

# RUI FU

RNA Bioscience Initiative, University of Colorado Anschutz Medical Campus

My research interests are in the various aspects of post-transcriptional gene expression regulation, particularly RNA degradation. Alongside 10 years of bench research experience, I have now worked 3 years in computational roles analyzing genomic and high throughput 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 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 the mitochondrial trigger of apoptotic mRNA decay
  - Purification of cytotoxic granules and key cytolytic proteins
  - 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 (TTP)-mediated mRNA decay and translational repression during the immune response of macrophages
  - 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  
|  
2016

2015  
|  
2009

2009  
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2007

## CONTACT

- ✉ [Rui.Fu@CUanschutz.edu](mailto:Rui.Fu@CUanschutz.edu)  
📞 +1 858-344-2507  
/github/raysinensis  
/in/ruifu-rna  
raysinensis.com

Bioinformatic tool development:  
*clustifyr*, automated single cell RNA-seq cell identity assignment (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*, tidyverse-style genomic interval analysis (co-developer)

*scraps*, extraction of polyadenylation site info from scRNA-seq data (co-developer)

*djvdj*, analysis of AVID-seq/LIBRA-seq signals alongside single cell VDJ sequencing data (co-developer)



## TEACHING EXPERIENCE

Current  
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2020

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

University of Colorado Anschutz

- Teaching and grading with RStudio Cloud for *Informatics and Statistics for Molecular Biology*
- Zoom lecture, paper discussion, and exam/homework design for RNA section of *Foundations in Biomedical Sciences*
- Online lectures for *Workshop for scRNA-seq Data Analysis*

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

Current  
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2018

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

University of Colorado Anschutz

- Lecture for RNA sequencing section of *Rigor in Research* (2020)
- Lectures, paper discussion, and exam/homework design for RNA section of *Foundations in Biomedical Sciences* (2018, 2019)
- Course development and lectures for *Practical Data Analysis with R/RStudio* (2018, 2019)
- Course development and lectures for *Workshop for scRNA-seq Data Analysis* (2019)

Developed computational biology course materials:

[rnabioco.github.io/practical-data-analysis](https://rnabioco.github.io/practical-data-analysis)

[rnabioco.github.io/cellar](https://rnabioco.github.io/cellar)

Current  
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2018

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

University of Colorado Anschutz

- *Practical Computational Biology for Biologists: R*
- *Practical Computational Biology for Biologists: Python*
- Paper discussion for *Core Topics in Biomedical Sciences*

Current  
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2017

- **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

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 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

2017

- **Summer Research Mentoring**

Harvard Medical School

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

2015

- **BS/MS Student Research Mentoring**

University of California San Diego

- Mentoring of student research spanning undergraduate honor thesis and master thesis in 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 the 2016 RNA manuscript, with mentee as second author

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2013

2012

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

University of California San Diego

- *Molecular Biology, DNA Recombination Lab x2*

|  
2011



## PUBLICATIONS, AS FIRST AUTHOR

2020

- **RNA-binding proteins regulate aldosterone homeostasis in human steroidogenic cells**

Submitted to *Molecular Systems Biology*

- Fu R<sup>7</sup>, Wellman K<sup>7</sup>, Daigneault J, Hammer G, Rainey B, Riemondy K, Mukherjee N.

Google Scholar:  
[tinyurl.com/googlescholar-rf](http://tinyurl.com/googlescholar-rf)

2020

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

Submitted to *biorxiv* and *PLOS Biology*

- Puntambekar S, Hesselberth J, Riemondy K<sup>c</sup>, Fu R<sup>c</sup>.

GitHub Projects:  
[github.com/rnabioco](https://github.com/rnabioco)

2020

- **Seasonal metabolic reprogramming dominates liver transcriptome dynamics in circannual hibernation**

Submitted to *Frontiers in Physiology*

- Gillen A<sup>7</sup>, Riemondy K<sup>7</sup>, Fu R<sup>7</sup>, Jeager J, Grabek K, Epperson E, Bustamant C, Hesselberth J, Lazar M, Martin S.

squirrelBox Web App:  
[tinyurl.com/sqRNABox](http://tinyurl.com/sqRNABox)

2020

- **Dynamic RNA regulation in the brain underlies physiological plasticity in a hibernating mammal**

*Frontiers in Physiology*

- Fu R<sup>7</sup>, Gillen A<sup>7</sup>, 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, Riemony K.
- 2018
- **PNPT1 release from mitochondria during apoptosis triggers decay of poly(A) RNAs**  
*Cell*
    - Liu X<sup>7</sup>, Fu R<sup>7</sup>, 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

- 2020
- **BTK signaling regulates real-time microglial dynamics and prevents demyelination in a novel *in vivo* model of antibody-mediated cortical demyelination**  
In prep for *Nature Medicine*
    - Barr H, Given K, McClain C, Gruber R, Ofengeim D, Fu R, Macklin W, Bennett J, Owens G, Hughes E
- 2020
- **Srsf3 mediates alternative RNA splicing downstream of PDGFRα signaling**  
Submitted to *biorxiv* and *Developmental Cell*
    - Dennison B, Larson E, Fu R, Mo J, Fantauzzo K.
- 2020
- **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.
- 2020
- **Single-cell RNA sequencing identifies macrophage transcriptional heterogeneities in granulomatous diseases**  
Submitted to *American Journal of Respiratory and Critical Care Medicine*
    - Liao S, Shaikh A, Konigsberg I, Fu R, Davidson E, Li L, Mould K, 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**, Riemonyd 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, Riemonyd K, **Fu R**, Schuyler R, Hesselberth J, Rosen H, Burchill M.
- 2019 ● **Single cell RNA Sequencing Identifies Transforming Growth Factor  $\beta$  as a Critical Regulator of Alveolar Regeneration**  
*JCI Insight*  
• Riemonyd 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*  
• Riemonyd 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

- 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<sub>0</sub>-S transition  
Cold Spring Harbor Laboratory mRNA Processing Meeting (Poster)
- 2012
  - The regulation of TTP family mRNA-decay factors during G<sub>0</sub>-S cell cycle progression  
Keystone Symposia on Protein-RNA Interactions (Poster)

## SERVICE

- Current | 2020
  - RNA Society Volunteer - Writer for Scientist Spotlight
- 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](http://tinyurl.com/rev-rf)
- Current | 2011
  - Peer review of manuscripts under Dr Lykke-Andersen, Dr Lieberman, Dr Hesselberth
- 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)
- 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

## RECOGNITION AND TRAINING

- 2021
  - CU Equity Certificate Program
- 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

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- A vertical timeline on the left side of the page. It features a blue vertical line with horizontal tick marks and labels. The labels on the left are: 2009, 2007, 2008, 2006, 2008, and 2006. To the right of the line, there are three bullet points corresponding to each label:
- National College Students Creativity Experiment Project
  - First-Class Scholarship
  - XMU University Merit Student

## fish SCIENCE OUTREACH

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- A vertical timeline on the left side of the page. It features a blue vertical line with horizontal tick marks and labels. The labels on the left are: 2020, 2019, 2017, 2016, 2016, and 2015. To the right of the line, there are three bullet points corresponding to each label:
- Facilitator at Denver Museum of Nature and Science - Prehistoric Journey section
  - Visitor Education Volunteer at the New England Aquarium
  - Information Ambassador at the San Diego Zoo

~500 hours of weekend volunteering time logged

Made with [pagedown](#).

Code at [github.com/raysinensis/cv](https://github.com/raysinensis/cv).

Last updated on 2021-01-01.