

JACOB C. SCHWARTZ, PH.D.

Tucson, AZ • (940) 367-8186 • jcschwartz@email.arizona.edu

EMPLOYMENT

Assistant Professor, University of Arizona at Tucson, Tucson, AZ • *present*

EDUCATION

Postdoctoral fellow, CU Boulder / Howard Hughes Medical Institute, Boulder, CO

Ph.D. in Biophysics, University of Texas, Southwestern Med. Center, Dallas, TX • 2010

Thesis: "Small RNAs regulate transcription by interaction with noncoding RNA transcripts." Mentor: Dr. David R. Corey.

M.S. in Biology, specialization in Neuroscience, Univ. of North Texas, Denton, TX • 2005

B.S. in Physics, Univ. of North Texas, Denton, TX • 2002

TRAINING

Laboratory of Dr. Tom Cech, Biochemistry, CU Boulder, Boulder, CO 2010 – 2014

K99/R00 award recipient • 2013 – Present

NRSA Postdoctoral Fellow • 2012 – 2013

Postdoctoral Researcher • 2010 – Present

Laboratory of Dr. David R. Corey, Pharmacology, UT Southwestern, Dallas, TX 2005 – 2010

NRSA Pre-doctoral Fellow • 2006 – 2010

Research Assistant II • 2005 – 2006

Research Assistant • Center for Network Neuroscience, Denton, TX 2002 – 2005

Research Assistant • Ion Beam Modifications and Analysis Laboratories, Denton, TX 2000 – 2003

Research Assistant • Polymer Gels and Hydrogels Research Laboratory, Denton, TX 2000 – 2001

Tutor • Texas Academy of Math and Science, Univ. of North Texas, Denton, TX 1999 – 2002

TEACHING EXPERIENCE

U. Arizona, Tucson, AZ 2014 – present

Lecturer – Proteins and Enzymes, *Fall semester, BIOC 565*

Lecturer – Introduction to Biochemical Research, *BIOC 296b*

C.U. Boulder, Boulder, CO 2011 – 2013

Discussion Group Leader – *RCR (Dale Mood)*, 2 lectures • 2012 – 2013

• Led Conflicts of Interest, and Human and Animal Use.

Guest Lecturer - *Biochemistry I (Robert Batey)*, 6 lectures, *BIOC4711* • 2012

• Lectures on Amino Acids, Protein Purification, Cooperativity, Allostery, and Drug Development.

Guest Lecturer - *Quantitative Biology (Tom Cech)*, 2 lectures, *PHYS7810* • 2011 – 2012

• Lectures and activity-based learning on Genome Bioinformatics Using Public Databases.

Univ. of North Texas, Denton, TX 2000 – 2002

Guest Lecturer - *Solid State Physics (Zhibing Hu)*, 2 lectures, *PHYS4500* • 2001 – 2002

Teaching Assistant - *Nuclear Physics Laboratory, PHYS4900* • 2002

Teaching Assistant - *Probability and Statistics, MATH1681 and MATH 1780* • 2001 – 2002

Teaching Assistant - *General Physics I and II, PHYS1510 and PHYS1520* • 2000 – 2001

Tutor • Texas Academy of Math and Science, Univ. of North Texas, Denton, TX 1999 – 2002

• Mechanics, Electricity and Magnetism, Calculus I, Calculus II, *PHYS1710, PHYS2220, MATH1710, MATH1720.*

DEPARTMENT AFFILIATIONS

(Primary Appointment) – Department of Chemistry and Biochemistry, University of Arizona

(Member) – Department of Neuroscience, University of Arizona

(Member) – University of Arizona Cancer Center, University of Arizona Health Sciences

SERVICE**Reviewer (Funding):**

<i>Gordon Research Conferences</i>	2015
<i>Motor Neurone Disease Association</i>	2015
<i>UA-American Cancer Society</i>	2014

Reviewer (Journal):

<i>PNAS</i> – 1 publication	2015
<i>Journal of Biological Methods</i> – 1 publication	2014
<i>Nucleic Acids Research</i> – 4 publications	2014 – present
<i>Cancer Gene Therapy</i> – 1 publication	2014
<i>ASN Neuro</i> – 1 publication	2014

