

Paula L. Croxson, Ph.D.

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EMPLOYMENT

July 2018 to present **Senior Manager for Education Programs**
Mortimer B. Zuckerman Mind Brain Behavior Institute, Columbia University, New York, USA

Adjunct Assistant Professor, Neuroscience
Friedman Brain Institute, Icahn School of Medicine at Mount Sinai, New York, USA

July 2013 to July 2018 **Assistant Professor, Neuroscience and Psychiatry**
Friedman Brain Institute, Icahn School of Medicine at Mount Sinai, New York, USA

Jan 2010 – July 2013 **Postdoctoral Research Fellow**
Supervisor: Dr Mark G. Baxter
Fishberg Department of Neuroscience, Icahn School of Medicine at Mount Sinai, New York, USA

July 2008 – Jan 2010 **Postdoctoral Research Scientist**
Supervisor: Dr Mark G. Baxter
Department of Experimental Psychology, University of Oxford, UK

Aug 2001 – Aug 2002 **Research Biologist**
Molecular Biology and Biochemistry Department
Merck Sharp & Dohme, Terlings Park, Harlow, Essex, UK

EDUCATION

2003 – 2008 *Ph.D., Experimental Psychology.*
Title: Prefrontal interactions and decision making
Supervisors: Dr Matthew F. Rushworth and Dr David M. Bannerman
Keble College, University of Oxford

2002 – 2003 *M.Sc., Neuroscience*
Keble College, University of Oxford

1998 – 2001 *M.A., Natural Sciences*
Selwyn College, University of Cambridge

AWARDS AND FELLOWSHIPS

2018	Poynter Fellowship in Journalism at Yale University
2017	Winner, Society for Neuroscience Science Educator Award Nominee, Organization for Human Brain Mapping Council Education Chair-Elect
2016	Finalist, AAAS Early Career Public Engagement in Science Award NARSAD Brain and Behavior Foundation Young Investigator Grant
2011-2013	Charles H. Revson Senior Fellowship in the Life Sciences
2007	Experimental Psychology Society Travel Grant
2006	Guarantors of Brain Travel Award
2005	Organization for Human Brain Mapping Travel Award Guarantors of Brain Travel Award
2002 – 2006	Wellcome Trust 4-Year Prize Studentship

PUBLICATIONS (Total citations 1996, H-index 13)

<https://scholar.google.com/citations?user=z0NUc4UAAAAJ&hl=en>

Research Articles

1. Froudust-Walsh S, Browning PGF, Young JJ, Murphy KL, Mars RB, Fleysher L, **Croxson PL** (2018) Macro-connectomics and microstructure predict dynamic plasticity patterns in the non-human primate brain. *eLife In press*
2. Milham MP, Ai L, Koo B, Xu T, Amiez C, Balezeau F, Baxter MG, Blezer ELA, Brochier T, Chen A, **Croxson PL**, Damatac CG, Dehaene S, Everling S, Fair DA, Fleysher L, Freiwald W, Froudust-Walsh S, Griffiths TD, Guedj C, Hadj-Bouziane F, Ben Hamed S, Harel N, Hiba B, Jarraya B, Jung B, Kastner S, Klink PC, Kwok SC, Laland KN, Leopold DA, Lindenfors P, Mars RB, Menon RS, Messinger A, Meunier M, Mok K, Morrison JH, Nacef J, Nagy J, Rios MO, Petkov CI, Pinsk M, Poirier C, Procyk E, Rajimehr R, Reader SM, Roelfsema PR, Rudko DA, Rushworth MFS, Russ BE, Sallet J, Schmid MC, Schwiedrzik CM, Seidlitz J, Sein J, Shmuel A, Sullivan EL, Ungerleider L, Thiele A, Todorov OS, Tsao D, Wang Z, Wilson CRE, Yacoub E, Ye FQ, Zarco W, Zhou YD, Margulies DS, Schroeder CE (2018) An Open Resource for Non-human Primate Imaging. *Neuron* S0896-6273(18)30768-2 doi: [10.1016/j.neuron.2018.08.039](https://doi.org/10.1016/j.neuron.2018.08.039) *Epub ahead of print*
3. Froudust-Walsh S, Browning PGF, **Croxson PL**, Murphy KL, Shamy JL, Veuthey TL, Wilson CRE, Baxter MG (2018) The Rhesus Monkey Hippocampus Critically Contributes to Scene Memory Retrieval, But Not New Learning. *J Neurosci* 38: 7800-7808 doi: [10.1523/JNEUROSCI.0832-18.2018](https://doi.org/10.1523/JNEUROSCI.0832-18.2018). *Epub 2018 Jul 26*.
4. **Croxson PL**, Forkel SJ, Cerliani L, Thiebaut de Schotten M (2017) Structural variability across the primate brain: A cross-species comparison *Cerebral Cortex* 13: 1-13 doi: [10.1093/cercor/bhx244](https://doi.org/10.1093/cercor/bhx244)
5. Nagy JRJ, Damatac CG, Baxter MG, Rudebeck PH, Croxson PL (2017) Lack of evidence for sex differences in higher cognitive function in macaques. *BioRxiv*. doi: <https://doi.org/10.1101/153593> and under revision

