

ELIZABETH M. SNYDER

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SUMMARY

My research aims to connect structural and nucleotide-level RNA variants to proteome composition and cellular development. My interdisciplinary research program:

- Will inform on fundamental aspects of **RNA biology and reproductive biology**.
- Uses the **mouse male germ cell** as a model.
- Provides a platform for **genomic education and training**.
- Is supported by an **NIH Pathway to Independence Award (K99/R00)**.

EDUCATION & TRAINING

Dec 2010 – March 2015 *Post-doctoral Fellow, Robert Braun Laboratory, The Jackson Laboratory*

- RNA modification analysis and modifying enzyme function in male germ cells via mouse genetic models.
- Testis transcriptome analyses.

Sept 2005 – Aug 2010 *PhD, Molecular and Cellular Biology, Michael Griswold Laboratory, School of Molecular Biosciences, Washington State University*

- Temporal onset of male germ cell differentiation and perturbation impacts on adult spermatogenesis.
- Retinoic acid (RA) driven male germ cell differentiation, using a transgenic mouse model, tissue culture, histology, and expression analysis.
- Hormonal responsiveness and development of the male reproductive tract, using microarray analysis.

Sept 2002 – June 2004 *Bachelor of Science – Molecular Biology, Western Washington University*

PROFESSIONAL EXPERIENCE

Sept 2017 and continuing *Assistant Professor, Department of Animal Sciences, Rutgers University*

July 2017 – Aug 2017 *Co-adjutant, Department of Animal Sciences, Rutgers University*

- Establish and staff a laboratory dedicated to the study of RNA modifications in male germ cells, their impact on male fertility, and effect on the male germ cell proteome.

April 2015 – June 2017 *Associate Research Scientist, The Jackson Laboratory*

- RNA modifications in male germ cells, impact on male fertility. Combining transcriptomics tools with mouse genetic models engineered by traditional and CRISPR-Cas-mediated genome editing.

FUNDING AWARDS

4/2015 – current NIH Pathway to Independence Award (**K99/R00**), NICHD

4/2012 – 3/2015 Individual Postdoctoral Fellowship (**F32**), NICHD

4/2012 Lalor Foundation Postdoctoral Fellowship (Declined)

PUBLICATIONS

Peer-reviewed primary research

- **Elizabeth M. Snyder**, Christopher McCarty, Adrienne Mehalow, Karen Svenson, Stephen A. Murray, Ron Korstanje, Robert Braun. APOBEC1 complementation factor (A1CF) is not required for C-to-U RNA editing *in vivo*. Jan. 2017. *RNA*.
- **Elizabeth M. Snyder**, Konstantin Licht, Robert E. Braun. Testicular adenosine to inosine RNA editing in the mouse is mediated by ADARB1. Jan. 2017. *Biology of Reproduction*.
- Tongjun Gu, Daniel M. Gatti, Anuj Srivastava, **Elizabeth Snyder**, Narayanan Raghupathy, Karen L. Svenson, Ivan Dotu, Jeffrey H. Chuang, Mark P. Keller, Alan D. Attie, Robert E. Braun, Gary A. Churchill. Genetic architectures of quantitative variation in RNA editing pathways. Feb. 2016. *Genetics*.
- **Elizabeth Snyder***, Ramani Soundararajan*, Manju Sharma, Andrea Dearth, Benjamin Smith, Robert E. Braun, Compound Heterozygosity for Y Box Proteins Causes Sterility due to Loss of Translational Control. Dec 2015. *PLoS Genetics*. *These authors contributed equally to the work.
- Chakraborty P, Buaas FW, Sharma M, **Snyder E**, deRooij DE, Braun RE. 2014. LIN28A marks the spermatogonial progenitor population and regulates its cyclic expansion. *Stem Cells* 32(4):860-873.
- Davis JC, **Snyder EM**, Hogarth CA, Small C, Griswold MD. 2013. Induction of spermatogenic synchrony by retinoic acid in neonatal mice. *Spermatogenesis* 3: e23180.
- Greenlee AR, Shiao MS, **Snyder E**, Buaas FW, Gu T, Stearns TM, Sharma M, Murchison EP, Puente GC, Braun RE. Deregulated sex chromosome gene expression with male germ cell-specific loss of dicer1. *PLoS ONE*. Oct 2012. 7(10): e46359.
- **Snyder EM**, Davis JD, Zhou Q, Evanoff, R, Griswold MD. Exposure to retinoic acid in the neonate but not adult mouse results in synchronous spermatogenesis. *Biol Reprod*. May 2011. 84(5):886-93.
- Hogarth CA, Evanoff R, Kent T, **Snyder EM**, Mitchell D, Small CL, Amory J, Griswold MD. Suppression of *Stra8* Expression in the Murine Gonad by WIN 18,446. *Biol Reprod*. May 2011. 84(5):957-65.
- **Snyder EM**, Small CL, Griswold MD. Retinoic acid availability drives the asynchronous initiation of spermatogonial differentiation in the mouse. *Biol Reprod*. Nov. 2010. 83(5):783-90.
- **Snyder EM**, Small CL, Bomgardener D, Xu B, Evanoff R, Griswold M, Hinton B. Gene expression in the efferent ducts, epididymis, and vas deferens during embryonic development of the mouse. *Dev Dyn*. Sep. 2010. 239(9):2479-91.
- **Snyder EM**, Small CL, Li Y, Griswold MD. Regulation of gene expression by estrogen and testosterone in the proximal mouse reproductive tract. *Biol Reprod*. Oct. 2009. 81(4):707-16.

