

# JEAN-NICOLAS AUDET, PH. D.

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## EDUCATION

<u>Ph.D. Ecology / Neurobiology</u>	2012-2017
McGill University, Biology department (Montreal, Qc, Canada), Advisor: Prof. Louis Lefebvre	
<u>M.Sc. Neurobiology</u>	2009-2011
Laval University, Medicine department (Quebec, Qc, Canada), Advisor: Prof. Jean-Pierre Julien	
<u>B.Sc. Biology</u>	2004-2009
Laval University (Quebec, Qc, Canada)	
<u>Collegial studies degree in Natural Sciences</u>	1998-2002
CEGEP du Vieux-Montreal (Montreal, Qc, Canada)	

## RESEARCH EXPERIENCE

<u>HHMI Research Associate</u>	2022-present
Prof. Erich Jarvis, Rockefeller University (Millbrook, New York, USA)	
<u>Postdoctoral fellow</u>	2017-2022
Prof. Erich Jarvis, Rockefeller University (Millbrook, New York, USA)	
<u>Research coordinator</u>	2017-present
Rockefeller University Field Research Center (Millbrook, New York, USA)	
<u>Consultant and Instructor</u>	2012
Embryo transfer rederivation core facility, Centre de Recherche CERVO (Quebec, Qc, Canada)	
<u>Transgenesis specialist and microinjectionist</u>	2004-2012
Transgenesis core facility, Centre de Recherche du CHUQ (Quebec, Qc, Canada)	
<u>Research assistant</u>	2003-2011
Prof. Jean-Pierre Julien, Centre de Recherche du CHUQ (Quebec, Qc, Canada)	
<u>Laboratory and animal technician</u>	2000-2003
Prof. Jean-Pierre Julien, Montreal General Hospital Research Institute (Montreal, Qc, Canada)	

## TEACHING EXPERIENCE

<u>Adjunct Professor, course "Information Flow in Biological Systems" (84 students)</u>	2022-present
Vassar College (Poughkeepsie, NY, USA)	
<u>Adjunct Professor, course "General Biology I" (23 students)</u>	2022
Marist College (Poughkeepsie, NY, USA)	
<u>Invited teacher, course "Science in the media" (80 students)</u>	2016
Prof. Louis Lefebvre, McGill University (Montreal, Qc, Canada)	
<u>Invited teacher, course "Bird brains and Innovation" (60 students)</u>	2016
Prof. Louis Lefebvre, McGill University (Montreal, Qc, Canada)	
<u>Teaching assistant, course "Organismal biology" (30 students/yr)</u>	2013-2014
Profs. Rudiger Krahe and Andrew Hendry, McGill University (Montreal, Qc, Canada)	
<u>Transgenesis theoretical courses and workshops (15-30 students/yr)</u>	2010-2013
Centre de Recherche du CHUQ, (Qc, Canada)	
<u>Training/mentoring of 31 students/postdocs/technicians/professor</u>	2002-present
CRCHUQ (Qc, Canada), CRCERVO (Qc, Canada), Duke U. (Durham, NC, USA), Bellairs Field RC (Jamestown, Barbados), Rockefeller University FRC (Millbrook, NY, USA)	

