

BADER CHAARANI, Ph. D

CURRICULUM VITAE

PERSONAL DATA

Office: University of Vermont, Department of Psychiatry, 1 S. Prospect St, Burlington, VT, 05401
Date of birth: 10/05/1987 Email: melmarsr@uvm.edu Mobile: + 1 802 363 1230

EDUCATION

- | | |
|-----------|--|
| 2011-2014 | Doctor of Philosophy in biomedical sciences with an honorary distinction.
Dissertation: "Study of cerebrospinal fluid and choroid plexus in neurodegenerative diseases with MRI and dynamic PET"
University of Picardie Jules Verne - Amiens, France |
| 2008-2010 | Master of Science in Bio-Informatics – Ranked 2 nd among 19 students
Master's thesis: "Early diagnosis of Alzheimer's Disease with Diffusion Tensor Imaging"
University of Bordeaux - Bordeaux, France |
| 2005-2008 | Bachelor of Arts in Life Science – GPA: 3.6/4.0
Lebanese university - Fanar, Lebanon |
| 2005 | Baccalaureate in Life Science – GPA: 3.9/4.0
National Orthodox College - Lebanon |

RESEARCH EXPERIENCE

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|---------------------------|---|
| September
2014-Present | Postdoctoral fellow (Supervisor: Prof. Hugh Garavan)
University of Vermont – Vermont Center on Behavior and Health - Burlington VT, USA <ul style="list-style-type: none">• Setup of structural and functional imaging protocols, MR acquisition and analysis of neuroimaging data within the TCORS project studying the neural correlates of very low nicotine cigarettes in vulnerable populations• Quality control, processing and Analysis of structural and functional neuroimaging and genetic data in psychological disorders and substance use from the IMAGEN database |
| 2013 - 2014 | Graduate Research Assistant (Supervisor: Dr. Olivier Baledent)
University hospital and faculty of medicine Of Amiens - Amiens, France. <ul style="list-style-type: none">• Alterations of cerebral blood perfusion and cerebrospinal fluid flow in neurodegenerative diseases• Quality control, processing and analysis of Phase-Contrast MRI data |
| March -
August 2010 | Undergraduate Internship (Supervisor: Dr. Bassem Hiba)
Magnetic Resonance and Biological Systems laboratory - Bordeaux, France <ul style="list-style-type: none">• Study of brain matter lesions in Alzheimer's disease with Diffusion Tensor MRI• Acquisition, quality control and analysis of Diffusion Tensor MRI data |
| March - May
2009 | Undergraduate Internship (Supervisor: Prof. Marie Beurton Aimar)
LABRI - University of Bordeaux - Bordeaux, France <ul style="list-style-type: none">• Segmentation and 3D reconstruction of mitochondrial networks using Python |

PUBLICATIONS

Matthew D. Albaugh, Catherine Orr, **Bader Chaarani**, Robert R. Althoff, Nicholas Allgaier, Nicholas D' Alberto, Kelsey Hudson, et al. "Inattention and Reaction Time Variability Are Linked to Ventromedial Prefrontal Volume in Adolescents." *Biological Psychiatry* 0, no. 0 (January 14, 2017).

Joël Daouk, Roger Bouzerar, **Bader Chaarani**, Jadwiga Zmudka, Marc-Etienne Meyer, and Olivier Balédent. "Use of Dynamic (18)F-Fluorodeoxyglucose Positron Emission Tomography to Investigate Choroid Plexus Function in Alzheimer's Disease." *Experimental Gerontology* 77 (May 2016): 62–68.

Scott Mackey, **Bader Chaarani**, Kees-Jan Kan, Philip A. Spechler, Catherine Orr, Tobias Banaschewski, Gareth Barker, et al. “Brain Regions Related to Impulsivity Mediate the Effects of Early Adversity on Antisocial Behavior.” *Biological Psychiatry*, January 18, 2016.

Philip A. Spechler, Catherine A. Orr, **Bader Chaarani**, Kees-Jan Kan, Scott Mackey, Aaron Morton, Mitchell P. Snowe, et al. “Cannabis Use in Early Adolescence: Evidence of Amygdala Hypersensitivity to Signals of Threat.” *Developmental Cognitive Neuroscience* 16 (December 2015): 63–70.

