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 biology 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**
Submitted to *RNA*, preprint on *bioRxiv*

- **Fu R**[†], Wellman K[†], Baldwin A, Rege J, Bartholomay K, Hirsekorn A, Riemondy K, Rainey W, Mukherjee N.

2021 **Inclusion of processed cell metadata improves single cell sequencing analysis reproducibility and accessibility**
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.

Google Scholar:
tinyurl.com/googlescholar-rf

GitHub Projects:
github.com/rnabioco

squirrelBox Web App:
tinyurl.com/sqRNAbox

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.

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

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

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 | 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*, and GitHub repo *someta*
- Mentoring is continuing beyond summer internship period, now focusing on manuscript preparation (first author on communication/essay), poster presentation (Keystone sSymposia), and further scRNA-seq software development

2017

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

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
- 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

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**

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**

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**

Society memberships:

RNA Society

International Society for Computational Biology

Genetics Society of America

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 2021-03-10.