

# CURRICULUM VITAE

**NAME:** Jeffery M. Collier, Ph.D.

**TITLE:** Assistant Professor

## PROFESSIONAL ADDRESS

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## EDUCATION

Post-doctoral                    *Howard Hughes Medical Institute & The University of Arizona*  
Department of Molecular & Cellular Biology, 2005

Ph.D.                                *The University of Wisconsin-Madison*  
Cellular and Molecular Biology, 2000

B.S. (Hons)                        *The University of Michigan*  
Biochemistry, 1994

*Stockholms Universitet, Sweden*  
Visiting researcher, Department of Molecular Biology, 1993

## AWARDS

*Howard Hughes Medical Institute Post-doctoral Fellowship*, University of Arizona, 2000 - 2005  
*Cellular and Molecular Biology Training Grant*, University of Wisconsin, 1994-2000  
*College of Arts and Sciences Honors Program Scholar*, University of Michigan, 1994 Awarded to 5 students/yr.  
*Murchie Fund Scholarship*, University of Michigan, 1994, Awarded to one student/yr.  
*Eugene W. Geniesse, Sr. Science Scholarship*, University of Michigan, 1993, Awarded to one student/yr.  
*Barbara Davis White Science Scholarship*, University of Michigan, 1993, Awarded to one student/yr.  
*Faculty and Staff Scholarship*, University of Michigan, 1993, Awarded to one student/yr.  
*Lions Research Grant*, University of Michigan, 1993  
*American Legion Research Grant*, University of Michigan, 1993  
*CAS Honors Program Stipend*, University of Michigan, 1993  
*Biological Research Excellence Award*, University of Michigan, 1993, Awarded to one student/yr.  
*William J. Brown Student Award*, American Society for Microbiology, 1992  
*CAS Freshman/Sophomore Honors Program Scholar*, University of Michigan, 1992  
*University of Michigan Scholar*, University of Michigan, 1991 & 1992  
*American Legion School Award*, University of Michigan, 1990  
*CAS Honors Program Scholarship*, University of Michigan, 1990, Awarded to ten incoming freshman.  
*Chancellor's Scholarship*, University of Michigan, 1990, Awarded to four incoming freshman.

## FUNDING HISTORY

### **“Investigating the process of existing mRNAs out of translation” (ongoing)**

Agency: National Institutes of Health

Type: ARRA-ROI supplement Research Project, Federal Support

Period: August 10, 2009 to July 31, 2012

Direct Cost: \$127,663/yr

### **“Transferring research from a model system to uncover the network that regulates long-distance signaling in potato” (ongoing)**

Agency: National Science Foundation

Type: Plant Genome Research Project - Federal Support

Period: October 1, 2008 to September 30, 2012

Direct Cost: \$95,000/yr

### **“Investigating the process of existing mRNAs out of translation” (ongoing)**

Agency: National Institutes of Health

Type: ROI Research Project, Federal Support

Period: July 1, 2007 to June 30, 2012

Direct Cost: \$171,000/yr

### **“Characterizing the contribution of RCK/p54 helicases to the control of the cell cycle” (complete)**

Agency: American Cancer Society

Type: Pilot Research Grant, Non-Federal Support

Period: July 1, 2006 - June 30, 2007

Direct Cost: \$20,000

## SOCIETY MEMBERSHIPS

The RNA Society, 2005-present

Faculty of 1000, 2005-present

## STUDENTS

### *Doctoral Students*

Wenqian Hu (2005-present); Department of Biochemistry, conducting thesis research on the interplay between translation and mRNA decay

Thomas J. Sweet (2006-present); Department of Biochemistry, conducting thesis research on the interaction of the DEAD box RNA helicase, Dhh1p, with the translational machinery.

Sarah J. Geisler (2007- present); Department of Biochemistry, conducting thesis research on the putative feedback of mRNA decapping on mRNA transcription.