## PUBLICATIONS

### I- Peer-reviewed Articles

29. **Audet JN**, Couture M, Lefebvre L, Jarvis ED. Problem-solving skills are predicted by innovations in the wild and brain size in Passerines. *Nature Ecology and Evolution*, 2024, 1-11.
28. **Audet JN**, Couture M, Jarvis ED. Songbird species that display more complex vocal learning are better problem-solvers and have larger brains. *Science*, 2023, 381(6663), 1170–1175.
27. Ducatez S, DeVore JL, Whiting MJ, **Audet JN**. Editorial: Cognition and Adaptation to Urban Environments. *Frontiers in Ecology and Evolution*, 2022, 10:3389.
26. Lefebvre L, **Audet JN**. Can we build a neuroecology of innovativeness similar to that pioneered by David Sherry for spatial memory? *Learning & Behavior*, 2022, 50(1), 37–44.
25. **Audet JN**. Neurobiological and ecological correlates of avian innovation. *Integrative and Comparative Biology*, 2020, 40(4): 955-966.
24. Ducatez S, Lefebvre L, Sayol F, **Audet JN**, Sol D. Host Cognition and Parasitism in Birds: A Review of the Main Mechanisms. *Frontiers in Ecology and Evolution*, 2020, 8:102.
23. Lee C, Cho S, Kim KW, Yoo DA, Han JY, Lee HJ, Gedman G, **Audet JN**, Hara E, Rivas M, Whitney O, Pfenning A, Kim H, Jarvis ED. Rules of amino acid convergence: Not how many, but who in avian vocal learning clades. *BioRxiv* preprint, 2020 (also submitted to *Genome Biology and Evolution* 12-2023).
22. Ducatez S, **Audet JN**, Lefebvre L. Speed–accuracy trade-off, detour reaching and response to PHA in Carib grackles. *Animal Cognition*, 2019, 18:485-96.
21. **Audet JN**, Kayello L, Ducatez S, Perillo S, Cauchard L, Howard JT, O'Connell LA, Jarvis ED, Lefebvre L. Divergence in problem-solving skills is associated with differential expression of glutamate receptors in wild finches. *Science Advances*, 2018, 4 (3): eaao6369.
20. Ohta Y, Soucy G, Phaneuf D, **Audet JN**, Gros-Louis F, Yamashita T, Sato K, Takemoto M, Hishikawa N, Julien JP, Abe K. The role of variant chromogranin b as disease modifier in Japanese female amyotrophic lateral sclerosis. *Journal of the Neurological Sciences*, 2017, 381: 101.
19. Korfach J, Gedman G, Kingan KB, Chin CS, Howard JT, **Audet JN**, Cantin L, Jarvis ED. De novo PacBio long-read and phased avian genome assemblies correct and add to reference genes generated with intermediate and short reads. *GigaScience*, 2017, 6 (10): 1-16.
18. **Audet JN**, Lefebvre L. What's flexible in behavioral flexibility? *Behavioral Ecology*, 2017, 28(4): 943-947
17. Ducatez S\* / **Audet JN\***, Rodriguez JR, Kayello L, Lefebvre L (\***contributed equally**). Innovativeness and the effects of urbanization on risk-taking behaviors in wild Barbados birds. *Animal Cognition*, 2017, 20: 33.
16. Ohta Y, Soucy G, Phaneuf D, **Audet JN**, Gros-Louis F, Rouleau GA, Blasco H, Corcia P, Andersen PM, Nordin F, Yamashita T, Abe K, Julien JP. Sex-dependent effects of chromogranin B P413L allelic variant as disease modifier in ALS. *Human Molecular Genetics*, 2016, 25 (21): 4771-4786.
15. **Audet JN**, Ducatez S, Lefebvre L. Bajan birds pull strings: Two wild Antillean species enter the select club of string-pullers. *PLoS One*, 2016, 11: e0156112.
14. **Audet JN**, Ducatez S, Lefebvre L. The Town Bird and the Country Bird: problem-solving and immunocompetence vary with urbanization. *Behavioral Ecology*, 2016, 27(2):637.
13. Lefebvre L, Ducatez S, **Audet JN**. Feeding innovations in a nested phylogeny of Emberizoidea: Thraupidae, Icteridae, Coeribinae, Barbados bullfinches and Carib grackles. *Phil. Trans. Roy. Soc. B*, 2016 Mar 19;371(1690).
12. Ducatez S, **Audet JN**, Lefebvre L. Problem solving and learning in Carib grackles: individuals show a consistent speed-accuracy trade-off. *Animal Cognition*, 2015, Mar;18(2):485-96.

