

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 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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CONTACT

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

Bioinformatic tool development:

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

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

sometra, quantification and monitoring of missing cell-level metadata in scRNA-seq GEO deposition

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

Developed computational biology course materials:

bioinformatics, rnabioco.github.io/practical-data-analysis

scRNA-seq, rnabioco.github.io/cellar

PUBLICATIONS, AS FIRST OR CORRESP. AUTHOR

- 2021 • Single cell profiling of airway associated CD4+ T cells in chronic beryllium disease
Submitted to *European Respiratory Journal*
• Shaikh A[†], Fu R[†], Falta M, Martin A, Yang I, Maier L, Fontenot A.
- 2021 • RNA-binding proteins regulate aldosterone homeostasis in human steroidogenic cells
RNA
• 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
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 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 • DUX4 induces the production of truncated RNA binding proteins in human muscle cells. *bioRxiv*. Campbell A, Dyle M, Calviello L, Matheny T, Cortazar M, Forman T, Fu R, Gillen A, Floor S, Jagannathan S.
- 2021 • Microglia engulf myelin during immune-mediated cortical demyelination. *In prep.* Barr H, Given K, Fu R, Stockton M, McClain C, Gruber R, Ofengeim D, Macklin W, Bennett J, Owens G, Hughes E.
- 2021 • Srsf3 mediates alternative RNA splicing downstream of PDGFRα signaling in the facial mesenchyme. *Development*. 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, Polleyea 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 ● Practical guide to spatial transcriptomics. (Pulmonary Division Excellence Seminar Series - Presentation)
- 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)
- 2015 ● TTP-mediated mRNA repression involves recruitment of the 4EHP-GYF2 complex. (Cold Spring Harbor Laboratory mRNA Processing Meeting - 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

● Lecture Instructor (Graduate-Level Courses)

University of Colorado Anschutz

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

- **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
- **Teaching Assistant (Undergraduate-Level Courses)**
University of California San Diego
 - Molecular Biology (2012)
 - DNA Recombination Lab (2011, 2012)

● MENTORING EXPERIENCE

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2020 | <ul style="list-style-type: none"> ● RNA Bioscience Initiative Internship Mentoring
University of Colorado Anschutz <ul style="list-style-type: none"> • 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 <i>clustifyr</i> and <i>clustifyrdatahub</i>, GitHub repo <i>someta</i>, first author communication/essay manuscript, and poster presentation. |
| 2017 | <ul style="list-style-type: none"> ● Summer Research Mentoring
Harvard Medical School <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> ● BS/MS Student Research Mentoring
University of California San Diego <ul style="list-style-type: none"> • Mentoring of student research spanning undergraduate honor thesis and master thesis on biochemical investigations of RNA-binding protein domains • 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

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2015 | <ul style="list-style-type: none"> ● Society memberships
RNA Society, International Society for Computational Biology, Genetics Society of America |
| Current

2019 | <ul style="list-style-type: none"> ● RNA Bioscience Initiative Grant Review |
| Current

2018 | <ul style="list-style-type: none"> ● GENETICS Early Career Reviewer (Cellular Genetics section)
6 manuscripts reviewed for <i>GENETICS</i>, <i>G3</i>, <i>Frontiers in Immunology, Computational and Structural Biotechnology Journal</i>, tinyurl.com/rev-rf |
| 2020 | <ul style="list-style-type: none"> ● Organizer for CU Anschutz Immuno-Informatics Joint Journal Club |
| 2019 | <ul style="list-style-type: none"> ● Mentor Collective mentorship training |
| 2017 | <ul style="list-style-type: none"> ● Data Incubator Data Science Fellowship |

- 2016
 - Grant writing workshop, Dr Lieberman
- 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 LGBTQ+ Hub Diversity training
- 2021
 - CU Anschutz Medical Campus Equity Certificate Program training
- 2021
 - Inclusive STEM Teaching Course training
- 2019
 - Admissions Committee for CU Graduate Experiences for Multicultural Students
- 2019
 - Mentor for CU Anschutz and Denver Campus ISCORE (undergraduate mentorship program)

RECOGNITION

- 2021
 - University of Colorado Anschutz Medical Campus Spatial Transcriptomics Pilot Grant**
Spatiotemporal analysis of microglial contribution to immune-mediated demyelinating lesion formation (joint submission with Dr Macklin)
- 2021
 - Colorado RNA Newsletter Spotlight**
- 2011
 - Dr Huang Memorial Scholarship, UC San Diego**
- 2009
 - First-Class Scholarship**
- 2008
 - XMU University Merit Student**
- 2006
 - XMU University Merit Student**

SCIENCE OUTREACH

- Volunteer for CU Anschutz Medical Campus Young Hands in Science Outreach Program (2021)
- Facilitator at Denver Museum of Nature and Science – Prehistoric Journey section (2019 – 2020)
- Visitor Education Volunteer at the New England Aquarium (2016 – 2017)
- Information Ambassador at the San Diego Zoo (2015 – 2016)
- Organizer for UCSD Ethics Center's Silent Spring 50th Anniversary Project (2012)

Made with [pagedown](#).

Code at github.com/raysinensis/cv.

Last updated on 2021-06-21.