Departmental Committees:

<i>CBC Faculty Search Committee</i>	2015 – present
<i>Colloquium Organization Committee</i>	2014 – present

Thesis Committee

Teal Brechtel (PhD)	Lindsay Guzman (PhD)
Wen Chen (PhD)	Lilian Patron (PhD)
Andres Morera (PhD)	
Michelle Riffer (MS)	

Graduate Students Trained

Matthew Swan (MA)	2014 – 2015
Mahta Moinpour (PhD)	2015 – present
Nasiha Ahmed (PhD)	2015 – present

Undergraduate Students Trained

Conner White	2014 – present
Rishab Srivastava	UBRP fellowship 2015 – present

AWARDS & ACHIEVEMENTS

Al Gilman Award, Department of Pharmacology, UT Southwestern, Dallas TX • 2009
 Dean's Discretionary Academic Excellence Award, UT Southwestern, Dallas TX • 2009
 Leita Marsh Pharmacological Award, Altrusa International Inc., Dallas, TX • 2009
 Keystone Symposia Scholarship, "RNAi, MicroRNA, and Non-Coding RNA" • 2008
 39th Annual Sigma Xi Research Forum Meritorious Research Award • 2007
 Presidential Honors Scholarship, Univ. of North Texas • 1999 – 2002
 Eagle Fellow's Scholarship, Univ. of North Texas • 1999 – 2001
 President of Society of Physics Students (SPS), Tarleton A&M University • 1998 – 1999
 Dick Smith Scholarship, Tarleton A&M University • 1998 – 1999

FUNDING

- NIH (NINDS) K99/R00 award, "Analysis of the RNA-binding protein FUS and its role in neurodegenerative disease" **2013 - present**
1K99NS082376-01A1
- NIH (NIGMS) F-32 NRSA Fellow, "Regulation of transcription by the RNA binding protein FUS" **2012 – 2013**

1F32GM095311-01A1

- NIH (NIBIB) F-31 Kirschstein Fellow, "Smart Radiolabels to image macromolecular interactions" 2006 – 2010
5F31EB005556

PATENT

WO 2009046397 – **Schwartz JC**, Younger ST, Janowski BA, Corey DR
 "Modulating gene expression with agRNA and gapmers targeting antisense transcripts"
License Agreement with: Alnylam Pharmaceuticals Inc., Start: 2009
License Agreement with: MiNA Therapeutics, Start: 2015

RESEARCH PUBLICATIONS

For more publication information, go to <http://www.researcherid.com/rid/J-6477-2012>

