

Samar Khoury, Ph.D.

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EDUCATION

McGill University	Post doctoral fellow	2014-2016
Université de Montréal	Ph.D. Neurosciences	2008-2013
Université de Montréal	MSc. Neurosciences	2005-2007
Concordia University	BSc. Cell and Molecular biology	2001-2004

PROFESSIONAL EXPERIENCE

Biostatistics and data management	Aventis Pharma	04/2002-06/2006
Consultation in statistics	PROOVE biosciences	03/2015-06/2015

HONORS and DISTINCTIONS

- 2014/10 - Travel award for IASP - International Association for the Study of Pain
- 2012/10 - Best oral presentation – Scientific meeting, faculty of dentistry, Université de Montréal
- 2010/08 - Special oral presentation award – Pain Symposium ACFAS
- 2010/08 - Travel allocation for IASP - Quebec Pain Research Network
- 2008/08 - Student travel grant award - CIHR Placebo Net
- 2008/07 - International Hatton Award - Senior clinical 2nd place - International Association for Dental Research
- 2007/12 - Student research award - Senior clinical research first place - CIHR/IMHA

FUNDING

- 2009-2012 – Doctoral Research Award – Frederick Banting and Charles Best Canada - Graduate Scholarships - CIHR
- 2006-2009 – Study Scholarship – Traumatology fund - Montreal Sacré-Coeur Hospital

MEMBRE OF SOCIETIES

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| 2009-2013 | Board member | Canadian Sleep Society |
| 2009-2012 | Board member | Quebec Network of Junior Pain Investigators |

AREAS OF RESEARCH

Genetics, traumatic brain injury, sleep, pain, temporomandibular joint disorder

ONGOING RESEARCH

1. Genetic association of temporomandibular disorder with somatic awareness phenotypes; from human to *drosophila* and back again
2. Identification of genetic markers associated with poor sleep in chronic pain patients with TMD: results from a genome-wide association study
3. The role of Neanderthal gene insertions in modern human in racial differences in pain sensitivities in the OPPERA cohort
4. The role of BDNF splice variants and their regulation by anti-sense in chronification of pain

INTERNATIONAL COLLABORATIONS

Dr Samuel McLean, University of North Carolina, Chapel Hill, NC, USA
Expertise in trauma, motor vehicle crash

Drs Takafumi Kato, Osaka University, Department of Oral Anatomy and Neurobiology, Japan
Expertise in sleep bruxism, sleep apnea, mastication

Dr Greg Neely, Garvan Institute of Medical Research, Sydney, Australia
Expertise in *drosophila melanogaster* genetics

TRAINEES

2015/09 Julia Segal Bachelors Honor's – Neurosciences McGill University

The role of BDNF splice variants and their regulation by anti-sense in chronification of pain

PUBLICATIONS

Published articles

1. Lavigne GJ, Morisson F, **Khoury S**, Mayer P. Sleep-related pain complaints: morning headaches and tooth grinding. *INSOM*, 2006; 7:4-11.
2. Lavigne GJ, **Khoury S**, Abe S, Yamaguchi T, Raphael K. Bruxism physiology and pathology: an overview for clinicians. *J Oral Rehabil*. 2008 Jul; 35(7):476-494.
3. **Khoury S**, Rouleau GA, Rompré PH, Mayer P, Montplaisir JY, Lavigne GJ. A significant increase in breathing amplitude precedes sleep bruxism. *Chest* 2008 Aug; 134(2):332-337.
4. Lavigne G, Blanchet P, **Khoury S**, Carra MC, Rouleau G, Denis R. Céphalées et sommeil : un survol diagnostique et un guide pour le clinicien. *Douleur analg*. 2010 Sep; 23(3):175-180.
5. **Khoury S**, Lavigne G. La douleur après un traumatisme crânien léger. *Douleur analg*. 2011; 24 (Suppl 2):30-42.
6. **Khoury S**, Gosselin N, Chouchou F, Giguère JF, Lavigne GJ. Perturbation du sommeil par la douleur chez les traumatisés crâniens légers. *Med Sc. Am*. 2013 Feb; 2(1):39-50.
7. **Khoury S**, Chouchou F, Amzica F, Giguère JF, Denis R, Rouleau GA, Lavigne GJ. Rapid EEG activity during sleep dominates in mild traumatic brain injury patients with acute pain. *J Neurotrauma* 2013 Apr; 30(8):633-641.
8. Chouchou F, **Khoury S**, Chauny JM, Denis R, Lavigne GJ. Postoperative sleep disruptions: A potential catalyst of acute pain? *Sleep Med Rev*. 2014 Jun; 18(3):273-282.
9. Duclos C, Dumont M, Wiseman-Hakes C, Arbour C, Mongrain V, Gaudreault PO, **Khoury S**, Lavigne G, Desautels A, Gosselin N. Sleep and wake disturbances following traumatic brain injury. *Pathol Biol (Paris)* 2014 Oct; 62(5):252-261.
10. Lavigne GJ, **Khoury S**, Chauny JM, Desautels A. Sleep and pain in mild traumatic brain injury. *PAIN* 2015; 156(Suppl 1):S75-S85.
11. Arbour C, **Khoury S**, Lavigne GJ, Gagnon K, Poirier G, Montplaisir JY, Carrier J, Gosselin N. Are sleep complaints after mild traumatic brain injury associated to abnormal NREM sleep oscillations? *Sleep Medicine* 2015; 16(4): 534-539.
12. Zorina-Lichtenwalter K, Meloto CB, **Khoury S**, Diatchenko LB. Genetic predictors of human chronic pain conditions. *Neuroscience* 2016 Apr 30; In press
13. Suzuki Y, Arbour C, **Khoury S**, El-Khatib H, Chauny J-M, Paquet J, Giguère JF, Denis R, Gosselin N, Lavigne GJ. Individuals with pain need more sleep in the early stage of mild traumatic brain injury. *Sleep Medicine* Accepted
14. **Khoury S**, Carra MC, Huynh N, Lavigne GJ. Familial aggregation of sleep bruxism using validated research criteria. *Sleep* Accepted

