

RUI FU

RNA Bioscience Initiative, University of Colorado Anschutz Medical Campus

My research interests are in various aspects of post-transcriptional gene expression regulation, particularly RNA degradation, interrogated through both biochemical experiments and bioinformatic/computational analyses of genomic and sequencing data.



EDUCATION

2015
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2009

- **Ph.D. Biological Science**
University of California San Diego 📍 La Jolla, CA, USA
- **B.S. Biological Science**
Xiamen University 📍 Xiamen, Fujian, China

RESEARCH EXPERIENCE

Current
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2017

- **Semi-Independent Postdoctoral Informatics Fellow**
Jay Hesselberth's Supervision 📍 University of Colorado Anschutz
 - Development of bioinformatics software packages
 - RNA post-transcriptional dynamics modeling of steroidogenesis
 - RNA-seq analysis and transcriptome annotation improvements for hibernating ground squirrel brain
 - Collaboration on various RNA biology projects
- **Postdoctoral Research Fellow**
Judy Lieberman's Lab 📍 Harvard Medical School
 - Identification of a mitochondrial trigger for apoptotic mRNA decay
 - Purification of cytotoxic granules and cytolytic proteins from NK cells
 - Mouse genetic manipulation by CRISPR-Cas9, and automated genotyping with custom R app
- **Graduate Research Assistant**
Jens Lykke-Andersen's Lab 📍 University of California San Diego
 - Investigation of co-factors involved in ZFP36-mediated mRNA decay and translational repression during macrophage innate immune response
 - Characterization of the ZFP36 family proteins in cell cycle progression regulation of mouse embryonic fibroblasts
- **Undergraduate Research Assistant**
Ruichuan Chen's Lab 📍 Xiamen University
 - Exploration of cell cycle and apoptosis implications of the transcription elongation regulator HEXIM1
 - Mechanistic characterization of p-TEFb activation by HIV-Tat

2017
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2016

2015
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2009

2009
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2007

CONTACT

- ✉** Rui.Fu@CUanschutz.edu
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🔗 github.com/raysinensis
🔗 linkedin.com/in/rui-fu-rna
🔗 raysinensis.cdm

Bioinformatic tool development:

clustifyr, automated single cell RNA-seq cell identity assignment Bioconductor package (author)

squirrelBox, RNA-seq data visualization, exploration, and analysis web browser built with R Shiny and JavaScript (author)

someta, quantification and monitoring of missing cell-level metadata in scRNA-seq GEO deposition (author)

valr, framework for tidyverse-style genomic interval analysis in R (co-developer)

scraps, scalable pipeline for extraction of polyadenylation site information from scRNA-seq data (co-developer)



TEACHING EXPERIENCE

- **Online Lecture Instructor (Graduate Level Courses)**

University of Colorado Anschutz

- *Informatics and Statistics for Molecular Biology* (2020) - teaching and grading on RStudio Cloud platform
- *Foundations in Biomedical Sciences* (2020) - online lecture, paper discussion, and homework/exam design on RNA biology
- *Workshop for scRNA-seq Data Analysis* (2020) - course development and online lectures

Additional pedagogy training through the Harvard Medical School Scientists Teaching Science Course

- **Lecture Instructor (Graduate Level Courses)**

University of Colorado Anschutz

- *Rigor in Research* (2020) - lecture on RNA sequencing
- *Foundations in Biomedical Sciences* (2018, 2019) - lectures, paper discussion, and homework/exam design on RNA biology
- *Practical Data Analysis with R/RStudio* (2018, 2019) - course development and lectures
- *Workshop for scRNA-seq Data Analysis* (2019) - course development and lectures

Developed computational biology course materials:

rnabioco.github.io/practical-data-analysis

rnabioco.github.io/cellar

- **Teaching Assistant (Graduate Level Courses)**

University of Colorado Anschutz

- *Practical Computational Biology for Biologists: R* (2018, 2019)
- *Practical Computational Biology for Biologists: Python* (2018, 2019)
- Paper discussion for *Core Topics in Biomedical Sciences* (2018)

- **Weekly RNA Bioscience Initiative Informatics Office Hour**

University of Colorado Anschutz

- Guidance on RNA and computational research questions from students and researchers of CU Anschutz Medical Campus

- **Teaching Assistant (Undergraduate Level Courses)**

University of California San Diego

- *Molecular Biology* (2012)
- *DNA Recombination Lab* (2011, 2012)

MENTORING EXPERIENCE

Current
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2020

- **RNA Bioscience Initiative Internship Mentoring**
University of Colorado Anschutz
 - Mentoring of undergraduate computer science student, systemically exploring published scRNA-seq cell type signatures in the NCBI Gene Expression Omnibus
 - Mentee's work was integrated into recent updates to R Bioconductor packages *clustifyr* and *clustifyrdatahub*
 - Mentoring is continuing beyond summer intern period, now focusing on manuscript preparation, poster presentation, and further scRNA-seq software development
- **Summer Research Mentoring**
Harvard Medical School
 - Mentoring of high school student enrolled in the MIT Research Science Institute program on tissue culture, RNA-related bench experiments, RNA-seq informatics analysis, and scientific writing
- **BS/MS Student Research Mentoring**
University of California San Diego
 - Mentoring of student research spanning undergraduate honor thesis and master thesis on biochemical investigations of RNA-binding protein functions
 - Mentee was awarded Best Poster Presentation Award at 2014 UCSD Biological Sciences Annual Student Research Showcase
 - Research project was integrated into 2016 RNA publication, with mentee as second author

