

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

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/linkedin.com/in/rui-fu-rna
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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)

scraps, scalable pipeline for extraction of polyadenylation site and sequencing internal priming information from scRNA-seq data (author)

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

Developed computational biology course materials:

rnabioco.github.io/practical-data-analysis

rnabioco.github.io/cellar

PUBLICATIONS, AS FIRST OR CORRESP. AUTHOR

- 2021 • RNA-binding proteins regulate aldosterone homeostasis in human steroidogenic cells
RNA
• **Fu R⁷**, Wellman K⁷, 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
PLOS Biology
• 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 A⁷, **Fu R⁷**, Riemondy K⁷, 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 R⁷**, Gillen A⁷, 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 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. 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. *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, Pollyea D, Gustafson A, Stevens B, Minhajuddin M, **Fu R**, Riemondy K, Gillen A, Sheridan R, Kim J, Costello J, Amaya M, Ingueva 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 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)

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)
 - 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 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
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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.

SERVICE AND TRAINING

Current
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2015

- **Society memberships**
RNA Society, International Society for Computational Biology, Genetics Society of America

Current
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2019

- **RNA Bioscience Initiative Grant Review**

Current
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2018

- **GENETICS Early Career Reviewer (Cellular Genetics section)**
4 manuscripts reviewed for *GENETICS* and *G3*, tinyurl.com/rev-rf

2020

- **Organizer for CU Anschutz Immuno-Informatics Joint Journal Club**

2019

- **Mentor Collective mentorship training**

2017

- **Data Incubator Data Science Fellowship**

2016

- Harvard Medical School Scientists Teaching Science Course



DIVERSITY, EQUITY, AND INCLUSION SERVICE

2021

- 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

2011

- Dr Huang Memorial Scholarship, UC San Diego

| 2009

- First-Class Scholarship

| 2008

- XMU University Merit Student

| 2006



SCIENCE OUTREACH

2021

- Volunteer for CU Anschutz Medical Campus Young Hands in Science Outreach Program
tinyurl.com/younghandssci

| 2020

- Facilitator at Denver Museum of Nature and Science - Prehistoric Journey section

| 2019

- Visitor Education Volunteer at the New England Aquarium

| 2017

- Information Ambassador at the San Diego Zoo

| 2016

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

| 2015

2012

Made with [pagedown](#).

Code at github.com/raysinensis/cv.

Last updated on 2021-04-13.