

Jordan A. Ramilowski

Associate Professor

Curriculum Vitae

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Join us!

Collaborate with us if you are an **Academic/Industry Researcher** interested in gene regulation, noncoding RNAs, RNA and genome structure and interactions, cell-cell communication, cell conversion and immunity applied to enhancing human life and curing diseases. We also always **welcome** highly-motivated **Japanese** and **International Graduate Students** and **Postdocs** to work on building Next Generation Sequencing (NGS) pipelines and to analyze various bulk & single cell data or those of you who are interested in experimental biology ([YCU – Tamura/immunol](http://YCU-Tamura/immunol)).

Employment

2020– **Associate Professor (current)**, Advanced Medical Research Center (YCU), Yokohama, Japan
2020– **Visiting Scientist (current)**, RIKEN Yokohama Institute (*IMS-ACGT), Yokohama, Japan
2016–2020 **Research Scientist (4 years 6 months)**, RIKEN Yokohama Institute (CLST/IMS), Yokohama, Japan
2011–2016 **Postdoctoral Researcher (4 years 3 months)**, RIKEN Yokohama Institute (OSC/CLST), Yokohama, Japan
2010–2011 **Bioinformatics Analyst (1-year Optional Practical Training)**, FivePrime Therapeutics Inc, San Francisco (CA), US
2008–2008 **Visiting Researcher (8 months)**, Universidad Autónoma de Madrid, Madrid, Spain
2004–2010 **Graduate Teaching and Research Assistant (5 years 10 months)**, Utah State University, Logan (UT), US

*<https://acgt.riken.jp>

Education

2010 **Ph.D. (Physical Chemistry)**, Utah State University (USU), US
2002 **MSc. Eng. (Organic Chemistry)**, Silesian University of Technology (SUT), Poland

Research Interests & Skills

During my PhD in Theoretical Chemistry I worked on the rotational dynamics of superfluid He-4 clusters and on quantum and classical chaos. My current research focuses mainly on understanding mammalian gene regulation ([FANTOM](#)), function and biological roles of the noncoding part of the genome, RNA and genome structure and interactions, cell-cell communication, cell conversion and immunity with the mission to prolong and enhance human life and cure cancer and other diseases. I apply a variety of informatics tools and computational and statistical methods to build efficient computational pipelines to analyze bulk and single cell NGS data (including clinical data) used by our lab and other researchers.

- NGS (RNA-seq, CAGE-seq, PARIS-seq, Hi-C, etc.) data analysis (assembly, quality control, differential expression, genes functional annotations)
- Biological experimental design
- Biological networks structure analysis (ligand-receptor networks, cell communities)
- cDNA Sanger-sequencing data analysis (sequence alignment tools, Blast, ClustalW, DNASTAR)
- Artificial Intelligence methods
- Modeling and simulation of chemical processes
- Diffusion Monte Carlo simulations of rotational/vibrational dynamics of molecules in superfluid 4He droplets
- Quantum/classical chaos and electronic structure simulations
- Programming languages & Software: R & Bioconductor, FORTRAN, Python, Perl, latex, shell scripting, RNA-seq assemblers, RNA-structure predictors (The ViennaRNA Package, Infernal), MAPLE, Gaussian, CHEMCAD
- Computational Platforms: UNIX, Linux, Mac OS, Windows

Teaching & Mentoring

As a Graduate Teaching Assistant, I taught chemistry laboratory and recitations. Currently, I teach Medical and Life Sciences Students the basic of modern Bioinformatics with the emphasis on the understanding, building and using highly efficient computational pipelines to help their own research. I also help the Biology Lab Members to better understand basic statistical and computational concepts related to their experiments.

- Lecturer at the Karolinska Institutet-RIKEN Joint International Doctoral Course 2020: "Bioinformatics analysis of gene regulation in omics data and its applications to medical problems"
- Supervising technical scientists, visiting undergraduate/graduate students and postdoctoral researchers at RIKEN
- Teaching bioinformatics to coworkers, collaborators and co-authors and helping to organize BI workshops
- Mentoring undergraduate/graduate students
- Taught principles of chemistry recitations USU (5 semesters: Fall 2005, Spring/Fall 2006, Spring 2007, Fall 2009)

- Taught general chemistry laboratory USU (3 semesters: Fall 2004, Spring/Summer 2005)
- Tutored high school, pre-medical and chemistry undergraduate students (2001–2006)

Oral Presentations & Lectures (selected)