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6. Murphy KL, McGaughy J, **Croxson PL**, Baxter MG (2016) Exposure to sevoflurane anesthesia during development does not impair aspects of attention during adulthood in rats. **Neurotoxicology and Teratology**. Special Issue 60: 87-94
7. Kumar V, **Croxson PL**, Simonyan K (2016) Structural Organization of the Laryngeal Motor Cortical Network and Its Implication for Evolution of Speech Production. **J Neurosci** 36: 4170-4181
8. Halene TB, Kozlenkov A, Jiang Y, Mitchell AC, Javidfar B, Dincer A, Park R, Wiseman J, **Croxson PL**, Giannaris EL, Hof PR, Roussos P, Dracheva S, Hemby SE, Akbarian S (2016) NeuN(+) neuronal nuclei in non-human primate prefrontal cortex and subcortical white matter after clozapine exposure. **Schizophr Res** 170: 235-44
9. Mars RB, Foxley S, Verhagen L, Jbabdi S, Sallet J, Noonan MP, Neubert F-X, Andersson JL, **Croxson PL**, Dunbar RIM, Khrapichev AA, Sibson N, Miller KL, Rushworth MF (2015) The extreme capsule fiber complex in humans and macaque monkeys: A comparative diffusion MRI tractography study. **Brain Struct Funct** 8: 4059-4071
10. **Croxson PL**, Walton ME, Boorman ED, Rushworth MF, Bannerman DM (2014) Unilateral medial frontal cortex lesions cause a cognitive decision-making deficit in rats. **Eur J Neurosci** 40: 3757-3765
11. O'Reilly JX*, **Croxson PL***, Jbabdi S, Sallet J, Noonan MP, Mars RB, Browning PG, Wilson CRE, Mitchell AS, Miller KL, Rushworth MFS, Baxter MG (2013) A causal effect of disconnection lesions on interhemispheric functional connectivity in rhesus monkeys. **PNAS** 110: 13982-13987 **both authors made an equal contribution*
12. **Croxson PL**, Browning PGF, Gaffan D, Baxter MG (2012) Acetylcholine facilitates recovery of episodic memory after brain damage. **J Neurosci** 32: 13787-13795
13. **Croxson PL**, Kyriazis DA, Baxter MG (2011) Cholinergic modulation of a specific memory function of prefrontal cortex. **Nat Neurosci** 14: 1510-1512
14. Sallet J, Mars RB, Noonan MP, Andersson JL, O'Reilly JX, Jbabdi S, **Croxson PL**, Jenkinson M, Miller KL, Rushworth MF (2011) Social network size affects neural circuits in macaques. **Science** 334: 697-700
15. Mars RB, Jbabdi S, Sallet J, O'Reilly JX, **Croxson PL**, Olivier E, Noonan, MP, Bergmann C, Mitchell A, Baxter MG, Behrens TEJ, Johansen-Berg H, Tomassini V, Miller KL, Rushworth MFS (2011) Diffusion-weighted imaging tractography-based parcellation of the human parietal cortex and comparison with human and macaque resting state functional connectivity. **J Neurosci** 31: 4087-4100
16. Browning PGF, Gaffan D, **Croxson PL**, Baxter MG (2010) Severe scene learning impairment, but intact recognition memory, after cholinergic depletion of inferotemporal cortex followed by fornix transection. **Cereb Cortex** 20: 282-293
17. Walton ME, Groves J, Jennings KA, **Croxson PL**, Sharp T, Rushworth MF, Bannerman DM (2009) Comparing the role of the anterior cingulate cortex and 6-hydroxydopamine nucleus accumbens lesions on operant effort-based decision making. **Eur J Neurosci** 29: 1678-169