Marie-Christine Beauvieux, Claire Chambre, Alan Stephant, Henri Gin, Anne-Karine Bouziers-Sore, **Bader Chaarani**, Gérard Raffard, et al. “High-Fructose Diet Enhances Cerebral Neurodegenerative Process; Preventive Effect of Resveratrol. A Nuclear Magnetic Resonance Imaging and Spectroscopy Study on Rat Nutritional Models.” *Nutrition and Aging* 2, no. 1 (January 1, 2014): 15–34.

Roger Bouzerar, **Bader Chaarani**, Catherine Gondry-Jouet, Jadwiga Zmudka, and Olivier Balédent. “Measurement of Choroid Plexus Perfusion Using Dynamic Susceptibility MR Imaging: Capillary Permeability and Age-Related Changes.” *Neuroradiology* 55, no. 12 (December 2013): 1447–54.

Joël Daouk, **Bader Chaarani**, Jadwiga Zmudka, Cyrille Capel, Anthony Fichten, Roger Bouzerar, Catherine Gondry-Jouet, Pierre Jouanny, and Olivier Balédent. “Relationship between Cerebrospinal Fluid Flow, Ventricles Morphology, and DTI Properties in Internal Capsules: Differences between Alzheimer’s Disease and Normal-Pressure Hydrocephalus.” *Acta Radiologica*, October 17, 2013.

Bader Chaarani, Cyrille Capel, Jadwiga Zmudka, Joel Daouk, Anthony Fichten, Catherine Gondry-Jouet, Roger Bouzerar and Olivier Balédent. “Estimation of the Lateral Ventricles Volumes from a 2D Image and Its Relationship with Cerebrospinal Fluid Flow.” *BioMed Research International* 2013 (September 16, 2013).

MANUSCRIPTS UNDER REVIEW

Bader Chaarani, Kees-Jan Kan, Scott Mackey, Phil A. Spechler, Alexandra Potter, Catherine Orr, Kelsey E. Hudson, Tobias Banaschewski, Gareth Barker, Arun L.W. Bokde, Uli Bromberg, Christian Büchel, Anna Cattrell, Patricia J. Conrod, Sylvane Desrivières, Herta Flor, Vincent Frouin, Jürgen Gallinat, Penny Gowland, Andreas Heinz, Bernd Ittermann, Jean-Luc Martinot, Eric Artiges, Herve Lemaitre, Frauke Nees, Dimitri Papadopoulos-Orfanos, Tomáš Paus, Luise Poustka, Michael N. Smolka, Nora C. Vetter, Henrik Walter, Robert Whelan, Argyris Stringaris, Stephen T. Higgins, Gunter Schumann, Hugh Garavan, Robert R. Althoff and the IMAGEN Consortium. “Neural and genetic correlates of adolescent irritability and its comorbidity with psychiatric disorders.” *Science*, 2017.

Bader Chaarani, Scott Mackey, Kees-Jan Kan, Philip Spechler, Alexandra Potter, Catherine Orr, Kelsey Hudson, Tobias Banaschewski, Arun Bokde, Uli Bromberg, Christian Buechel, Anna Cattrell, Patricia Conrod, Sylvane Desrivières, Bernd Ittermann, Herta Flor, Vincent Frouin, Juergen Gallinat, Penny Gowland, Andreas Heinz, Jean-Luc Martinot, Frauke Nees, Dimitri Papadopoulos Orfanos, Tomas Paus, Luise Poustka, Michael Smolka, Henrik Walter, Robert Whelan, Stephen T. Higgins, Gunter Schumann, Robert Althoff, Elliot Stein, Hugh Garavan and the IMAGEN Consortium. “CHRNA5 polymorphism and dose response associations between adolescent smoking and ventromedial prefrontal cortex.” *Nature*, 2017.