- The 24th Annual Meeting of the RNA Society, 2019, Krakow, Poland, *Large Scale Screening of lncRNA Functions and Structures*.
- The 43rd Naito Conference: Noncoding RNA Biology, Chemistry & Diseases, 2017, Sapporo, Japan, *An atlas and functional evidence of human long non-coding RNAs with accurate 5'ends*.
- Science Club of International Institute of Molecular and Cell Biology & Career Advice (**invited**), 2017, Warsaw, Poland, *Functional characterizations of long non-coding RNAs: turning 'junk' into a treasure trove*.
- Molecular Biology Society of Japan, 2015, Kobe, Japan, *A draft network of ligand-receptor mediated multicellular signaling in human*
- RIKEN CLST Educational Program (**invited**), 2015, Yokohama, Japan, *Towards a better understanding of the body integrated functioning: a draft network of ligand-receptor mediated multicellular signaling in human*.
- RIKEN CLST Science Exchange Workshop (hot topics) (**invited**), 2014, Yokohama, Japan, *Uncovering cell-cell interaction network*.

Awards & Honours

- 2018 RIKEN President Letter of Appreciation for Outstanding HUGO Presentation
- 2018 HUGO Genome Meeting 2018 Outstanding Presentation Award
- 2015 RIKEN President Letter of Appreciation for IMGC Outstanding Presentation
- 2015 29th International Mammalian Genome Conference Outstanding Presentation Award
- 2014 OIST Practical Workshop on High-Throughput Sequencing Data Analysis Participation Award
- 2014 Lorne Genome Conference Travel Grant
- 2010 Travel Award for the 239th American Physical Society Meeting (USU Graduate Student Senate)
- 2009 Outstanding Graduate Student in Chemistry Award (USU Department of Chemistry and Biochemistry)
- 2009 Travel Award for the 237th American Chemical Society Meeting (USU Graduate Student Senate)
- 2006 The AAAS/Science Program Award for Excellence in Science: AAAS/Science one-year sponsored membership
- 2000 Outstanding Student Stipend (SUT Department of Chemistry; 2 years total)

Other Activities

- Reviewer for RIKEN Incentive Research Projects 2020, Yokohama, Japan
- Scientific Committee Member for the International Young Scientists Conference on Molecular and Cell Biology 2020, Warsaw, Poland
- Development of the Publications Registration System at RIKEN CLST (2014–2015)
- RIKEN Yokohama Open Day Volunteer and Lab Touring to Visitors (2014–2020)
- Peer-reviewing for Bioinformatics, Genome Research, Nature Publishing Group and other scientific journals (since 2013)
- RIKEN Yokohama Research Seminar co-organizer (2012–2016)
- Member of the FANTOM Consortium (since 2011)
- Member of the Graduate Student Senate, SUT (2001–2002)
- President and Member of the Student Board of the Department of Chemistry, SUT (1999–2002)

Languages

- English (fluent), Polish (fluent), Spanish (fluent), Japanese (conversational)