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18. **Croxson PL***, Walton ME*, O'Reilly JX, Behrens TE, Rushworth MF (2009) Effort-based cost-benefit valuation and the human brain. *J Neurosci* 29: 4531-4541 **both authors made an equal contribution*
19. **Croxson PL**, Johansen-Berg H, Behrens TEJ, Robson MD, Pinski MA, Gross CG, Richter W, Richter MC, Kastner S, Rushworth MF (2005) Quantitative investigation of connections of the prefrontal cortex in the human and macaque using probabilistic diffusion tractography. *J Neurosci* 25: 8854-66
20. Walton ME, **Croxson PL**, Rushworth MF, Bannerman DM (2005) The mesocortical dopamine projection to anterior cingulate cortex plays no role in guiding effort-related decisions. *Behav Neurosci* 119: 323-328

Commentaries, Review Articles and Book Chapters

1. Froudust-Walsh S, López-Barroso D, José Torres-Prioris M, Croxson PL, Berthier ML (2017) Plasticity in the working memory system: Life span changes and response to injury. *The Neuroscientist*: epub ahead of print: doi: 10.1177/1073858417717210
2. Baxter MG, **Croxson PL** (2013) Reversal of fortune: Behavioral control by the orbital prefrontal cortex. *Nat Neurosci* 16: 984-985
3. **Croxson PL**, Baxter MG (2012) Facing the role of the amygdala in emotional information processing. *PNAS* 109:21180-21181
4. Walton ME, **Croxson PL**, Behrens TEJ, Kennerley SW, Rushworth MF (2007) Adaptive decision making and value in the anterior cingulate cortex. *NeuroImage* 36, Suppl 2: T142-T154
5. Rushworth MF, **Croxson PL**, Buckley MJ, Walton ME (2006) Ventrolateral and medial frontal contributions to decision-making and action selection. In *The Neuroscience of Rule-Guided Behavior*, Bunge SA and Wallis JD, Eds. Oxford: Oxford University Press, pp 129-157

PROFESSIONAL ACTIVITIES

Reviewing Editor	Frontiers in Evolutionary Psychology and Neuroscience
<i>Ad hoc</i> reviewer	eLife, Journal of Neuroscience, NeuroImage, Public Library of Science (PLOS) One, Cerebral Cortex, Brain Structure and Function, Neurobiology of Aging, Behavioral Neuroscience, Brain, Human Brain Mapping, Hippocampus, Frontiers in Neuroscience, Neuropsychologia, Organization for Human Brain Mapping Abstracts, BBSRC UK (Research Grant Reviewer)

PROFESSIONAL AFFILIATIONS

Society for Neuroscience
Organization for Human Brain Mapping
International Society for Behavioural Neuroscience (elected member)
Cognitive Neuroscience Society

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New York Academy of Sciences
American Association for the Advancement of Science

INVITED TALKS

January 2018	Columbia University, New York, NY
December 2017	Inserm, Lyon, France
October 2017	Bordeaux University, France
October 2017	University of Madison, WI
April 2017	Boston University, MA
January 2017	Nathan Kline Institute, New York, NY
December 2016	Institut du Cerveau et de la Moelle Epinière, Paris, France
August 2016	5 th Workshop on the Computational Properties of the Prefrontal Cortex, Lyon, France
June 2016	Universiteit Gent, Belgium
February 2016	University of Texas, Dallas, TX
July 2015	Institute of Psychiatry, Kings College London, U.K.
July 2015	Department of Neuroscience, University of Cambridge, U.K.
Mar 2015	CUNY Graduate School of Journalism, New York
Oct 2013	Laboratorium Neuro- en Psychofysiologie, KU Leuven, Belgium
June 2013	Laboratory of Neuropsychology, National Institute of Mental Health, Washington DC
May 2013	Brain and Mind Institute, University of Western Ontario, Canada
Feb 2013	Department of Psychology, Columbia University, NY
Jan 2013	Department of Brain and Cognitive Sciences, Rochester University, NY
Dec 2012	Friedman Brain Institute, Icahn School of Medicine at Mount Sinai

TEACHING

Paula L Croxson, Ph.D.