Philip A. Spechler, Nicholas Allgaier, **Bader Chaarani**, Robert Whelan, Lee Jollans, Richard Watts, Catherine Orr, Matthew D. Albaugh, Nicholas D’Alberto, Stephen T. Higgins, Kelsey E. Hudson, Scott Mackey, Alexandra Potter, Tobias Banaschewski, Arun L.W. Bokde, Uli Bromberg, Christian Büchel, Anna Cattrell, Patricia J. Conrod, Sylvane Desrivières, Herta Flor, Vincent Frouin, Jürgen Gallinat, Penny Gowland, Andreas Heinz, Bernd Ittermann, Jean-Luc Martinot, Marie-Laure Paillère Martinot, Frauke Nees, Dimitri Papadopoulos Orfanos, Tomáš Paus, Michael N. Smolka, Henrik Walter, Gunter Schumann, Robert R. Althoff, Hugh Garavan and the IMAGEN Consortium. “Predicting Cannabis Use in Adolescent Males and Females from High-dimensional Biobehavioral Data.” *JAMA Psychiatry*, 2017.

MANUSCRIPTS IN PREPARATION

Bader Chaarani, Philip A. Spechler, Alexandra Ivanciu, John Hughes, Stephen T. Higgins and Hugh Garavan. “Multimodal neuroimaging differences in abstinent vs. satiated smokers.”

Bader Chaarani, Scott Mackey, Catherine Orr, Philip Spechler, Kelsey Hudson, Stephen T. Higgins, Robert Whelan, Lee Jollans, Alexandra Potter, Robert R. Althoff, Hugh Garavan and the IMAGEN Consortium “Should left-handers be excluded from functional neuroimaging studies?”

Nicholas D’Alberto*, **Bader Chaarani***, Scott Mackey, Catherine Orr, Phil Spechler, Alexandra Potter, Robert R. Althoff, Hugh Garavan and the IMAGEN Consortium. “Does the adaptive algorithm in the stop signal task introduce a confound in neuroimaging studies?” (*): *contributed equally to the work*.

BOOK CHAPTERS

Bader Chaarani, Philip A. Spechler, Kelsey E. Hudson, John Foxe, Alexandra Potter, and Hugh Garavan. “The Neural Basis of Response Inhibition and Substance Abuse.” *Wiley Handbook of Cognitive Control* (2016).

Scott Mackey, Kees-Jan Kan, **Bader Chaarani**, Nelly Alia-Klein, Albert Batalla, Samantha Brooks, Janna Cousijn, et al. “Genetic Imaging Consortium for Addiction Medicine: From Neuroimaging to Genes.” *Progress in Brain Research* 224 (2016): 203–23.

Philip A. Spechler, **Bader Chaarani**, Kelsey E. Hudson, Alexandra Potter, John J. Foxe, and Hugh Garavan. “Response Inhibition and Addiction Medicine: From Use to Abstinence.” *Progress in Brain Research* 223 (2016): 143–64.

ORAL PRESENTATIONS

Bader Chaarani, Scott Mackey, Kees-Jan Kan, Phil Spechler, Alexandra Potter, Stephen T. Higgins, Robert R. Althoff, Elliot Stein, Hugh Garavan and the IMAGEN Consortium. “Smoking effects on the adolescent brain.” *Society for Research on Nicotine and Tobacco conference 2016* - Chicago, IL.

Bader Chaarani, Jadwiga Zmudka, Veronique Quaglino, Roger Bouzerar and Olivier Balédent. “The relationship between CSF oscillation, cerebral vascular pulsation and brain morphology.” *Hydrocephalus conference 2014* - Bristol, UK.

Bader Chaarani, Jadwiga Zmudka, Cyrille Capel, Catherine Gondry-Jouet, Pierre Jouanny, Anthony Fichten, Roger Bouzerar and Olivier Balédent. “The relationship between ventricular volume and cerebrospinal fluid dynamics.” *Journées Francophones de Radiologie 2013* - Paris, France.

Bader Chaarani, Cyrille Capel, Jadwiga Zmudka, Catherine Gondry-Jouet, Anthony Fichten, Roger Bouzerar, Olivier Balédent. “CSF and brain tissue repartition in aging brain disorders.” *Hydrocephalus conference 2012* - Kyoto, Japan.

Bader Chaarani, Jadwiga Zmudka, Cyrille Capel, Catherine Gondry-Jouet, Cedric Brochart, Anthony Fichten, Roger Bouzerar, Olivier Balédent. “Repartition index of white matter and cerebrospinal fluid in neurodegenerative diseases.” *Journées Francophones de Radiologie 2012* - Paris, France.