Articles in revision

1. Parisien M, **Khoury S**, Chabot-Doré AJ, Slade GD, Smith SB, Fillingim RB, Ohrbach R, Greenspan JD, Maixner W, Mogil J, Belfer I, Diatchenko L. Effect of human genetic variability on gene transcription in dorsal root ganglia and association with pain phenotypes. *Nature Neuroscience*.

Articles in preparation

1. **Khoury S**, Segal J, Noreau A, Diatchenko L, Bouthillier D, Dion P, McLean S, Giguère JF, Denis R, Rouleau GA, Lavigne GJ. Distinct genetic signature for pain chronification and fatigue in mild traumatic brain injury: A multiple locus effect in BDNF and ANKK1 respectively in a prospective control study.
2. SUZUKI Y, **KHOURY S**, GIGUÈRE J-F, DENIS R, LAVIGNE GJ. Sleep bruxism and pain following mild traumatic brain injury: An exploratory controlled study.

Book chapters

Gilles J. Lavigne, **Samar Khoury**, Danièle Laverdure-Dupont, Ronald Denis, Guy A. Rouleau. Tools and Methodological Issues in the Investigation of Sleep and Pain Interactions. In G. Lavigne, B. Sessle, M. Choinière & P. Soja (Eds.), Sleep and pain. Seattle: IASP Press 2007.

Gilles J. Lavigne, **Samar Khoury**, Caroline Arbour, Nadia Gosselin. Sleep and pain: Interactions and syndromes. In S. Chokroverty & L. Ferini-Strambi (Eds.), Oxford Textbook of Sleep Disorders. Oxford University Press 2016.

Published abstracts

1. Huynh N, **Khoury S**, Rompré PH, Montplaisir JY, Lavigne GJ. Prevalence of headache and neck pain in a sleep bruxism population investigated in a sleep laboratory. Sleep 2006; 29(0829):A282 (abstract supplement)
2. **Khoury S**, Amzica F, Giguère JF, Denis R, Rouleau GA, Lavigne GJ. Sleep characteristics in mild traumatic brain injury patients. Sleep Biol Rhythms 2011; 9:PO-1-226
3. Chouchou F, **Khoury S**, Roy I, Manzini C, Denis R, Giguère JF, Lavigne G. Subjective sleep complaints in traumatic brain injury patients are explained by the influences of depression, presence of pain and pain catastrophising. J Sleep Res 2012; 21 (Suppl. 1):P529
4. **Khoury S**, Chouchou F, Amzica F, Pelletier S, Denis R, Giguère JF, Lavigne G. Presence of pain in acute mild traumatic brain injury patients blunts electroencephalographic differences: a controlled sleep lab-study. J Sleep Res 2012; 21 (Suppl. 1):P530
5. **Khoury S**, Carra MC, Huynh N, Rouleau G, Lavigne G. Heritability of sleep bruxism: a polysomnographic study. J Sleep Res 2012; 21 (Suppl. 1):P1001
6. Gagnon K, **Khoury S**, Carrier J, Montplaisir J, Lavigne G, Gosselin N. Are sleep complaints following mild traumatic brain injury associated with changes in the characteristics of sleep slow waves? Sleep Med. 2013; 14:e132

