RUI FU

RNA Bioscience Initiative, University of Colorado Anschutz Medical Campus

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

EDUCATION

2015 | 2009

Ph.D. Biological Science
University of California San Diego — La Jolla, CA, USA

2009 | 2005

B.S. Biological Science
Xiamen University — Xiamen, Fujian, China

RESEARCH EXPERIENCE

Current | 2017

Semi-Independent Postdoctoral Informatics Fellow
Jay Hesselberth's Supervision — University of Colorado Anschutz

- Development of bioinformatics software packages for single cell sequencing
- RNA post-transcriptional dynamics modeling of steroidogenesis
- RNA-seq analysis and transcriptome annotation improvements for hibernating ground squirrel brain
- Collaboration on various single cell RNA sequencing projects
- Analysis of human genetic variation from gnomAD database for insights into nonsense-mediated mRNA decay

2017 | 2016

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

2015 | 2009

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

2009 | 2007

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

CONTACT

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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)

PUBLICATIONS, AS FIRST OR CORRESP. AUTHOR

2021 **RNA-binding proteins regulate aldosterone homeostasis in human steroidogenic cells**
Under review at *RNA*, preprint on *bioRxiv*
• **Fu R**[†], Wellman K[†], Baldwin A, Rege J, Bartholomay K, Hirsekorn A, Riemondy K, Rainey W, Mukherjee N.

2021 **Cell-level metadata is indispensable for documenting single cell sequencing datasets**
Revision at *PLOS Biology*, preprint on *bioRxiv*
• Puntambekar S, Hesselberth J, Riemondy K[c], **Fu R**[c].

2021 **Liver transcriptome dynamics during hibernation are shaped by a shifting balance between transcription and RNA stability**
Frontiers in Physiology
• Gillen A[†], **Fu R** [†], Riemondy K[†], Jager J, Fang B, Lazar M, Martin S.

2020 **Dynamic RNA regulation in the brain underlies physiological plasticity in a hibernating mammal**
Frontiers in Physiology
• **Fu R**[†], Gillen A[†], Grabek K, Riemondy 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, Riemondy K.

2018 **PNPT1 release from mitochondria during apoptosis triggers decay of poly(A) RNAs**
Cell
• Liu X[†], **Fu R**[†], 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 PDGFRa signaling**
Revision at *Development*, preprint on *bioRxiv*
• Dennison B, Larson E, **Fu R**, Mo J, Fantauzzo K.

Google Scholar:
tinyurl.com/googlescholar-rf

GitHub Projects:
github.com/rnabioco

squirrelBox Web App:
tinyurl.com/sqRNAbox

2021 **Molecular tracking devices quantify antigen distribution and archiving in the lymph node**

Revision at *eLife*, preprint on *bioRxiv*

- 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, Pollyea D, Gustafson A, Stevens B, Minhajuddin M, **Fu R**, Riemondy 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, Riemondy 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

- Riemondy 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

- Riemondy 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 **Interactive scRNA-seq cell-type classification via clustifyr identifies widespread omission of cell-level annotations in public data repositories**

Keystone eSymposia on Single Cell Biology (Poster, co-present with mentee)

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 G_0-S transition**
Cold Spring Harbor Laboratory mRNA Processing Meeting (Poster)

2012 **The regulation of TTP family mRNA-decay factors during G_0-S cell cycle progression**
Keystone Symposia on Protein-RNA Interactions (Poster)

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

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

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)

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

Developed computational biology course materials:

rnabioco.github.io/practical-data-analysis

rnabioco.github.io/cellar

MENTORING EXPERIENCE

Current | 2020

RNA Bioscience Initiative Internship Mentoring
University of Colorado Anschutz

- Mentoring of undergraduate computer science student for 2020 summer internship and beyond
- Project: systemic exploration of published scRNA-seq cell type signatures in the NCBI Gene Expression Omnibus
- Mentee's work was integrated into updates to R Bioconductor packages *clustifyr* and *clustifyrdatahub*, GitHub repo *someta*, first author communication/essay manuscript, and poster presentation.

2017

Summer Research Mentoring
Harvard Medical School

- Mentoring of high school student enrolled in the MIT Research Science Institute program
- Topics: tissue culture, RNA-related bench experiments, RNA-seq informatics analysis, and scientific writing

2015 | 2013

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
- Project: biochemical investigation of RNA-binding protein functions
- Mentee's work was integrated into second author 2016 RNA publication. Mentee was awarded Best Poster Presentation Award at 2014 UCSD Biological Sciences Annual Student Research Showcase.

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

2012

Organizer for UCSD Ethics Center's Silent Spring (50th Anniversary) Project

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)

Society memberships:

RNA Society

International Society for Computational Biology

Genetics Society of America

RECOGNITION AND TRAINING

2018 — **BioFrontiers Hackathon**

2017 — **Data Incubator Data Science Fellowship**

2016 — **Grant writing training under Dr Lieberman**

2016 — **Harvard Medical School Scientists Teaching Science Course**

2011 | 2009 — **Dr Huang Memorial Scholarship, UC San Diego**

2009 | 2007 — **National College Students Creativity Experiment Project**

2008 | 2006 — **First-Class Scholarship**

2008 | 2006 — **XMU University Merit Student**

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 2021-03-16.