Publication List

2002 Simulations of the Process of Oxidative Coupling of Methane using CHEMCAD 5.2 (MSc Thesis)

2010 Dynamics of van der Waals Clusters: Theoretical and Computational Studies (PhD Dissertation)

Google Scholar

1. Mikosz, AA, JA **Ramilowski**, and D Farrelly (2006). Quantum solvation dynamics of HCN in a helium-4 droplet. *The Journal of Chemical Physics* **125**(1), 014312–10.
2. **Ramilowski**, JA, AA Mikosz, D Farrelly, JLC Fajin, and B Fernandez (2007). Rotational structure of small 4He clusters seeded with HF, HCl, and HBr molecules. *The Journal of Physical Chemistry A* **111**(49), 12275–12288.
3. Gamboa, A, H Hernández, JA **Ramilowski**, J Losada, R Benito, F Borondo, and D Farrelly (2009). Chaos in the classical mechanics of bound and quasi-bound HX-4 He complexes with X= F, Cl, Br, CN. *Physical Chemistry Chemical Physics* **11**(37), 8203–8213.
4. **Ramilowski**, JA, SD Prado, F Borondo, and D Farrelly (2009). Fractal Weyl law behavior in an open Hamiltonian system. *Physical Review E* **80**(5), 055201–4.
5. ***Ramilowski**, JA and D Farrelly (2010). Computation of nodal surfaces in fixed-node diffusion Monte Carlo calculations using a genetic algorithm. *Physical Chemistry Chemical Physics* **12**(39), 12450–12456.
6. Wang, LM, BB Averkiev, JA **Ramilowski**, W Huang, LS Wang, and AI Boldyrev (2010). Planar to Linear Structural Transition in Small Boron- Carbon Mixed Clusters: C x B5- x(x= 1- 5). *Journal of the American Chemical Society* **132**(40), 14104–14112.
7. Suarez, AG, JA **Ramilowski**, R Benito, and D Farrelly (2011). Renormalization of the rotational constants of an ammonia molecule seeded into a 4He droplet. *Chemical Physics Letters* **502**(1-3), 14–22.
8. **Ramilowski**, JA and D Farrelly (2012). Fixed node diffusion Monte Carlo using a genetic algorithm: A study of the CO-4 He N complex, N= 1..10. *Physical Chemistry Chemical Physics* **14**(22), 8123–8136.
9. ***Ramilowski**, JA, S Sawai, H Seki, K Mochida, T Yoshida, T Sakurai, T Muranaka, K Saito, and CO Daub (2013). Glycyrhiza uralensis transcriptome landscape and study of phytochemicals. *Plant and Cell Physiology* **54**(5), 697–710.
10. Forrest, AR, H Kawaji, M Rehli, JK Baillie, MJ De Hoon, V Haberle, T Lassmann, IV Kulakovskiy, M Lizio, M Itoh, et al. (2014). A promoter-level mammalian expression atlas. *Nature* **507**(7493), 462–470.
11. Persson, H, AT Kwon, JA **Ramilowski**, G Silberberg, C Söderhäll, C Orsmark-Pietras, B Nordlund, JR Konradsen, MJ de Hoon, E Melén, et al. (2015). Transcriptome analysis of controlled and therapy-resistant childhood asthma reveals distinct gene expression profiles. *Journal of Allergy and Clinical Immunology* **136**(3), 638–648.
12. ***Ramilowski**, JA, T Goldberg, J Harshbarger, E Kloppmann, M Lizio, VP Satagopam, M Itoh, H Kawaji, et al. (2015). A draft network of ligand-receptor-mediated multicellular signalling in human. *Nature Communications* **6**(1), 1–12.
13. Hon, CC, JA **Ramilowski**, J Harshbarger, N Bertin, OJ Rackham, J Gough, E Denisenko, S Schmeier, TM Poulsen, J Severin, et al. (2017). An atlas of human long non-coding RNAs with accurate 5' ends. *Nature* **543**(7644), 199–204.
14. Lizio, M, J Harshbarger, I Abugessaisa, S Noguchi, A Kondo, J Severin, C Mungall, D Arenillas, A Mathelier, YA Medvedeva, A Lennartsson, F Drabløs, **Jordan A. Ramilowski**, et al. (2017). Update of the FANTOM web resource: high resolution transcriptome of diverse cell types in mammals. *Nucleic Acids Research* **45**(D1), D737–D743.
15. Pawlak, M, KZ Kedzierska, M Migdal, KA Nahia, JA **Ramilowski**, L Bugajski, K Hashimoto, A Marconi, K Piwocka, P Carninci, et al. (2019). Dynamics of cardiomyocyte transcriptome and chromatin landscape demarcates key events of heart development. *Genome Research* **29**(3), 506–519.
16. Alam, T, S Agrawal, J Severin, RS Young, R Andersson, EA Arner, A Hasegawa, M Lizio, JA **Ramilowski**, et al. (2020). Comparative transcriptomics of primary cells in vertebrates. *Genome Research* **30**(7), 951–961.
17. **Ramilowski**, JA, CW Yip, S Agrawal, JC Chang, Y Ciani, I Kulakovskiy, M Mendez, et al. (2020). Functional Annotation of Human Long Non-Coding RNAs via Molecular Phenotyping. *Genome Research* **30**(7), 1060–1072.
18. Mendez, M, **FANTOM Consortium Main Contributors**, MS Scott, and MM Hoffman (bioarxiv). Unsupervised analysis of multi-experiment transcriptomic patterns with SegRNA identifies unannotated transcripts. <https://doi.org/10.1101/2020.07.28.225193>.
19. Grapotte, M, M Saraswat, C Bessière, C Menichelli, **Jordan A. Ramilowski**, J Severin, Y Hayashizaki, et al. (bioarxiv). Discovery of widespread transcription initiation at microsatellites predictable by sequence-based deep neural network. <https://doi.org/10.1101/2020.07.10.195636>.
20. Takahashi, H, H Nishiyori-Sueki, **Jordan A. Ramilowski**, M Itoh, and P Carninci (bioarxiv). Low Quantity single strand CAGE (LQ-ssCAGE) maps regulatory enhancers and promoters. <https://doi.org/10.1101/2020.08.04.231969>.

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