11. Wang R, Chen CC, Hara E, Rivas MV, Roulhac PL, Howard JT, Chakraborty M, **Audet JN**, Jarvis ED. Convergent differential regulation of SLIT-ROBO axon guidance genes in the brains of vocal learners. *Journal of Comparative Neurology*, 2015, 523(6):892-906.
10. Whitney O, Pfenning AR, Howard JT, Blatti CA, Liu F, Ward JM, Wang R, **Audet JN**, Kellis M, Mukherjee S, Sinha S, Hartemink AJ, West AE, Jarvis ED. Core and region enriched networks of behaviorally regulated genes and the singing genome. *Science*, 2014, Dec 12;346(6215).
9. **Audet JN**, Ducatez S, Lefebvre L. Morphological and molecular sexing of the monochromatic Barbados bullfinch, *Loxigilla barbadensis*. *Zoological Science*, 2014, Oct;31(10):687-91.
8. Ducatez S\*/**Audet JN\***, Lefebvre L (**\*contributed equally**). Independent appearance of an innovative feeding behavior in Antillean bullfinches. *Animal Cognition*, 2013, May 16(3):525-9.
7. Swarup V\*/**Audet JN\***, Phaneuf D, Kriz J, Julien JP (**\*contributed equally**). Abnormal regenerative responses and impaired axonal outgrowth after nerve crush in TDP-43 transgenic mouse models of ALS. *Journal of Neuroscience*, 2012, Dec 12;32(50):18186-95.
6. **Audet JN**, Soucy G, Julien JP. Methylene blue administration fails to confer neuroprotection in two amyotrophic lateral sclerosis mouse models. *Neuroscience*, 2012, 209:136-43.
5. **Audet JN\***/Gowing G\*, Paradis R, Soucy G, Julien JP (**\*contributed equally**). Ablation of proliferating cells in the CNS exacerbates motor neuron disease caused by mutant SOD1. *PLoS One*, 2012, 7(4):e34932.
4. **Audet JN**, Gowing G, Julien JP. Wild type human SOD1 overexpression does not accelerate disease in mice expressing murine Sod1<sup>G86R</sup>. *Neurobiology of Disease*, 2010, Oct 40(1):245-50.
3. Gowing G, Lalancette-Hebert M, **Audet JN**, Dequen F, Julien JP. M-CSF exacerbates ALS disease in a mouse model through altered responses of microglia expressing mutant SOD. *Exper. Neurol.*, 2009, 220(2):267-75.
2. Gowing G\*/Philips T\*, Van Wijmeersch B, **Audet JN**, Dewil M, Van Den Bosch L, Billiau AD, Robberecht W, Julien JP (**\*contributed equally**). Ablation of proliferating microglia does not affect motor neuron degeneration in ALS caused by mutant SOD. *Journal of Neuroscience*, 2008, 28(41):10234-44.

## II- Book Chapter

1. Ducatez S, Overington SE, **Audet JN**, Battesti M, Lefebvre L. Carib grackles - field and lab work on a tame, opportunistic island Icterid. In *Field and Laboratory Methods in Animal Cognition: A Comparative Guide* (pp. 76-96). Cambridge University Press. doi:10.1017/9781108333191.006, 2018.

## FELLOWSHIPS AND AWARDS (AMOUNTS IN CAD)

Banting Postdoctoral fellowship (140K)	2019-2021
NSERC Postdoctoral fellowship (90K)	2017-2019
FRQNT Postdoctoral fellowship (70K - Declined)	2017-2019
Graduate Excellence Award, McGill University Science Faculty (6K)	2015-2016
First prize for best presentation, CEEB retreat, McGill University	2015
Hydro-Quebec Doctoral Scholarship (45K)	2013-2016
Animal Behavior Society research grant (USA) (2K)	2013-2014
Society of Canadian Ornithologists (1K)	2013-2014
Travel Awards, McGill Biology Dept. (Barbados, Boston, Durham, New-York) (13.5K)	2011-2015
FRQNT Doctoral Scholarship (60K)	2011-2014
Graduate Excellence Fellowship, Biology dept, McGill University (5.25K)	2011-2012
Lorne-Trottier Science Accelerator Award, McGill University (2.5K)	2011-2012