2017
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2015
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2013

PUBLICATIONS, AS FIRST OR CORRESP. AUTHOR

2021
2021
2021

- **RNA-binding proteins regulate aldosterone homeostasis in human steroidogenic cells**
Submitted to *biorxiv* and *Molecular Systems Biology*
 - Fu R[†], Wellman K[†], Baldwin A, Rege J, Bartholomay K, Hirsekorn A, Riemony K, Rainey W, Mukherjee N.
- **Inclusion of processed cell metadata improves single cell sequencing analysis reproducibility and accessibility**
Submitted to *biorxiv*, Under review at *PLOS Biology*
 - Puntambekar S, Hesselberth J, Riemony K^c, Fu R^c.
- **Liver transcriptome dynamics during hibernation are shaped by a shifting balance between transcription and RNA stability**
Submitted to *Frontiers in Physiology*
 - Gillen A[†], Fu R[†], Riemony K[†], Jager J, Fang B, Lazar M, Martin S.

Google Scholar:
tinyurl.com/googlescholar-rf

GitHub Projects:
github.com/rnabioco

squirrelBox Web App:
tinyurl.com/sqRNABox

- 2020
- **Dynamic RNA regulation in the brain underlies physiological plasticity in a hibernating mammal**
Frontiers in Physiology
 • Fu R⁷, Gillen A⁷, Grabek K, Riemonyd K, Epperson E, Bustamant C, Hesselberth J, Martin S.
- 2020
- **clustifyr: an R package for automated single-cell RNA sequencing cluster classification**
F1000Research
 • Fu R, Gillen A, Sheridan R, Tian C, Daya M, Hao Y, Hesselberth J, Riemonyd K.
- 2018
- **PNPT1 release from mitochondria during apoptosis triggers decay of poly(A) RNAs**
Cell
 • Liu X⁷, Fu R⁷, Pan Y, Meza-Sosa K, Zhang Z, Lieberman J.
- 2016
- **Recruitment of the 4EHP-GYF2 cap-binding complex to tetraproline motifs of tristetraprolin promotes repression and degradation of mRNAs with AU-rich elements**
RNA
 • Fu R, Olsen MT, Webb K, Bennett E, Lykke-Andersen J.



PUBLICATIONS, AS CONTRIBUTING AUTHOR

- 2021
- **Microglial BTK Signaling Regulates Immune-Mediated Cortical Demyelination**
In prep for Nature Medicine
 • Barr H, Given K, McClain C, Fu R, Gruber R, Ofengeim D, Macklin W, Bennett J, Owens G, Hughes E.
- 2021
- **Srsf3 mediates alternative RNA splicing downstream of PDGFRα signaling**
Submitted to biorxiv, Revision at Development
 • Dennison B, Larson E, Fu R, Mo J, Fantauzzo K.
- 2021
- **Molecular tracking devices quantify antigen distribution and archiving in the lymph node**
Submitted to biorxiv, Revision at eLife
 • Walsh S, Sheridan R, Doan T, Lucas E, Ware B, Fu R, Burchill M, Hesselberth J, Tamburini B.
- 2021
- **Single-cell RNA sequencing identifies macrophage transcriptional heterogeneities in granulomatous diseases**
European Respiratory Journal
 • Liao S, Shaikh A, Mould K, Konigsberg I, Fu R, Davidson E, Li L, Fontenot A, Maier L, Yang I.

- 2019 ● **Monocytic Subclones Confer Resistance to Venetoclax-Based Therapy in Acute Myeloid Leukemia Patients**
Cancer Discovery
• Pei S, Polleyea D, Gustafson A, Stevens B, Minhajuddin M, **Fu R**, Riemony K, Gillen A, Sheridan R, Kim J, Costello J, Amaya M, Inguva A, Winters A, Ye H, Krug A, Jones C, Adane B, Khan N, Ponder J, Schowinsky J, Abbott D, Hammes A, Myers J, Ashton J, Nemkov T, D'Alessandro A, Gutman J, Fesik S, Ramsey H, Savona M, Smith C, Jordan C.
- 2019 ● **Chronic Liver Disease in Humans Causes Expansion and Differentiation of Liver Lymphatic Endothelial Cells**
Frontiers in Immunology
• Tamburini B, Finlon JM, Gillen A, Kriss M, Riemony K, **Fu R**, Schuyler R, Hesselberth J, Rosen H, Burchill M.
- 2019 ● **Single cell RNA Sequencing Identifies Transforming Growth Factor β as a Critical Regulator of Alveolar Regeneration**
JCI Insight
• Riemony K, Jansing N, Jiang P, Redente E, Gillen A, **Fu R**, Anthony G, Hesselberth J, Zemans R.
- 2019 ● **Recovery and analysis of transcriptome subsets from pooled single-cell RNA-seq libraries.**
Nucleic Acid Research
• Riemony K, Ransom M, Alderman C, Gillen A, **Fu R**, Finlay-Schultz J, Kirkpatrick G, Di Paola J, Kabos P, Sartorius C, Hesselberth J.

