

# Jean-Denis Beaudoin, PhD.

Nationality: Canadian

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## EDUCATION

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- 2020 – today **UCONN Health**  
Assistant professor of Genetics and Genome Sciences
- 2013 – 2019 **Yale University**  
Postdoctorate in Genetics at the Yale Medical School  
Supervisor: Dr Antonio Giraldez
- 2007 – 2013 **Université de Sherbrooke**  
Master and Ph.D. student in Biochemistry  
Supervisor: Dr. Jean-Pierre Perreault  
(GPA: 4.3/ 4.3)
- 2004 – 2006 **Université de Sherbrooke**  
B.Sc. in Biotechnology (Molecular Biology)  
(GPA: 3.95 / 4.3)
- 2001 – 2004 **Cégep de Lévis-Lauzon**  
Chemistry-Biology College Diploma
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## GRANTS AND HONORS

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- 2018 – today NIH pathway to independence award (Parent K99/R00) (K99 200,000\$/2 years; R00 750,000\$/3 years)
- 2014 – 2017 Postdoctoral fellowship from the Fonds de la Recherche en Santé du Québec– FRSQ (135,000\$)
- 2011 Canadian Student Health Research Forum (CSHRF) National Poster - Silver Award
- 2011 Dean's Honor list
- 2011 One of the three students in the Université de Sherbrooke to attend the Canadian Student Health Research Forum (CSHRF) National Poster Competition
- 2009 – 2012 Ph.D. studentship from the Canadian Institutes of Health Research – CIHR (105,000\$)
- 2009 – 2012 Ph.D. studentship from the Fonds de la Recherche en Santé du Québec – FRSQ (60,000\$)
- 2008 Jean-Marie Beauregard Award for Best Poster Presentation at the Annual Scientific Symposium of the Faculty of Medicine and Health Sciences of the Université de Sherbrooke
- 2008 Dean's Honor list
- 2007 – 2009 Master studentship from the Fonds de la Recherche en Santé du Québec– FRSQ (30,000\$)
- 2007 – 2008 Master studentship from the Canadian Institutes of Health Research – CIHR (17,500\$)
- 2006 Honorable Mention Awards at the Faculty of Science (Fall Term)
- 2006 Summer studentship from the Natural Sciences and Engineering Research Council of Canada – NSERC (4,500\$)
- 2006 Summer studentship from the Faculty of Medicine and Health Sciences – Université de Sherbrooke
- 2005 Honorable Mention Awards at the Faculty of Science (Summer Term)

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**PUBLICATIONS**

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**Work in progress**

1. **Beaudoin, J.D.** and Giraldez, A.J. (2018) Deciphering the RNA regulatory code controlling translation during vertebrate embryogenesis. *In preparation*.
2. Novoa E.M.#, **Beaudoin, J.D.#**, Giraldez, A.J., Mattick, J.S. and Manolis Kellis, M. (2017) Best practices for genome-wide RNA structure analysis: combination of mutational profiles and drop-off information. *In revision, deposited in bioRxiv* <https://doi.org/10.1101/176883>

**Selected publications**

3. **Beaudoin\*#**, **J.D.**, Novoa#, E.M., Vejnar, C.E., Yartseva, V., Takacs, C.M., Kellis, M. and Giraldez\*, A.J. (2018) Analyses of mRNA structure dynamics identify embryonic gene regulatory programs. *Nat. Struct. Mol. Biol.* 25(8):677-686  
\* **co-corresponding authors**
4. Moreno-Mateos#, M.A., Vejnar#, C.E., **Beaudoin, J.D.**, Fernandez, J.P., Mis, E.K., Khokha, M.K. and Giraldez, A.J. (2015) CRISPRscan: designing highly efficient sgRNAs for CRISPR-Cas9 targeting in vivo. *Nat. Methods.* 12(10):982-8
5. **Beaudoin, J.D.** and Perreault, J.P. (2013) Exploring mRNA 3'-UTR G-quadruplexes: evidence of roles in both alternative polyadenylation and mRNAs shortening. *Nucleic Acids Res.* 41(11):5898-5911
6. **Beaudoin, J.D.** and Perreault, J.P. (2010) 5'-UTR G-quadruplex structures acting as translational repressors. *Nucleic Acids Res.* 38(20):7022-36.
7. **Beaudoin#**, **J.D.**, Jodoin#, R. and Perreault, J.P. (2014) New scoring system to identify RNA G-quadruplex folding. *Nucleic Acids Res.* 42(2) :1209-23
8. **Beaudoin#**, **J.D.**, Jodoin#, R. and Perreault, J.P. (2013) In-line probing of RNA G-quadruplexes. *Methods.* 64(1)79-87
9. **Beaudoin, J.D.** and Perreault, J.P. (2008) Potassium ions modulate a G-quadruplex-ribozyme's activity. *RNA.* 14(6):1018-25