- 2010 – present ***Icahn School of Medicine at Mount Sinai***
Lecturer to 1st year MS, MD, and PhD students, and Psychiatry Residents
- 2005 – 2010 ***University of Oxford***
Tutor for Experimental Psychology students (preliminary and final honours)
Tutor for Sarah Lawrence, IFSA-Butler and UGA visiting student programs
Demonstrator for final honors school neuroanatomy practicals

STUDENTS MENTORED IN LABORATORY RESEARCH

- 2017 – 2018 Caitlin Sarubbi, M.Sc. student, Icahn School of Medicine at Mount Sinai
- Spring 2016 Nick Upright, Ph.D. rotation student
- Summer 2016 Jack Olmstead, Summer Undergraduate Research Program student, Baylor University
- Fall 2016 Ciorana Roman Ortiz, Ph.D. rotation student
- 2015 – present Sumaiya Islam, High School Volunteer, Queens High School for the Sciences
- 2015 – 2017 Joseph Simon IV, PREP student, Icahn School of Medicine at Mount Sinai
- 2014 – 2016 Christienne Damatac, M.Sc. student, Icahn School of Medicine at Mount Sinai

STUDENTS CO-MENTORED IN LABORATORY RESEARCH

- 2012 Ashley Russo, M.Sc. student, Icahn School of Medicine at Mount Sinai
Zachary Lorsch, M.D./Ph.D. student, Icahn School of Medicine at Mount Sinai
- 2011 Deborah Paradise, Summer Undergraduate Research Program, Icahn School of Medicine at Mount Sinai
- 2008 Charlotte Rae, M.Sc. in Neuroscience, University of Oxford, UK
- 2008 Matthew Evans, M.Sc. in Neuroscience, University of Oxford, UK
- 2005 Erie Boorman, M.Sc. in Neuroscience, University of Oxford, UK

SERVICE

- 2017 Member, Publishing Taskforce, Organization for Human Brain Mapping
- 2016 Host, Society for Neuroscience Professional Development Podcast series, “The Perils of Publishing”
<http://neuroline.sfn.org/Articles/Professional-Development/2016/Podcast-Series-The-Perils-of-Publishing>
Co-organizer, Cognitive Neuroscience Social, Society for Neuroscience Annual Meeting
- 2013-2015 Member, Steering Committee,

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2012-2013 Icahn School of Medicine at Mount Sinai Brain Imaging Center
Co-Chair, Mount Sinai Postdoctoral Committee
Member, Postdoctoral Advisory Committee

2011 - 2012 Founder, Mount Sinai Postdoctoral Writing Group
Member, Mount Sinai Postdoctoral Committee

RESEARCH FUNDING

Completed

MF18-1T1P-01 Mindlin Foundation Microgrant

Zoo Brains! A roving, interactive exhibit for the public

Role: PI

Dates: 1/1/2018-12/31/2018

Science outreach grant to fund an interactive exhibit about animal brains for the public, based at Zoo New England.

1 R21 NS096936-01 NINDS

Chemogenetic modulation of the primate basal forebrain

Dates: 4/1/2017-3/31/2019

Role: Co-PI

The goal of this project is to specifically target the projections from the basal forebrain to the dorsolateral prefrontal cortex using a combination of chemogenetic techniques. We will use this combination of techniques to stimulate the function of cholinergic projections to the basal forebrain in working memory, thereby improving working memory function.

Brain and Behavior Research Foundation NARSAD Young Investigator Grant

Longitudinal assessment of the cognitive and molecular risk factors underlying psychosis

Dates: 1/15/2017-1/14/2019

Role: PI

The goal of this project is to develop a developmental model of psychosis in non-human primates and combine cognitive, magnetic resonance imaging and epigenetic assessment in a longitudinal manner to investigate the mechanistic changes that occur.