### *High School Students*

(Catalyst Program, Gilmour Academy High School)

Lexi Antunez (2008)

So In Yoon (2008)

Reem Azem (2007)

Elizabeth McErlean (2007)

Brooke Boyer (2006)

Iswhar Gill (2006)

### *Thesis Committees*

Andrea Putnam 2008- present (Dr. Eckhard Jankowsky)

Yu Cao 2008-present (Dr. Eckhard Jankowsky)

Huijue Jia 2007-present (Dr. Eckhard Jankowsky)

Wen Huang 2006-2007 (Dr. Tim Nilsen's lab)  
Yang Yu 2007-present (Dr. William Merrick's lab)  
Abby Bifano, 2005-present (Dr. Mark Capera's Lab)  
Ryan Strachan, 2005-present (Biochemistry Department)  
Lucas Reineke, 2005-present (Dr. William Merrick's Lab)  
Zhaofeng Gao, 2008 - present (dr. Eckhard Jankowsky lab)

## PEER REVIEWED PUBLICATIONS

Hu, W., Sweet, T.J., Baker, K.E., and **Coller, J.** (2009) Co-translational mRNA decay in *Saccharomyces cerevisiae*, *Nature*, *in press*

Sweet, T.J., Boyer, B., Hu, W., Baker, K.E., and **Coller, J.** (2007) Microtubule disruption stimulates P-body formation. *RNA*, 13:493-502

Barbee, S., Estes, P., Cziko, AM., Luedeman, R., **Coller, J.**, Johnson, N., Howlett, I., MacDonald, P., Brand, A., Newbury, S., Levine, R., Wilhelm, J., Nakamura, A., Parker, R., and Ramaswami, R. (2006) Neuronal RNA granules and cytoplasmic processing bodies are similar in composition and function. *Neuron* 52:997-1009

**Coller J.**, and Parker R. (2005) General Translational Repression by Activators of mRNA Decapping. *Cell* 122:875-886

Cheng Z., **Coller J.**, Parker R., and Song H. (2005) Crystal structure of the DEAD box helicase, Dhh1p. *RNA* 11:1258-1270

Baker K.E.\*, **Coller J.**\*, and Parker R. (2004) The yeast Apq12 protein affects nucleocytoplasmic mRNA transport. *RNA* 10:1352-1358

\*Authors contributed equally

**Coller J.**, Tucker M., Sheth U., Valencia M., and Parker R. (2001) The DEAD box helicase, Dhh1p, functions in mRNA decapping and interacts with both the decapping and deadenylase complexes. *RNA* 12:1717-1727

**Coller J.** (2000) Control of mRNA metabolism via the poly (A) binding protein and development of the tethered function assay. *Doctorate Thesis*, University of Wisconsin.

Gray N., **Coller J.**, Dickson K., and Wickens M. (2000) Multiple portions of poly (A) binding protein stimulate translation *in vivo* through a poly (A)-independent mechanism. *EMBO J* 19:4723-4733

**Coller J.**, Gray N., and Wickens M. (1998) mRNA stabilization by poly (A) binding protein is independent of a poly (A) tail and requires translation. *Genes & Dev.* 12:3226-3235

## REVIEWS AND CHAPTERS

**Coller, J.** and Rueda, D. (2009) RNA research in the Rustbelt. *RNA Biol. in press*

**Coller, J.** (2008) Analysis of mRNA decay in *Saccharomyces cerevisiae*. *Methods Enzymol.* 448: 267-282.

**Coller, J.** and Wickens M. (2007). Tethered function assays: An adaptable approach to study RNA regulatory proteins. *Methods Enzymol.* 429:299-321

Baker, K.E. and **Coller J.**, (2006) The many routes to regulating mRNA translation. *Genome Biology*, 7:332

**Coller J.**, and Parker R. (2004) Eukaryotic mRNA decapping. *Annu. Rev. Biochem.* 73:861-890

**Coller J.**, and Wickens M. (2002) Tethered function assays using 3'UTRs. *Methods* 26:142-150

## **INVITED SEMINARS**

*Ohio State University (Columbus, OH)* Eukaryotic mRNA decay occurs on polyribosomes. - Invited by Dr. Daniel Schoenberg, March 10th, 2009

*University of South Carolina (Columbia, SC)* Eukaryotic mRNA decay occurs co-translationally. Invited by Dr. Dan Dixon, Center for Colon Cancer Research, February 9th, 2009

*Ohio State University (Columbus, OH)* Eukaryotic mRNA decay, P-bodies, and Polyribosomes - Invited by Dr. JC Jang, Department of Plant Cellular and Molecular Biology. December 11th, 2008

*Case Western Reserve University* Eukaryotic mRNA decay occurs on polyribosomes. CRISS seminar December 10th, 2008.

