure and Function; Canadian Journal of Physiology and Pharmacology; Frontiers in Cellular Neuroscience; Frontiers in Neuroanatomy; 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; Personality Neuroscience; PLoS ONE; Quarterly Journal of Experimental Psychology; Social Cognitive & Affective Neuroscience; The World Journal of Biological Psychiatry

EDITOR

Associate Editor: Frontiers in Neuroanatomy (IF = 3.3) 2016-

Invited by Journal Editor Professor Javier DeFelipe

Guest Associate Editor: <i>Frontiers in Neuroanatomy</i> (IF = 3.3) Special topic title: "Structural magnetic resonance imaging in functional neurosurgery: Using in vivo measures of brain structure to inform clinical care"	2015-17
Guest Associate Editor: <i>Frontiers in Systems Neuroscience</i> (RG IF = 3.8) Special topic title: "Reward- and aversion-related processing in the brain: translational evidence for separate and shared circuits"	2013-14

CERTIFICATES

Biomedical Research Course, CITI Program, through Trinity Health, Albany, NY	2017-20
Clinical Research Coordinator Course, CITI Program, through Trinity Health, Albany, NY	2017-20
Conflicts of Interest Course, CITI Program, through Trinity Health, Albany, NY	2017-21

COMMITTEE MEMBERSHIP

Committee member, Jacob Bronowski Memorial Lecture Series New College, University of Toronto, Toronto, Canada	2016-17
Psychology Department Representative, Student Research Grant Committee Union College, Schenectady, NY, USA	2016-17
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	2011
Alberta Graduate Council, Chair Represented >14,000 students at Alberta universities to provincial government and stakeholders	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 COORDINATOR

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
IMHR, Young Researchers' Annual Conference, Executive Committee An annual conference for Canadian trainees (postdoctoral researchers and graduate and undergraduate students) to communicate their brain-related research findings	2011-12
IMHR, Young Researchers' Forum, Committee member A monthly forum for trainees within the IMHR to share and discuss their research findings	2011