► POSTERS AND TALKS

- 2021 ● **clustifyr2.0: leveraging GEO deposited single cell data for automated cell type classification**
Keystone eSymposia on Single Cell Biology (Poster)
- 2020 ● **Towards a comprehensive view of dynamic RNA regulation in hibernating 13-lined ground squirrel**
EMBL Conference, From Functional Genomics to Systems Biology (Poster)
- 2019 ● **ClustifyR: automated single-cell RNA sequencing cluster classification**
Keystone Symposia on Single Cell Biology (Poster)
- 2017 ● **PNPT1 release from the mitochondrial intermembrane space triggers rapid decay of mRNA and poly(A)-tailed ncRNA during apoptosis**
Boston Children's Hospital PCMM Research Poster Session (Poster)
- 2016 ● **PNPT1 release from the mitochondrial intermembrane space triggers rapid decay of mRNA during apoptosis**
Boston Children's Hospital PCMM Research Poster Session (Poster)

- 2015 ● **TTP-mediated mRNA repression involves recruitment of the 4EHP-GYF2 complex**
Cold Spring Harbor Laboratory mRNA Processing Meeting (Presentation)
- 2014 ● **TTP represses translation of target mRNAs through the 4EHP-GYF2 complex**
UCSD Mechanisms of Gene Expression Seminar (Presentation)
- 2013 ● **TTP family proteins regulate the stability of retinoblastoma protein mRNAs during serum-stimulated G₀-S transition**
Cold Spring Harbor Laboratory mRNA Processing Meeting (Poster)
- 2012 ● **The regulation of TTP family mRNA-decay factors during G₀-S cell cycle progression**
Keystone Symposia on Protein-RNA Interactions (Poster)

📢 PROFESSIONAL SERVICE

- Current | 2020 ● **Organizer for CU Anschutz Immuno-Informatics Joint Journal Club**
- Current | 2019 ● **RNA Bioscience Initiative Grant Review**
- Current | 2018 ● ***GENETICS* Early Career Reviewer (Cellular Genetics section)**
4 manuscripts reviewed for *GENETICS* and *G3*, tinyurl.com/rev-rf
- Current | 2011 ● **Peer review of manuscripts under Dr Lykke-Andersen, Dr Lieberman, Dr Hesselberth**
- 2012 ● **Organizer for UCSD Ethics Center's Silent Spring (50th Anniversary) Project**

Society memberships:

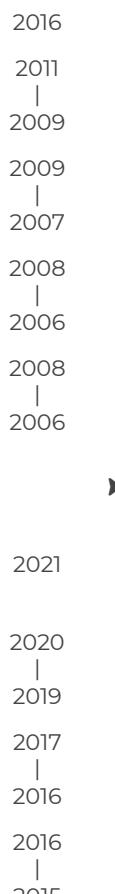
- RNA Society
- International Society for Computational Biology
- Genetics Society of America

🤝 DIVERSITY, EQUITY, AND INCLUSION SERVICE

- Current | 2020 ● **RNA Society Volunteer - Writer for Scientist Spotlight**
- 2021 ● **CU Anschutz Medical Campus Equity Certificate Program training**
- 2019 ● **Admissions Committee for CU Graduate Experiences for Multicultural Students**
- 2019 ● **Mentor for CU Anschutz and Denver Campus ISCORE (undergraduate mentorship program)**

🏅 RECOGNITION AND TRAINING

- 2018 ● **BioFrontiers Hackathon**
- 2017 ● **Data Incubator Data Science Fellowship**

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- 2016 ● Harvard Medical School Scientists Teaching Science Course
 - 2011 ● Dr Huang Memorial Scholarship, UC San Diego
 - 2009 |
 - 2009 ● National College Students Creativity Experiment Project
 - 2007 |
 - 2008 ● First-Class Scholarship
 - 2006 |
 - 2008 ● XMU University Merit Student
 - 2006 |

fish SCIENCE OUTREACH

- 2021 ● Volunteer for CU Anschutz Medical Campus Young Hands in Science Outreach Program
- 2020 |
- 2019 ● Facilitator at Denver Museum of Nature and Science - Prehistoric Journey section
- 2017 |
- 2016 ● Visitor Education Volunteer at the New England Aquarium
- 2016 |
- 2015 ● Information Ambassador at the San Diego Zoo

~500 hours of weekend volunteering time logged

Made with [pagedown](#).

Code at github.com/raysinensis/cv.

Last updated on 2021-02-13.