**All peer-reviewed**

10. Vejnar, C.E.#, Messih, M.A.#, Takacs, C.M.#, Yartseva, V.#, Oikonomou, P.#, Christiano, R., Stoeckius, M., Lau, S., Lee, M.T., **Beaudoin, J.D.**, Musaev, D., Darwich-Codore, H., Walther, T.C., Tavazoie, S., Cifuentes, D. and Giraldez, A.J. (2019) Genome wide analysis of 3' UTR sequence elements and proteins regulating mRNA stability during maternal-to-zygotic transition in zebrafish. *Genome Res.* 29(7):1100-1114
11. Chang, S.H., Tang, Y., Miao, L., Darwich-Codore, H., Vejnar, C.E., **Beaudoin, J.D.**, Damir, M., Fernandez, J.P., Benitez, M.D.J., Bazzini, A.A., Moreno-Mateos, M.A. and Giraldez A.J. (2019) Brd4 and P300 confer transcriptional competency during zygotic genome activation. *Dev. Cell.* 49(6):867-881
12. Rouleau, S., **Beaudoin, J.D.**, Bisailon, M. and Perreault, J.P. (2015) Small antisense oligonucleotides against G-Quadruplexes: specific mRNA translational switches. *Nucleic Acids Res.* 43(1):595-606
13. Reymond, C., **Beaudoin, J.D.** and Perreault, J.P. (2009) Modulating RNA structure and catalysis: lessons from small cleaving ribozymes. *Cell. Mol. Life Sci.* 66(24):3937-50
14. Nehdi, A., Perreault, J., **Beaudoin, J.D.** and Perreault, J.P. (2007) A novel structural rearrangement of hepatitis delta virus antigenomic ribozyme. *Nucleic Acids Res.* 35(20):6820-31
15. Lévesque, D., **Beaudoin, J.D.**, Roy, S. and Perreault, J.P. (2007) In vitro selection and characterization of RNA aptamers binding thyroxine hormone. *Biochem J.* 403(1):129-38

# Authors contributed equally

**Complete list of published work available at:**

<https://www.ncbi.nlm.nih.gov/pubmed/?term=beaudoin+jd>

**CONFERENCE PRESENTATIONS**

**Invited Oral presentations**

- 2019 Elucidating the interplay between RNA structure and gene expression during vertebrate embryogenesis. *Faculty interview*, **University of Michigan-Ann Arbor**, MI, USA.
- 2019 Elucidating the interplay between RNA structure and gene expression during vertebrate embryogenesis. *Faculty interview*, **SUNY Buffalo**, NY, USA.
- 2019 Deciphering the code regulating translation during vertebrate embryogenesis. *NIH NICHD Networking Workshop*, **National Institute of Health**, Washington D.C., USA.
- 2019 Elucidating the interplay between RNA structure and gene expression during vertebrate embryogenesis. *Faculty interview*, **Institute for Research in Immunology and Cancer (IRIC)**, Canada.
- 2019 Elucidating the interplay between RNA structure and gene expression during vertebrate embryogenesis. *Young Investigator Research Symposium*, **Institute for Research in Immunology and Cancer (IRIC)**, Canada.
- 2019 Elucidating the interplay between RNA structure and gene expression during vertebrate embryogenesis. *Faculty interview*, **Department of Genetics and Genome Sciences UCONN Health**, CT, USA.
- 2013 RNA G-quadruplexes as regulatory elements of RNA functions. *Dr. David Liu's lab visit*, **Harvard University**, MA, USA.
- 2013 RNA G-quadruplexes as regulatory elements of RNA functions. *Dr. Antonio J Giraldez's lab visit*, **Yale University**, CT, USA.