## ACADEMIC PRESENTATIONS

34. Audet JN, et al. ISBE international meeting, Melbourne, Australia, 2024 (Talk).
33. Audet JN, et al. Keynote lecture for the Neuroscience and behavior program seminar, Vassar College, Poughkeepsie, NY, USA, 2024 (Invited talk).
32. Audet JN, et al. Department of ecology and evolution seminar, University of Lausanne, Lausanne, Switzerland, 2023 (Invited talk).
31. Audet JN, et al. 60<sup>th</sup> Animal Behavior Society (ABS) Conference, Portland, Oregon, 2023 (Invited talk).
30. Audet JN, et al. Centre for Integrative Biology (CBI) seminar, Toulouse, France, 2022 (Invited talk).
29. Audet JN, et al. 47<sup>th</sup> annual meeting of the Société Québécoise pour l'Étude Biologique du Comportement (SQEBC), Ottawa, On, Canada, 2022 (Invited talk)
28. Audet JN, et al. 46<sup>th</sup> SQEBC meeting, Sherbrooke, Qc, Canada, 2021 (Talk and session moderator).
27. Audet JN, et al. 58<sup>th</sup> ABS Conference, virtual, 2021 (Talk).
26. Audet JN, et al. 45<sup>th</sup> SQEBC meeting, virtual, 2020 (Talk).
25. Audet JN, et al. Organismal seminar, New Mexico State Univ., Las Cruces, NM, USA. 2020 (Invited talk).
24. Audet JN, et al. Society for Integrative and Comparative Biology. Austin, TX, USA, 2020 (Invited talk).
23. Audet JN, et al. 56<sup>th</sup> ABS and 36<sup>th</sup> International Ethological Conference, Chicago, IL, USA, 2019 (Poster).
22. Audet JN, et al. 44<sup>th</sup> SQEBC meeting, virtual, 2019 (Poster).
21. Audet JN, et al. Society for Neuroscience (SFN) 46<sup>th</sup> annual meeting, San Diego, CA, USA, 2016 (Talk).
20. Audet JN, et al. 41<sup>st</sup> SQEBC, Rimouski, Qc, Canada, 2016 (Talk).
19. Audet JN, et al. International congress for Neuroethology, Montevideo, Uruguay, 2016 (Poster).
18. Audet JN, et al. SFN 45<sup>th</sup> annual meeting, Chicago, IL, USA, 2015 (Poster).
17. Audet JN, et al. Behaviour 2015, Cairns, Australia, 2015 (Talk).
16. Audet JN, et al. SFN 44<sup>th</sup> annual meeting, Washington, USA, 2014 (Poster).
15. Audet JN, et al. 39<sup>th</sup> SQEBC, Montreal, Qc, Canada, 2014 (Poster).
14. Audet JN, et al. Biology department day, McGill University, Montreal, Qc, Canada, 2014 (Poster).
13. Audet JN, et al. ISBE international meeting, New-York, New York, USA, 2014 (Talk).
12. Audet JN, et al. 8<sup>th</sup> World Congress of IBRO, Florence, Italy, 2011 (Poster).
11. Audet JN, et al. 5<sup>th</sup> Canadian Neuroscience Meeting, Quebec, Qc, Canada, 2011 (Poster).
10. Audet JN, et al. ACFAS 79<sup>th</sup> Congress, Sherbrooke, Qc, Canada, 2011 (Poster).
9. Audet JN, et al. ALS Canada 7<sup>th</sup> annual meeting, Toronto, On, Canada, 2011 (Poster).
8. Audet JN, et al. Journée de la recherche en Médecine de l'Univ. Laval, Quebec, Canada, 2011 (Poster).
7. Audet JN, et al. SFN 40<sup>th</sup> annual meeting, San Diego, USA, 2010 (Poster).
6. Audet JN, et al. André-Delambre foundation 6<sup>th</sup> symposium, Quebec, Qc, Canada, 2010 (Poster).
5. Audet JN, et al. Journées de la recherche du CREMOGH, Quebec, Qc, Canada, 2010 (Poster).
4. Audet JN, et al. Journée de la recherche en Médecine de l'Université Laval, Quebec, Qc, 2010 (Poster).