Roger Bouzerar, **Bader Chaarani**, Olivier Pottie, Catherine Gondry-Jouet, Jadwiga Zmudka, Jean-Michel Serot, Olivier Balédent. “Choroid plexus functioning with perfusion MRI: is it possible?” *Journées Francophones de Radiologie 2011* - Paris, France.

POSTER PRESENTATIONS (Selection)

Bader Chaarani, Phil Spechler, Scott Mackey, Stephen T. Higgins, Robert R. Althoff, Elliot Stein, Hugh Garavan and the IMAGEN Consortium. “Neural correlates of genetic variant RS16969968 of the nicotinic receptor subunit alpha5.” *Society for Research on Nicotine and Tobacco conference 2017*- Florence, Italy.

Bader Chaarani, Scott Mackey, Catherine Orr, Philip Spechler, Kelsey Hudson, Stephen T. Higgins, Robert Whelan, Lee Jollans, Alexandra Potter, Robert R. Althoff, Hugh Garavan and the IMAGEN Consortium “Should left-handers be excluded from functional neuroimaging studies?” *Human Brain Mapping 2016* - Geneva, Switzerland.

Nicholas D’Alberto*, **Bader Chaarani***, Scott Mackey, Catherine Orr, Phil Spechler, Alexandra Potter, Robert R. Althoff, Hugh Garavan and the IMAGEN Consortium. “Does the adaptive algorithm in the stop signal task introduce a confound in neuroimaging studies?” *Human Brain Mapping 2016*- Geneva, Switzerland. (*): *contributed equally to the work.*

Bader Chaarani, Scott Mackey, Kees-Jan Kan, Catherine Orr, Phil Spechler, Alexandra Potter, Stephen Higgins, Elliot Stein, Robert R. Althof, Hugh Garavan and the IMAGEN Consortium “Smoking and the rs16969968 SNP effects on adolescent grey matter.” *Human Brain Mapping 2015* - Honolulu, HI.

Bader Chaarani, Scott Mackey, Kees-Jan Kan, Catherine Orr, Phil Spechler, Alexandra Potter, Stephen Higgins, Elliot Stein, Robert R. Althof, Hugh Garavan and the IMAGEN Consortium “Smoking and the rs16969968 SNP effects on adolescent grey matter.” *TCORS conference 2015* - Bethesda, MD.

Bader Chaarani, Kees-Jan Kan, Scott Mackey, Phil Spechler, Alexandra Potter, Catherine Orr, Stephen T. Higgins, Argyris Stringaris, Hugh Garavan, Robert R. Althoff and the IMAGEN Consortium. “Neural and genetic correlates of adolescent irritability and its comorbidity with psychiatric disorders.” *Human Brain Mapping 2015* - Honolulu, HI.

Bader Chaarani, Joel Daouk, Roger Bouzerar, Marc-Etienne Meyer and Olivier Baledent. “Intra-ventricular structures segmentation with ¹⁸F-FDG dynamic PET images.” *Brain PET 2013* - Shanghai, China.

Bader Chaarani, Joel Daouk, Roger Bouzerar, Marc-Etienne Meyer and Olivier Baledent. “Is ¹⁸F-FDG dynamic PET able to point out potential choroid plexus alteration in Alzheimer’s disease?” *Brain PET 2013* - Shanghai, China.

Bader Chaarani, Joel Daouk, Roger Bouzerar, Marc-Etienne Meyer and Olivier Baledent. “Kinetic analysis of ¹⁸F-FDG exchanges across the blood-CSF barrier.” *Brain PET 2013* - Shanghai, China.

Bader Chaarani, Joel Daouk, Roger Bouzerar, Marc-Etienne Meyer and Olivier Baledent. “Minimum cerebral blood transit time measurement with dynamic ¹⁸F-FDG PET: a novel approach for Alzheimer Disease.” *Brain PET 2013* - Shanghai, China.

Malek I Makki, Cyrille Cappel, **Bader Chaarani**, Catherine Gondry-Jouet, and Olivier Baledent. “Cine 2D Phase-Contrast MRI Free of Blood Flow Artifacts to Study Cervical Cerebrospinal Fluid Flow.” *ISMRM 2013* - Salt Lake City, UT.