ORAL PRESENTATIONS

1. Prevalence of headache and neck pain in a sleep bruxism population investigated in a sleep laboratory. Advanced Pain Research Methodologies Training Summer School -CIHR (Pain M2C). Mai 2006, Kingston, ON, Canada
2. Le rôle potentiel des variables respiratoires chez les patients souffrant de Bruxisme ayant des douleurs orofaciales et des céphalées. Retraite annuelle du groupe de recherche en système nerveux central (GRSNC). Septembre 2006, Val Morin, QC, Canada
3. Identification of a respiratory pattern during sleep in Sleep Bruxism subjects with and Without Headache. Advanced Pain Research Methodologies Training Summer School -CIHR (Pain M2C). Juin 2007, Kingston, ON, Canada
4. Étude des variations respiratoires associées à une activité rythmique des muscles de la mastication durant le bruxisme du sommeil. Présentation étudiante du Groupe de Recherche sur le Système Nerveux Central (GRSNC). Janvier 2008, Montréal, QC, Canada
5. How sleep modulates nociception? Panel discussion 2nd annual meeting Quebec Network of Junior Pain Investigators (QNJPI). Juin 2008, Sherbrooke, QC, Canada
6. Genetic risk factors identification in Mild Traumatic Brain Injury patients who develop chronic pain and poor sleep: A prospective study. REPAR Traumatology Québec. Février 2009, Montréal, QC, Canada
7. The different approaches in clinical research. Career day Quebec Network of Junior Pain Investigators (QNJPI). Février 2009, Montréal, QC, Canada
8. La douleur après un traumatisme crânien léger. Symposium Douleur et Francophonie. Aout 2010, Sherbrooke, QC, Canada
9. Douleurs chroniques et troubles du sommeil suite à un TCCL. Colloque interprofessionnel en traumatologie. Septembre 2010, Montréal, QC, Canada
10. Trauma and pain: grand project platform. Winter meeting of the Quebec Pain Research Network. Janvier 2011, Québec, QC, Canada
11. Sleep homeostasis and pain in mild traumatic brain injury. 6th annual meeting Centre of Excellence in Neuromics of Université de Montréal (CENUM). Mars 2011, Sainte-Adèle, QC, Canada
12. Le sommeil et la douleur suite à un traumatisme crânien léger. 79^{ième} congrès de l'Association Francophone pour le Savoir ACFAS. Mai 2011, Sherbrooke, QC, Canada
13. Sleep and pain interaction in Mild Traumatic Brain Injury patients. World Association of Sleep Medicine. Septembre 2011, Québec, QC, Canada
14. Le sommeil et la douleur suite à un traumatisme crânien léger. Journée de la recherche de l'Hôpital du Sacré-Coeur de Montréal. Mai 2012, Montréal, QC, Canada
15. Le sommeil et la douleur suite à un traumatisme crânien léger. Brain Injury Association of Canada. Septembre 2012, Ottawa, ON, Canada

16. Le sommeil et la douleur suite à un traumatisme crânien léger. Journée médecine dentaire Université de Montréal.
Octobre 2012, Montréal, QC, Canada
17. Biomarkers of pain and sleep interaction with a focus on minor traumatic brain injury as a prospective study model. World Congress on Sleep Medicine.
Mars 2015, Seoul, South Korea
18. Genetics of sleep complaints in chronic pain patients. The Philip R. Bromage Anesthesia Research Day, McGill University.
Mai 2016, Montréal, QC, Canada