3. Audet JN, et al. ALS Canada 5<sup>th</sup> annual meeting, Toronto, On, Canada, 2009 (Poster).
2. Audet JN, et al. Society for Neuroscience 39<sup>th</sup> annual meeting, Chicago, USA, 2009 (Poster).
1. Audet JN, et al. André-Delambre foundation 5<sup>th</sup> symposium, Quebec, Qc, Canada, 2009 (Poster).

## **ACADEMIC SERVICE AND OUTREACH**

### **Journal peer reviews (37)** 2014-2024

Animal Behaviour (5), Animal Cognition (6), Behavioral Ecology (1), Behavioural Processes (1), Biol. J. Linnean Society (1), Current Biology (3), Ethology (2), Front. in Ecol. Evol. (1), PLoS ONE (2), Proc. Royal Society B (5), Royal Society Op. Sci. (1), Science of the Total Environment (3), Scientific Reports (4), Turkish J. Zoology (1), Zoological Science (1).

### **Grants and contest reviews (9)** 2010-2024

BSF res. grant (1), ISF res. grant (1), NRDH Hungary res. grant (1), Expo-Sciences judge (2), SICB Div. Anim. Beh. contest (1), Rockefeller U. SSRP grant (1), ABS research & Justice, Equity, Diversity and Incl. grant (2).

### **Edition (2)**

Guest editor – Animal Cognition (*Genetics of animal cognition*) 2024

Associate editor - Frontiers in Ecol. and Evol. (*Cognition and Adaptation to Urban Environments*) 2021

### **Meeting organization (9)**

1<sup>st</sup> Bird Song and Animal Communication Annual Meeting 2018

With: Prof. Erich Jarvis. Rockefeller field research center (Millbrook, NY, USA)

McGill Neurobiology retreat 2016

With: Prof. Jon Sakata. McGill University (Montreal, Qc, Canada)

CALAS 52<sup>th</sup> annual symposium: Derivation by embryo transfer workshop 2013

With: Dr Ronald Charbonneau. Centre de recherche du CHUQ (Quebec, Qc, Canada)

André Delambre symposium for amyotrophic lateral sclerosis (6 editions) 2005-2010

With: Prof. Jean-Pierre Julien (Montreal, Quebec and Ottawa, Canada)

### **Invited conferences and workshops for a general audience (8)**

The ecology and neurobiology of innovation in birds 2024

Keynote lecture, Science Research Program Seminar at John Jay High School, Hopewell Junction, NY

Overview of the new Millbrook Field Research Center 2018

Presentation at the 1<sup>st</sup> Bird Song and Animal Communication Annual Meeting. Millbrook, NY

The Rockefeller Field Research Center (FRC) – a reopening 2017

Presentation for Rick Lifton (president of Rockefeller) and colleagues to obtain funding for the FRC

Cognition aviaire: Têtes de linotte ou têtes à Papineau? 2016

Invited conference for a funding activity organized by biology students, Trois-Rivières University, Qc

Transgenesis in mice: techniques and applications 2013

Invited conference for all staff of the CERVO research center, Quebec, Qc, Canada

A comparative analysis of cognition in two sister species of Barbados birds 2012

David Johnston's (Governor General of Canada) visit of the McGill Bellair Research center, Barbados

Derivation by embryo transfer (part of the national CALAS 49<sup>th</sup> annual symposium) 2010

Invited conference and workshop for animal health technicians, CRCHUQ, Quebec, Qc, Canada

Transgenesis in mice: techniques and applications 2007

Conference for employees of the University of Calgary, Ab, Canada