*John Carroll University (Cleveland OH)* The RNA World - Undergraduate guest lecture - invited by Dr. Mike Martin. October 28th, 2008

*Case Western Reserve University -Department of Biochemistry* Eukaryotic mRNA decay occurs co-translationally. October 9, 2008

*Case Western Reserve University* - "Speaking Strategies: Job Interviews" Invited by the Profession Skills Program, Office of Graduate Education. April 10, 2008

*Case Western Reserve University* - "The RNA Revolution" Foundation of Research and Scholarship Lecture, Invited by the School of Medicine to discuss research to the first year medical students. August 24th, 2007.

*Case Western Reserve University* - "Evidence that mRNA decay occurs co-translationally" Cell and Molecular Biology Training Grant Seminar Series. December 13th, 2007.

*Case Western Reserve University* - "Insights into how mRNAs stop translating" New Faculty Symposium. Invited by the School of Medicine. April 18th, 2007

*Case Western Reserve University* - "Insights into how mRNAs stop translating" Invited by the Department of Nutrition. April 3rd, 2007

*Cleveland State University* - "Insights into how mRNAs stop translating" Invited by the Biochemistry Department. February 7th, 2007

*University of California-Santa Cruz* - "Activators of mRNA decapping are general translational repressors" Invited by the Center for Molecular Biology of RNA. January 19th, 2005

*University of California-San Diego* - "Activators of mRNA decapping are general translational repressors" Invited by the Department of Chemistry. January 5th, 2005

*Case Western Reserve University* - "Activators of mRNA decapping are translational repressors" Invited by the Center for RNA Molecular Biology. December 15th, 2004

*Sloan-Kettering Cancer Center* - "Translational repression by components of P-bodies" Invited by the Department

of Molecular Biology. December 8th, 2004

July 20, 2004 - "Eukaryotic mRNA decapping". 154<sup>th</sup> meeting of the Society of General Microbiology, Bath, UK

## CONFERENCE PRESENTATIONS

**Hu, W.**, Sweet, T.J., Baker, K.E. and Collier, J. Eukaryotic mRNA decay occurs co-translationally. Research conference on mRNA decay and links between rare and common disease. Rustbelt RNA Meeting (Columbus, OH) October 17th - 18th 2008.

Hu, W., Sweet, T.J., Baker, K.E. and **Collier, J.** Eukaryotic mRNA decay occurs co-translationally. Research conference on mRNA decay and links between rare and common disease. Ashville, North Carolina, October 12th -16th, 2008.

Hu, W., Sweet, T.J., Baker, K.E. and **Collier, J.\*** Eukaryotic mRNA decay occurs co-translationally. FASEB summer research conference on mRNA decay. Lucca Italy September 14th - 19th. 2008 \*Invited Speaker

**Hu, W.**, Sweet, T.J., Baker, K.E. and Collier, J. Eukaryotic mRNA decay occurs co-translationally. CSHL meeting on Translational Control. September 3rd -6th 2008

Hu, W., Sweet, T.J., and **Collier, J.** (2007) Insights into how mRNAs stop translating. Rustbelt RNA Meeting (Columbus, OH).

Sweet, T.J, Boyer, B., Hu, W., Baker, K.E., and **Collier, J.** (2007) Microtubule disruption stimulates P-body formation. RNA Society Meeting, Madison WI

Hu, W., Sweet, T.J., and **Collier, J.** (2007) Insights into the role of RCK/p54 helicases in promoting translational silencing. RNA Society Meeting, Madison WI

**Collier, J.** (2006) How do mRNA enter translational quiescence? RNA Society Meeting., Seattle Washington. Barbee, S., Estes, P., **Collier, J.**, Johnason, N., Cziko, A., Newbury, S., Nakamura, A., Parker, R., and Ramaswami, M. (2005). A core translational control machinery shared between yeast and neurons is required for Fragile-X mediated repression. FASEB Summer Research Conference, Tucson, AZ