Bader Chaarani, Jadwiga Zmudka, Joel Daouk, Catherine Gondry-Jouet, Roger Bouzerar, Olivier Balédent. “CSF and brain atrophy investigation in neurodegenerative diseases.” *ISMRM 2012* - Melbourne, Australia

Bader Chaarani, Cyrille Capel, Jadwiga Zmudka, Catherine Gondry-Jouet, Anthony Fichten, Roger Bouzerar, Olivier Balédent. “CSF and brain tissue repartition in aging brain disorders.” *Hydrocephalus conference 2012* - Kyoto, Japan.

Jadwiga Zmudka, **Bader Chaarani**, Roger Bouzerar, Olivier Pottié, ... and Olivier Balédent. "The role of PC-MRI in the differential diagnosis between Alzheimer's disease and NPH." *American Geriatrics Society 2012*- Seattle, WA.

Bader Chaarani, Jadwiga Zmudka, Catherine Gondry-Jouet, Anthony Fichten, Marek Czosnyka, Olivier Balédent. "Are CSF amplitude flow oscillations related to CSF ventricular volume?" *Hydrocephalus 2011*- Copenhagen, Denmark.

Bader Chaarani, Jadwiga Zmudka, Roger Bouzerar, Catherine Gondry-Jouet, Anthony Fichten, Pierre Jouanny and Olivier Balédent. "CSF ventricular volume and flow investigation in neurodegenerative diseases." *European Society for Magnetic Resonance in Medicine and Biology 2011* - Leipzig, Germany.

EDITORIAL ACTIVITY

Reviewer, Manuscript for *European Journal of Radiology*, 2016.

Reviewer, Manuscript for *Neuroimage*, 2015.

Reviewer, Symposia submissions to *European Society for Magnetic Resonance in Medicine and Biology*, 2012-2014.

COURSES ATTENDED

"Exploring the Human Connectome" given by the Human Connectome Project at the Harvard Medical School, Boston, MA. August 28-September 1 2016.

- Acquisition, quality control and processing of high-resolution structural and functional MRI data
- Advanced techniques for brain parcellation and fMRI analyses

TEACHING EXPERIENCE

2012-2013 Instructor, Image processing and computer science - University hospital and faculty of medicine of Amiens, France.

- Developed course syllabus, lecture materials, assignments and exams for 30 medical students

2011-2012 Teaching assistant, Neuroimaging - University hospital and faculty of medicine of Amiens, France.

- Developed course syllabus, lecture materials, assignments and exams for 20 radiologists

MENTORSHIP AND TRAINING

Philip A. Spechler, Pre-doctoral Student (Experimental Psychology), University of Vermont

Kelsey E. Hudson, Pre-doctoral Student (Clinical Psychology), University of Vermont

Nicholas D'Alberto, Pre-doctoral Student (Clinical Psychology), University of Vermont

Simon Garnotel, Pre-doctoral Student (Mathematics), University hospital of Amiens, France

Gwenael Page, Pre-doctoral Student (Biomedical Sciences), University hospital of Amiens, France

Gautier Levert, Engineering Student (Software Development), University hospital of Amiens, France

Fabrice Plouzennec, Information Technology, University hospital of Amiens, France

SKILLS

– Medical imaging: pre- and post-processing of morphological and functional MRI and PET data using FSL, SPM, MIPAV, ImageJ, GE ADW workstation, PARAVISION and MRICRON.

– Biology and neuroscience: cerebrospinal liquid, choroid plexus, brain metabolism, dementia and psychiatric disorders.

– Statistical analysis of quantitative and genetic data using R, Matlab, SPSS and Plink.

– Bio-informatics:

– Programming languages: Python, Matlab, C, Interactive data language, Java, Perl, XML/HTML, SQL, Visual Basic, Shell and LaTeX.

– Use of bioinformatics and genetic analysis tools (Mach, Haploview, Plink, Blast, Clustalw, Mega4, Mobylye, Expasy tools, Dotlet).

– Languages: English (very well written, read and spoken) – French and Arabic (maternal languages).