POSTER PRESENTATIONS

1. Prevalence of headache and neck pain in a sleep bruxism population investigated in a sleep laboratory. Huynh N., **Khoury S.**, Rompré P.H., Montplaisir J.Y., Lavigne G.J. Associated Professional Sleep Societies (APSS) meeting. Juin 2006, Salt Lake City, UT, USA
2. Identification of a respiratory pattern during sleep in sleep bruxism subjects with and without headache. **Khoury S.**, Lavigne G.J., Mayer P., Montplaisir J.Y., Rouleau G.A. Advanced Pain Research Methodologies Training Summer School - CIHR (Pain M2C). Juin 2007, Kingston, ON, Canada
3. Circadian phase shift and change in pain perception in mild traumatic brain injury patients with acute pain. **Khoury S.**, Giguère J-F., Demers A., Bouthillier D., Denis R., Lavigne G.J. At 12th World congress on pain by the International Association for the Study of Pain (IASP). Aout 2008, Glasgow, Scotland
4. Altered thermal heat sensation but not pain in mild traumatic brain injury patients: preliminary report on pre and post sleep quantitative assessments. **Khoury S.**, Roy I., Huynh N., Denis R., Giguère J-F., Rouleau G.A., Lavigne G.J. 13th World congress on pain by the International Association for the Study of Pain (IASP). Aout 2010, Montréal, QC, Canada
5. Sleep characteristics in Mild Traumatic Brain Injury patients. **Khoury S.**, Amzica F., Giguère J-F., Denis R., Rouleau G.A., Lavigne G.J. World Sleep Society. Octobre 2011, Kyoto, Japan
6. Sleep-wake disturbances after traumatic brain injury. **Khoury S.**, Amzica F., Giguère J-F., Denis R., Rouleau G.A., Lavigne G.J. 26th Annual Meeting of the Associated Professional Sleep Societies (APSS). Juin 2012, Boston, MA, USA
7. Heritability of sleep bruxism: a polysomnographic study. **Khoury S.**, Carra M.C., Huynh N., Rouleau G.A., Lavigne G.J. 21st European Sleep Research Society. Aout 2012, Paris, France
8. Presence of pain in acute mild traumatic brain injury patients bluntselectroencephalographic differences: a controlled sleep lab study. **Khoury S.**, Chouchou, F., Amzica, F., Pelletier S., Denis R., Giguere JF., and Lavigne, GL. 21st European Sleep Research Society. Aout 2012, Paris, France
9. Subjective sleep complaints in traumatic brain injury patients are explained by the influences of depression, presence of pain and pain catastrophizing. F.Chouchou, **Khoury S.**, I. Roy, C. Manzini, R. Denis, J. Giguere, G. Lavigne. 21st European Sleep Research Society. Aout 2012, Paris, France
10. Are sleep complaints following mild traumatic brain injury associated with changes in the characteristics of sleep slow waves? Gagnon K., **Khoury S.**, Carrier J., Montplaisir J., Lavigne G., Gosselin N. 5th World Congress on Sleep Medicine. Octobre 2013, Valencia, Spain
11. Genetic association study of somatic symptoms in a temporomandibular disorder pain cohort. **Khoury S.**, Cole T., Parisien M., Smith S.B., Neely G.G., Slade G.D., Fillingim R.B., Greenspan J.D., Ohrbach R., Maixner W., Diatchenko L. 19th annual McGill Pain Day. Janvier 2014, Montréal, QC, Canada
12. A functional BDNF polymorphism predicts chronic pain following mild traumatic brain injury. **Khoury S.**, Noreau A., Bouthillier D., Giguère J.F., Denis R., Rouleau G.A., Lavigne G.J. 15th World Congress on Pain of the International Association for the study of pain (IASP). Octobre 2014, Buenos Aires, Argentina

13. Suzuki Y., **Khoury S.**, Chauny JM., Paquet J., Giguere JF., Denis R., Lavigne G. Sleep need is not higher in mild traumatic brain injury (mild TBI) patients after one year regardless of post-trauma pain: An actigraphy study. Canadian Sleep Society. Septembre 2015, Toronto, ON, Canada

14. SUZUKI Y., **KHOURY S.**, GIGUÈRE J.F., DENIS R., LAVIGNE G.J. Absence of secondary sleep bruxism in mild traumatic brain injury patients at one month post trauma. Journée scientifique, faculté de médecine dentaire, Université de Montréal. Janvier 2016, Montréal, QC, Canada

15. SUZUKI Y., **KHOURY S.**, GIGUÈRE J.F., DENIS R., LAVIGNE G.J. No increase in sleep bruxism or sustained orofacial muscle activity during sleep in mild traumatic brain injury patients: A controlled study. Oral presentation poster at the American Academy of Dental Sleep Medicine (AADSM). AADSM 26th Annual Meeting, Denver, CO, USA. June 2016

16. Suzuki Y, Arbour C, **Khoury S**, El-Khatib H, Chauny JM, Paquet J, Giguère JF, Denis R, Gosselin N, Lavigne GJ. Individuals with pain need more sleep in the early stage of mild traumatic brain injury (mTBI). Poster for the International Association for the Study of Pain (IASP) 16th World Congress on Pain, Yokohama, Japan. September, 2016.

17. Khoury S, Slade G. D, Smith S. B, Fillingim R. B, Ohrbach R, Greenspan J. D, Maixner W, Diatchenko L. A genome wide association study of sleep complaints in chronic pain patients: a potential mechanism of action. Poster for the International Association for the Study of Pain (IASP) 16th World Congress on Pain, Yokohama, Japan. September, 2016.

18. **Khoury S**, Barakatt M, Slade G. D, Smith S. B, Fillingim R. B, Ohrbach R, Greenspan J. D, Maixner W, Gravel S, Diatchenko L. Admixture mapping for pain sensitivity differences among races. Poster for the International Association for the Study of Pain (IASP) 16th World Congress on Pain, Yokohama, Japan. September, 2016.