**Collier J.**, and Parker R. (2004) Components of yeast P-bodies promote translational repression. FASEB Summer Research Conference, Tucson, AZ

Baker K.\*, **Collier J.\***, and Parker R. (2004) The yeast Apq12 protein affects nucleocytoplasmic mRNA transport. FASEB Summer Research Conference, Tucson, AZ  
\*Authors contributed equally

**Collier J.**, and Parker R. (2004) Components of yeast P-bodies promote translational repression. RNA Society Meeting, Madison, WI

Baker K.\*, **Collier J.\***, and Parker R. (2004) The yeast Apq12 protein affects nucleocytoplasmic mRNA transport. RNA Society Meeting, Madison, WI  
\*Authors contributed equally

**Collier J.**, and Parker R. (2001) Efficient mRNA decapping in yeast requires the DEAD box helicase, Dhh1p, a component of the CCR4 deadenylase complex, RNA Society Meeting, Banff, Canada

**Coller J.**, and Parker R. (2001) Efficient mRNA decapping in yeast requires the DEAD box helicase, Dhh1p, a component of the CCR4 deadenylase complex, Monod Conference, Aussoie, France

Gray N., **Coller J.**, Dickson K., and Wickens M. (2000) Multiple portions of poly(A)-binding protein stimulate translation. CSHL Summer Conference on Translational Control, Cold Spring Harbor, NY

Gray N., **Coller J.**, Dickson K., and Wickens M. (2000) Multiple portions of poly(A)-binding protein stimulate translation. UK Translational Control Meeting. Cambridge, UK

Gray N., **Coller J.**, Dickson K., and Wickens M. (2000) Multiple portions of poly (A) binding protein stimulate translation *in vivo* through a poly (A)-independent mechanism. RNA Society Meeting, Madison, WI

**Coller J.**, and Wickens M. (1999) Poly (A) binding protein's function in mRNA stability and mRNA translation are genetically separable. Gordon Conference, Newport, RI

**Coller J.**, and Wickens M. (1998) mRNA turnover in yeast and frogs. FASEB Summer Research Conference, Portland, OR

**Coller J.**, Gray N., and Wickens M. (1998) mRNA stabilization by poly(A) binding protein *in vivo* is independent of a poly(A) tail and requires translation of the mRNA. RNA Society Meeting, Madison, WI

## TEACHING EXPERIENCE

*Case Western Reserve University (2005 - present)*

Contact hrs/yr: 8      Lecturer, Biochemistry 519, Molecular Biology of RNA. Topics: Translational control (Winter 2008)

Contact hrs/yr: 8      Lecturer, Biochemistry 599, RNA Structure and Function. Topics: Ribosomes dynamics and translation mechanism (Fall 2007)

Contact hrs/yr: 10      Lecturer, Gene Expression Unit, Medical Student Core Curriculum, Medium Size Group, The Human Blueprint. Introductory course for all incoming medical students Topics: Molecular Biology of Diabetes, Cystic Fibrosis, Breast Cancer, and Fragile X. (Fall 2007)

Contact hrs/yr: 6      Lecturer, Cell Biology 455, Correlated Curriculum in Cell and Molecular Biology (C3MB). Molecular Biology I (Introductory course for all incoming graduate students in Biomedical Sciences Training Program plus students in the Physiology & Biophysics program). Topics: Eukaryotic mRNA translation (Fall 2007)

Contact hrs/yr: 6      Lecturer, Cell Biology 455, Correlated Curriculum in Cell and Molecular Biology (C3MB). Molecular Biology I (Introductory course for all incoming graduate students in Biomedical Sciences Training Program plus students in the Physiology & Biophysics program). Topics: mRNA decay, mRNA translational control, and cytoplasmic mRNP granules. (Fall 2006)

Contact hrs/yr: 45      Course organizer and lecturer, Molecular Biology 488, Yeast Genetics and Cell Biology. (Advanced graduate student course). Developed course module on "Localization of mRNAs in yeast, a paradigm for developmental control in metazoans". Also developed a module on "Genomic analysis of a simple Eukaryotic organism". (Winter 2006)

Contact hrs/yr: 12      Lecturer, Biochemistry 519, Molecular Biology of RNA (Advance graduate student course). Developed course module on "Translational control of mRNA in Eukaryotes". (Winter 2006)

*University of Wisconsin-Madison (1994-2000)*

Teaching Assistant, 1998, Biochemistry 511-Genomics (an advanced graduate course for biochemistry students). Responsible for conducting a weekly discussion group on topics presented during lectures.