Departmental Start-Up Grant, Icahn School of Medicine at Mount Sinai

Cognitive neuroimaging of memory systems

Dates: 7/01/2013-6/31/2018

Role: PI

The goal of this program is to develop methods for the acquisition of MRI data in non-human primates in order to study the cognitive processes underlying memory and their anatomical correlates. The work includes the establishment of high-resolution imaging techniques (functional, diffusion and structural) in anesthetized macaque monkeys and an awake functional imaging program in macaque monkeys.

Richard and Susan Friedman Research Scholar Award, Icahn School of Medicine at Mount Sinai

Exploring the functional and metabolic imaging features of neuroplasticity in brainstem and spinal cord

Dates: 1/1/2016-12/31/2016

Role: Co-PI

The goal of this program is to develop ultra-high field strength functional MRI techniques for measuring acute metabolic changes in GABA+ and glutamate in the primate brainstem and spinal

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cord as markers of neuroplasticity and combining this with functional MRI to facilitate the investigation of spinal cord neuroplasticity

Brain Imaging Center Pilot Grant, Icahn School of Medicine at Mount Sinai

Virtual tract tracing in the non-human primate brain using high field-strength MRI

Dates: 7/01/2014-6/31/2015

Role: Co-PI. The goal of this program was to establish 7T diffusion imaging in non-human primates at high spatial and angular resolution for tracking changes in white matter structure over time

068992/Z/02/A Wellcome Trust (London, U.K.)

Neuropharmacology of decision making in the rodent and human cingulate cortex

Dates: 1/10/2003-1/09/2006

SCIENCE COMMUNICATION AND OUTREACH

A full list of my activities is on my personal website: <https://paulacroxson.com/blog-2/>

July 2017 – present

- Producer, The Story Collider, a live storytelling show and podcast that features true, personal stories about science: <https://www.storycollider.org/about-us/>

2014 to present

- Committee member: Greater New York Chapter of the Society for Neuroscience, BrainNY (organizer of New York-wide Brain Awareness Week activities) <https://comebebrainy.com/>
- Co-curator of Story Collider Brain Awareness Week show
- Local organizer: Neuwrite (a collaborative working group for scientists, writers, and those in between working to develop novel approaches for communicating science to the public) <http://www.neuwrite.org/>
- Invited lecturer, CUNY Graduate School of Journalism: “Neuroscience 101 and the pitfalls of neuroscience journalism.”
- World Science Festival street fair exhibit co-organizer: <http://www.worldsciencefestival.com/>
- Psychology today blog (2012-2013) <https://www.psychologytoday.com/blog/selective-memory>

SELECTED CONFERENCE ABSTRACTS

Croxson PL, Schiller D (co-chairs) (2017) **Society for Neuroscience** Washington, DC
Minisymposium: The Science of Storytelling and Storytelling in Science

Upright N, Damatac CG, Hof PR, Rudebeck PH, **Croxson PL**, Baxter MG (2017) **Society for Neuroscience** Washington, DC
Stereological analysis of DREADD transduction in prefrontal cortex of rhesus monkeys

Froudust-Walsh S, Browning PGF, Young JJ, Murphy KL, Mars RB, Fleysher L, **Croxson PL** (2017) **Society for Neuroscience** Washington, DC
Dynamic plasticity of the functional connectome is predicted by pre-lesion connectivity in the non-human primate brain

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Simon IV J, Damatac CG, Olmstead J, Nagy J, Froudish-Walsh S, Dickstein DL, Varghese, M, Janssen, WG, Fleysher L, O'Halloran RL, **Croxson PL** (2017) **Society for Neuroscience** Washington, DC
Structural changes in the primate brain following cognitive training

Croxson PL Forkel SJ, Cerliani L, Thiebaut de Schotten M (2017) **International Society for Behavioural Neuroscience** Las Vegas, USA
Structural variability across the primate brain and its relationship to evolution

Simon IV J, Damatac CG, Seán Froudish-Walsh, Jamie Nagy JRJ, Fleysher L, O'Halloran RL, **Croxson PL** (2016) **NeuroImage** Geneva, Switzerland
Structural changes resulting from specific cognitive training in monkeys