Manuscripts in preparation

- **Elizabeth M. Snyder**, Robyn L. Ball, Nazira Bektassova, Lucie N. Hutchins, Joel H. Graber, Robert E. Braun. An expanded testis transcriptome demonstrates cell-specific novel coding transcripts give rise to testis proteome complexity.

SELECTED PRESENTATIONS

- September 2016: Cornell University, Department of Biomedical Sciences – Invited Seminar “RNA variants in the Male Germ Cells: A New Layer of Developmental Regulation”
- July 2016: Texas Tech University Health Sciences Center, Department of Cell Biology & Biochemistry – Invited seminar “RNA modification enzymes and their roles in male fertility”

- April 2016: Rutgers University, Department of Animal Sciences – Invited seminar “RNA epigenetic modification enzymes and their roles in male fertility”
- February 2016: Boston University, School of Medicine – Invited seminar “RNA epigenetics and male fertility: enzymes and function”
- June 2015: Society for the Study of Reproduction Annual meeting - *Oral presentation selected from abstracts*
- April 2015: American Society of Andrology - Poster
- April 2015: North American Testis Workshop - *Oral presentation selected from abstracts*
- March 2015: Gordon Research Conference, RNA editing - Poster
- March 2015: Gordon Research Seminar, RNA editing - *Oral presentation selected from abstracts*
- July 2014: Gordon Research Conference, Post-Transcriptional Gene Regulation - Poster
- April 2014: American Society of Andrology, Basic Science Workshop - *Invited speaker*
- July 2013: Society for the Study of Reproduction - Poster
- April 2013: North American Testis Workshop - Poster
- April 2012: American Society of Andrology Annual Meeting - Poster
- August 2011: Mammalian Gametogenesis & Embryogenesis Gordon Research Conference - Poster
- April 2010: Center for Reproductive Biology Annual Retreat - Oral Presentation - *1st place – Outstanding Pre-doctoral Scientific Presentation*
- April 2010: American Society of Andrology, Basic Science Workshop - Oral presentation
- April 2010: American Society of Andrology - Poster - *Award – Anna Steinberger Research Excellence Award to a Female Trainee*
- November 2009: Dr. William R. Wiley Exposition of Graduate and Professional Studies, Washington State University - Oral presentation - *1st place - Medical and Life Sciences Oral Presentation*
- April 2007: North American Testis Workshop – Poster

SELECTED HONORS

- April 2015: American Society of Andrology, *Lonnie D. Russell Travel Award*
- April 2012: American Society of Andrology, *Trainee Presentation Award*
- April 2010: American Society of Andrology, *Award – Anna Steinberger Research Excellence Award to a Female Trainee*

SELECTED TEACHING AND SERVICE

Teaching

2015 – 2016	Guest Faculty, Colby Undergraduate Genome Institute, The Jackson Laboratory
2014 – 2015	Journal Club Coordinator, Summer Student Program, The Jackson Laboratory <ul style="list-style-type: none"> • Developed and implemented a course focused on understanding how biomedical research is portrayed in the popular press. Applied multiple active learning techniques to ensure students gained proficiency in analysis of biomedical research and popular press coverage.
2013	Journal Club Facilitator, Summer Student Program, The Jackson Laboratory
2005 – 2006	Lead Teaching Assistant, Freshman Biology, Washington State University

Mentoring

2016	Mentor, Colby JanPlan Internship Program, The Jackson Laboratory
2013 - 2016	Mentor (4 students total), Summer Student Program, The Jackson Laboratory

- Directly supervised students from underrepresented groups. Multiple trainees have moved on to pursue graduate studies in molecular bioscience.

- 2009 - 2010 Undergraduate Researcher Mentor, Washington State University
- Directly supervised top tier undergraduate researchers. Trainees have moved on to pursue medical careers, scientific drafting careers, and advanced degrees. One long-term trainee was accepted to Harvard Graduate School as a student for Dr. Douglas Melton.
- 2009 - 2010 Graduate Researcher Mentor, Washington State University
- 2006 - 2007 Undergraduate Researcher Mentor, Washington State University

Service activities

- July 2017 to current: Society for the Study of Reproduction, Program Committee Member
- April 2015 to current: American Society of Andrology, **Basic Science Workshop Committee Chair**
- April 2012 to current: American Society of Andrology, Trainee Affairs Committee
- April 2011 to 2012: American Society of Andrology, **Trainee Representative**
- April 2010 to April 2011: American Society of Andrology, Trainee Affairs Committee Member, Trainee Representative elect
- 2006 - 2010: Student Mentor, Graduate Recruiting Weekend, School of Molecular Biosciences, Washington State University
- May 2009 to May 2010: Molecular Biosciences Graduate Student Association Invited Speaker and Professional Development Committee Chair
- May 2008 to May 2009: Molecular Biosciences Graduate Student Association President
- May 2007 to May 2008: Molecular Biosciences Graduate Student Association Vice President
- August 2006 to May 2007: Molecular Biosciences Graduate Student Association Secretary

Journal Reviewer

- *Nature Scientific Reports*
- *Reproduction*
- *Biology of Reproduction*
- *PLOS Genetics*