Administrative Teaching Assistant, 1997, Biocore 301, Evolution, Ecology, and Genetics (part of the core curriculum required for all majors in biological sciences at the undergraduate level). Responsible for overseeing the organization of the course, grades, exams, lecture schedules, and other teaching assistants.

Teaching Assistant, 1997, Plant Pathology 123: Plants, Parasites, and People (an elective course offered to non-major undergraduates). Responsible for conducting a weekly laboratory and discussion group.

Summer instructional course on teaching college biology, 1996, 1997

## **ACADEMIC SERVICE**

- 2005- present                      Organizer of RNA Center Student Seminar Series.
- 2006- present                      *Undergraduate Academic Advisor* for the Department of Biochemistry, Case Western Reserve University
- Advisees:                      Matthew Blauhut  
   Laura Bryant  
   Justin Care  
   Bo Chen  
   Mark Corriveau  
   Jingnan Hou  
   Jacob Moskowitz  
   Christine Petzold  
   Funita Phan  
   Roshni Rao  
   Sameed Shaikh  
   Steven Salloum  
   Nicole Zimmerman
- 2007-2010                      *Radiation Safety Committee (RSC)* - Case Western Reserve University. The Radiation Safety Committee assists the President and the University by ensuring compliance with the University's Radiation Safety Program as outlined in the University's Ohio Department of Health (ODH) Broadscope License. The Radiation Safety Committee members are chosen from a variety of disciplines to provide comprehensive expertise. The committee reviews all applications for use of radioactive materials.

## **SCIENTIFIC COMMUNITY SERVICE**

- National Science Foundation* - Study section panel reviewer (2009)
- MRC* - Ad hoc reviewer (2009)
- Wellcome Trust* - Ad hoc reviewer 2006-2008 (3 grants total)
- National Science Foundation* - Ad hoc reviewer for MCB - BIMOLECULAR SYSTEMS (2008) (1 grant)
- National Science Foundation* - Ad hoc reviewer for MCB - GENES AND GENOME SYSTEMS (2008) (2 grants)
- 2005 Peer reviewer for the journals: *Molecular Biology of the Cell* (2 manuscripts), *The Journal of Histological Chemistry* (1 manuscript), *RNA* (1 manuscript), *EMBO Reports* (1 manuscript).
- 2006 Peer reviewer for the journals: *RNA* (7 manuscripts), *PLOS Biology* (1 manuscript), *Journal of Biological Chemistry* (1 manuscript), *Molecular Cell* (3 manuscripts), *Molecular and Cellular Biology* (1 manuscript), *Genes and Development* (1 manuscript), *Nature Reviews in Molecular Biology* (1 manuscript), *Nucleic Acids Research* (1 manuscript), *Nature Structural and Molecular Biology* (1 manuscript).
- 2007 Peer reviewer for the journals: *Molecular Biology of the Cell* (3 manuscripts), *Molecular and Cellular Biology* (3 manuscript), *RNA* (6 manuscripts), *Biology of the Cell* (2 manuscript), *Genes and Development* (1 manuscript),

*Molecular Cell* (1 manuscript), *Nucleic Acids Research* (1 manuscript), *Biochemical and Biophysical Research Communications* (1 manuscript).

2008 Peer reviewer for the journals: *Molecular Cell* (1 manuscript), *RNA* (3 manuscripts), *Nucleic Acids Research* (2 manuscript).

## REFERENCES

**Dr. Tim Nilsen**, Professor and Chair  
Center for RNA Molecular Biology  
Case Western Reserve University  
10900 Euclid Avenue, School of Medicine  
Cleveland, OH 44106  
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**Dr. Roy Parker**, Professor  
Molecular and Cellular Biology Department  
Howard Hughes Medical Institute  
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