Croxson PL, Young JJ, Murphy KL, Mars RB, Fleysher L, Browning PGF (2016) **NeuroImage** Geneva, Switzerland
Multimodal imaging of alterations in structure and function following hippocampal lesions in monkeys

Nagy JRJ, Damatac CG, Baxter MG, Rudebeck PH, **Croxson PL** (2015) **Society For Neuroscience** Chicago, USA
Does sex matter? An analysis of sex differences in higher cognitive function

Damatac C, Nagy J, Fleysher L, O'Halloran R, **Croxson PL** (2015) **Society For Neuroscience** Chicago, USA
Structural and functional network changes associated with cognitive training in memory

Remole K, McKellar H, Bowling, H, Cain C, **Croxson PL**, Friedman L, Garbarino J, Hill A, Kalmbach A, Melendez C, Yu H (2013) Theme H Poster in **Society for Neuroscience** San Diego, CA, USA
Coordinated, multi-institutional Brain Awareness Week activities in New York City

Croxson PL, Simonyan K (2013) in **NeuroImage** Seattle, WA, USA
A comparison of the connections of laryngeal motor cortex in humans and macaque monkeys using diffusion weighted imaging

Croxson PL, O'Reilly JX, Mars, RB, Sallet J, Noonan MP, Browning, PGF, Miller KL, Rushworth MF, Baxter MG (2012) Abstract 698.05 **Society for Neuroscience** New Orleans, LA, USA
Brain-wide alterations in white matter and resting-state network activity following fornix transection in macaque monkeys

Croxson PL, O'Reilly JX, Sallet J, Noonan MP, Mars, RB, Browning, PGF, Miller KL, Rushworth MF, Baxter MG (2012) **International Society for Behavioural Neuroscience** Half Moon Bay, CA, USA
In vivo MRI of monkeys with subcortical lesions: the relationship between structure and function

Croxson PL, O'Reilly JX, Sallet J, Noonan MP, Mars, RB, Browning, PGF, Miller KL, Rushworth MF, Baxter MG (2011) Abstract 405.17 in **Society for Neuroscience** Washington, DC, USA
Alterations in resting-state network activity following commissurotomy in macaque monkeys

Croxson PL, Kyriazis DA, Baxter MG (2010) **Motivational and Cognitive Control Symposium** Oxford, UK
Cholinergic depletion of prefrontal cortex impairs delayed response learning but not episodic memory, strategy implementation or decision making

Croxson PL, Baxter MG (2009) Abstract 98.4 in: **Society for Neuroscience** Chicago, IL, USA

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Multiple neuromodulator depletion interacts with fornix transection to impair episodic memory in monkeys

Croxson PL, Baxter MG (2009) *International Society for Behavioural Neuroscience* Hilton Head Island, SC, USA

The effect of multiple neuromodulator depletion on episodic memory in monkeys

Croxson PL, Kyriazis DA, Baxter MG (2008) *International Society for Behavioural Neuroscience* Sydney, Australia

Cholinergic depletion of prefrontal cortex impairs delayed response learning but not episodic memory, strategy implementation or decision making

Croxson PL, Browning PGF, Gaffan D, Baxter MG (2007) Abstract 292.7 in: *Society for Neuroscience* Washington, DC, USA

Cholinergic depletion of the inferior temporal cortex interferes with recovery from episodic memory deficits

Croxson PL, Walton ME, O'Reilly JX, Rushworth MF (2007) Abstract 13 in: *NeuroImage* Chicago, IL, USA

The basis of effort and delay anticipation in the human brain

Croxson PL, Johansen-Berg H, Behrens TEJ, Robson MD, Pinsk MA, Gross CG, Richter W, Richter MC, Kastner S, Rushworth MF (2005) Abstract 71 in: *NeuroImage* Toronto, Canada

Quantitative investigation of connections of the prefrontal cortex in the human and macaque using probabilistic diffusion tractography

Croxson PL, Johansen-Berg H, Behrens TEJ, Robson MD, Pinsk MA, Gross CG, Richter W, Richter MC, Kastner S, Rushworth MF (2004) Abstract 87.11 in: *Society for Neuroscience* San Diego, CA, USA

Comparison of subcortical connections with the prefrontal cortex in the human and macaque using diffusion tractography