**Oral presentations (selected speaker)**

- 2019 Characterizing the regulatory activity of 5'UTR elements on translation initiation in vertebrates. *Riboclub 20th anniversary and Canada Gairdner International symposium*. Orford, **Canada**.
- 2018 Elucidating the interplay between RNA structure and translation during vertebrate embryogenesis. *Riboclub Annual Meeting*. Orford, **Canada**.
- 2017 Interplay between mRNA structure and gene expression in vertebrates. *GRS Translation machinery in health and disease*. Galveston, TX. **USA**. (**Awarded best presentation and invited to present at the GRC**).
- 2016 Ribosomes shape RNA structures in vivo. *Yale RNA club annual retreat*. New Haven, CT, **USA**.
- 2016 Ribosomes shape RNA structures in vivo. *Riboclub Annual Meeting*. Orford, **Canada**.
- 2016 Genome-wide analysis of RNA structure-function dynamics during vertebrate embryogenesis. **Stockholm, Sweden**.
- 2014 Exploring the RNA structure-function landscape during vertebrate embryogenesis. *Yale RNA Club*. Yale University. New Haven, CT, **USA**.
- 2012 À l'exploration des G-quadruplexes dans les 3'UTR. *GDR Quadruplexes*. Bordeaux, **France**.
- 2011 3'UTR G-quadruplex structures regulating the synthesis of shorter transcripts. Sorrento, **Italy**.
- 2010 5'UTR G-quadruplex structure acting as translational repressors. Honolulu, HI, **USA**.
- 2010 G-quadruplex structure: a translational repressor broadly found in the transcriptome. *Riboclub Videoconference throughout Canada*. Sherbrooke, **Canada**.
- 2008 Potassium ions modulate a G-quadruplex-Ribozyme's activity. *Riboclub Videoconference throughout Canada*. Sherbrooke, **Canada**.