1. Wang X, **Schwartz JC**, Podell ER, Cech TR, "FUS binds RNA in a cooperative and length-dependent manner." *NAR*, 2015 Jul 6. Pii: gkv679. (*Epub ahead of print*). (PMID: 26150427)
2. **Schwartz JC**, Cech TR, Parker RR, "Biochemical properties and biological functions of FET proteins", *Annu. Rev. Biochem.* 2015; 84:355-79. (PMID: 25494299)
3. **Schwartz JC**, Podell ER, Han SSW, Berry JD, Eggan KC, Cech TR, "FUS is sequestered in nuclear aggregates in ALS patient fibroblasts" *Mol Biol Cell*, 2014; 25(17):2571-8. (PMID: 25009283)
4. **Schwartz JC**, Wang X, Podell ER, Cech TR, "RNA seeds higher order assembly of FUS protein" *Cell Reports*, 2013; 5(4):918-25.
5. **Schwartz JC**, Ebmeier CC, Podell ER, Heimiller J, Taatjes DJ, Cech TR, "FUS binds the CTD of RNA polymerase II and regulates its phosphorylation at Ser2" *Genes Dev*, 2012; 26:2690-95.
6. Pena-Llopis S, Vega-Rubin-de-Celis S, **Schwartz JC**, Wolff N, Tran TAT, Zou L, Xie X, Corey DR, Brugarolas J, "Reciprocal regulation of V-ATPases and mTORC1", *EMBO J*, 2011; 30(16):3242-58.
Commented on by:
 - a. Jacinto E, "TFEBulous control of traffic by mTOR", *EMBO J*, 2011; 30(16):3215-3216
7. **Schwartz JC**, Corey DR, "Practical considerations for analyzing antigene RNAs (agRNAs): RNA immunoprecipitation of argonaute protein", *Methods Mol Biol*, 2011; 764:301-15
8. Yue A, **Schwartz JC**, Younger ST, Chu Y, Gagnon KT, Elbashir S, Janowski BA, Corey DR, "Regulation of Transcription by Small RNAs Complementary to Sequences Downstream from the 3' Termini of Genes", *Nat Chem Biol*, 2010 Aug; 6(8):621-9
9. Hu J, Matsui M, Gagnon KT, **Schwartz JC**, Gabillet S, Arar K, Wu J, Bezprozvanny I, Corey DR, "Inhibiting Expression of Mutant Huntingtin and Ataxin-3 by Targeting Expanded CAG Repeat RNAs", *Nat Biotech*, 2009 May; 27(5):478-84
Commented on by:
 - a. Aronin N, "Expanded CAG repeats in the crosshairs." *Nat Biotech*, 2009; 27(5):748-84.
10. **Schwartz JC**, Younger ST, Nguyen, NB, Hardy DB, Monia BP, Corey DR, Janowski BA, "Antisense Transcripts are Targets for Small Activating RNAs", *Nat Struct Mol Biol.* 2008 Aug;15(8):842-8.
Commented on by:
 - a. Arnaud, CH, "RNA-Controlled Gene Expression", *Chem&Engineering News*, 2008 July 10.
 - b. UTSMC. "New Targets For RNAs That Regulate Genes Identified." *ScienceDaily*, 2008 Jul 6.
 - c. Kruger RP, "Leading Edge: Making Sense of Antisense", *Cell*, 2008 July 25; 134: 195-6.
 - d. Sheppard TL, "Research Highlights: Making sense of RNA activation", *Nat Chem Biol*, Aug 2008; 4(8):457.
 - e. Pollack A, "The Promise and Power of RNA", *The New York Times*, 2008 Nov 11.
 - f. Dolgin E, "Now Showing: RNA Activation." *The Scientist*, 2009 May 5; 23(5):34
11. Janowski BA, Huffman KE, **Schwartz JC**, Ram R, Nordsell R, Shames DS, Minna JD, Corey DR, "Involvement of AGO1 and AGO2 in mammalian transcriptional silencing", *Nat Struct Mol Biol.* 2006 Sep;13(9):787-92.
12. Janowski BA, Kaihatsu K, Huffman KE, **Schwartz JC**, Ram R, Hardy D, Mendelson CR, Corey DR, "Inhibiting transcription of chromosomal DNA with antigene peptide nucleic acids", *Nat Chem Biol.* 2005 Sep;1(4):210-5.

13. Janowski BA, Huffman KE, **Schwartz JC**, Ram R, Hardy D, Shames DS, Minna JS, Corey DR, "Inhibiting gene expression at transcription start sites in chromosomal DNA with antigene RNA", *Nat Chem Biol.* 2005 Sep;1(4):216-22.
14. Lu X, Hu Z, **Schwartz J** "Phase Transition Behavior of Hydroxypropylcellulose under Interpolymer Complexation with Poly(acrylic acid)" *Macromolecules* 2002; 35(24): 9164-8
15. McDaniel FD, Doyle BL, Seager CH, Walsh DS, Vizkelethy G, Brice DK, Yang C, Rossi P, Nigam M, El Bouanani M, Ravi Prasad GV, **Schwartz JC**, Mitchell LT, and Duggan JL, "Ionoluminescence decay measured with single ions" *Nuclear Instruments and Methods in Physics Research B*, 2002; 190:1-10.

TALKS PRESENTED

1. Tarleton State University, 1999
 2. Substrate Integrated Microelectrode Array (SIMEA) conference, Denton TX, 2003
 3. School of Biomedical Sciences, University of Nottingham, UK, 2003
 4. Institute of Biological Sciences, University of Rostock, Germany, 2003
 5. Regulatory and Noncoding RNA conference, Cold Spring Harbor Laboratories, N.Y. 2012
 6. Functional RNAs, Cell Symposia, Sitges, Spain 2012
-