**Poster presentations**

- 2018 Deciphering the interplay between RNA structure and translation during vertebrate embryogenesis. *Translational control*, Cold Spring Harbor Laboratory, NY, USA.
- 2017 mRNA structure dynamics identifies RNA remodelers and functional elements during embryogenesis. *Yale Genetics retreat*, MA, USA.
- 2017 mRNA structure dynamics identifies RNA remodelers and functional elements during embryogenesis. *Yale Genetics retreat*, MA, USA.
- 2017 Interplay between mRNA structure and gene expression during vertebrate development. *NCI RNA biology*. Bethesda, MD, USA
- 2016 Ribosomes shape transcripts structure *in vivo*. *Yale Genetics retreat*, MA, USA. (**Awarded best presentation for post-doctorate**)
- 2015 Understanding RNA structure-function dynamics during vertebrate embryogenesis. *Yale RNA retreat*, CT, USA.
- 2015 Dissecting the RNA structure-function landscape during vertebrate embryogenesis. *Yale Genetics retreat*, MA, USA. (Awarded second best presentation)
- 2014 Dissecting the RNA structure-function landscape during vertebrate embryogenesis. Heidelberg, Germany
- 2014 Investigating the RNA structure-function landscape during vertebrate embryogenesis. *Riboclub Annual Meeting*, Orford, Canada
- 2014 Dissecting the RNA structure-function landscape during vertebrate embryogenesis. *Yale RNA retreat*, MA, USA.
- 2013 Analysis of the RNA Structurome in Zebrafish. *2013 Yale University RNA retreat*. New Haven, CT, USA.
- 2013 Analysis of the RNA Structurome in Zebrafish. *2013 Yale University Genetics departmental retreat*. Jiminy Peak, MA, USA.
- 2012 Exploring 3'-UTR G-quadruplexes: role in alternative polyadenylation and mRNAs shortening. *Riboclub Annual Meeting*. Orford, Canada.
- 2012 3'-UTR G-quadruplexes regulate gene expression throughout alternative polyadenylation site. *The 17<sup>th</sup> Annual Meeting of the RNA society*. Ann Arbor, MI, USA.
- 2011 3'UTR G-quadruplex structures regulating alternative polyadenylation sites. *Canadian Student Health Research Forum (limited to outstanding Canadian graduate students)*, Winnipeg, MA, Canada. (**Awarded a Silver Award for best presentation**)
- 2011 3'UTR G-quadruplex structures: their impacts on gene expression. *Riboclub Annual Meeting*. Orford, Canada.
- 2010 G-quadruplex structure: a translational repressor broadly found in the transcriptome. *Riboclub Annual Meeting*. Orford, Canada.
- 2009 G-quadruplex structure acts as a translational repressor: potential implication in cancer. *Clinical Oncology Research Initiative Annual Meeting*. Orford, Canada.
- 2009 G-quadruplex structure: a "translational molecular handbreak" broadly found in the cell. *Riboclub Annual Meeting*. Orford, Qc, Canada.
- 2009 G-quadruplex structure controlling RNA activities. *Second International meeting on G-quadruplex DNA*. Louisville, KY, USA.
- 2008 May a G-quadruplex structure regulate an RNA activity? *Riboclub Annual Meeting*. Orford, Canada.
- 2008 Caractérisation d'une Chimère G-Quadruplex-Ribozyme. *37<sup>th</sup> Journée scientifique de la Faculté de médecine et des sciences de la santé de l'Université de Sherbrooke*. Sherbrooke, Canada. (**Jean-Marie Beaugard Award for best presentation**)

2008 Potassium ions modulate a G-quadruplex-Ribozyme's activity. *Thirteenth Annual Meeting of the RNA society*. Berlin, Germany.

2007 A G-quartet controlling a ribozyme activity. *Riboclub Annual Meeting*. Orford, Canada.

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## ACADEMIC ACTIVITIES

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### Primary mentor and organizer of the post-transcriptional regulation group in the Giraldez lab

- Director and primary mentor of 4 postdocs and 2 PhD students (2017-2019)

### Teacher assistant

- Training of undergrad students for the *Biochemical Techniques* (BCM511) course – Department of Biochemistry, Université de Sherbrooke (2007-2008)

### Student supervision

- Supervision and training of 1 computational biologist postdoctorate, 3 PhD students, 2 master students, 4 undergraduate students, 1 postgraduate student and 1 MD student (2007-today)

### Contribution to manuscript revisions

- Reviewer of FRSQ grant applications (Master student training fellowships) (2018)
  - Reviewer of four manuscripts submitted for publication in *PLoS ONE*, *ncRNA* and *Biochimie* journals (2012-today)
  - Co-reviewer with my Ph.D. and Postdoctoral supervisors of more than 13 manuscripts submitted for publication in journals such as: *Cell*, *Nature Review Molecular Biology*, *Nature Communication*, *Nucleic Acid Res.*, *RNA*, and others (2007-today)
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## OTHER PROFESSIONAL ACTIVITIES

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2009-2011 **Riboclub student's representative** (National Organization)

- Co-organizers of International Riboclub Annual Meetings 2010 and 2011
- Managing scientific and social events with students throughout Canada and USA
- Showing Leadership on the International and National scenes within a RNA group

2009-2011 **Ph.D. student's representative** of the Department of Biochemistry of the Université de Sherbrooke

- Set up supervisory committee system for Ph.D. students

2008-2009 **Master student's representative** of the Department of Biochemistry of the Université de Sherbrooke