

Curriculum Vitae
Brian D. Adams, Ph.D.

Principle Investigator, Research Faculty
The RNA Institute, University at Albany
Life Sciences Research Building
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Education

August – 2015	Postdoc in Genetics & Molecular Biology	Yale University , New Haven, CT
August – 2009	Ph.D. in Biomedical Sciences	UConn Health Center , Farmington, CT
May – 2003	B.S. in Biology	King's College , Wilkes-Barre, PA

Major Research Interests

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| 1. Triple Negative Breast Cancer | 4. Dysregulation of endocrine & microRNA networks |
| 2. Brain Cancer Networks | 5. Role of Circular RNAs in Development |
| 3. Chemotherapeutic & radiation resistance | 6. Epigenetic regulators as therapeutic targets |

Research Experience

University at Albany – SUNY – Principle Investigator/Research Faculty: September 2016 to Present
– The RNA Institute, SUNY- University at Albany

Running an independent lab elucidating the role of non-coding RNAs in development and cancer.

Beth Israel Deaconess Medical Center – Instructor/Research Scientist: September 2015 to August 2016
Dr. Frank Slack, Department of Pathology, BIDMC/HMS; Director Institute for RNA Medicine

Yale University – Postdoctoral Associate: July 2014 to August 2015
– Postdoctoral Fellow: July 2013 to June 2014 - 5 T32 HG 3198-10

Dr. Frank Slack, Department of Molecular Cellular and Developmental Biology

Investigating the role of microRNAs within triple negative breast cancer, and using *in vivo* models to determine if microRNA replacement can serve as an effective therapeutic strategy for breast cancer patients

*Awarded MCDB Genomics & Proteomics Training Grant to identify microRNA targets in lymphoma models

Yale University – Postdoctoral Associate: August 2009 to June 2011; July 2012 to June 2013
– Postdoctoral Fellow: July 2011 to June 2012 - 5 T32 HL 7262-34

Dr. Jun Lu, Department of Genetics/Hematology

Researched the role of microRNAs within hematopoietic & leukemic stem cell biology, megakaryocyte development, and in promoting sensitivity to chemotherapeutic agents in both normal & cancer cells

*Received a Ruth L. Kirschstein National Research Service Award (Institutional T32 from Yale Hematology)

University of Connecticut Health Center – Graduate Assistant: January 2006 to August 2009

Dr. Bruce White, Department of Cell Biology (**Dissertation Laboratory**):

Discovered microRNA-206 regulates the estrogen-signaling network in human breast cancer cell lines by targeting ER α , SRC-1/3, and GATA-3, while reciprocally being regulated by 17 β -estradiol

MicroRNA-206 and the microRNA effector molecule Argonaute-2 was also found to be positively regulated by EGFR/MAPK signaling in ER α -negative in human breast cancer cells

MicroRNA-206 inhibited a luminal phenotype and promoted a “myoepithelial” phenotype in MCF-7 cells

University of Connecticut Health Center – Graduate Assistant: September 2005 to December 2005

Dr. Kevin Claffey, Center for Vascular Biology **(Fall Rotation)**:

Elucidated a mechanism explaining how hypoxia represses MAPK signaling in glioblastoma cells.

Immunoprecipitation experiments indicated activators of ERK1/2 such as Raf were affected by hypoxia.

University of Connecticut Health Center – Graduate Assistant: June 2005 to August 2005

Dr. Daniel Rosenberg, Center for Molecular Medicine **(Summer Rotation)**:

Created a retroviral-inducible cPLA2 α construct to assess its role in an *in vivo* colon cancer model. Molecular cloning, viral titers, and infections of colon cancer cells were performed to validate construct effectiveness.

Yale University – Research Assistant: June 2003 to May 2005

Dr. Leonard Milstone, Department of Dermatology

Conceived and optimized a novel approach to measure non-heme iron in epidermal tissue. Used *in vivo* models to study epidermal response to elevated iron levels associated with hereditary hemochromatosis.

Pharmaceutical Discovery Corporation – Research Assistant: May 2002 to January 2003

Dr. Cohava Gelber, Department of Immunology and Biology

Performed characterization of three monoclonal antibodies purified from hybridoma cultures. They were found, with relatively high affinity, to specifically target small cell lung cancer cells.

St. Vincent's Medical Center – Research Intern: June 2001 to August 2001

Maria Capasso RN, Research Nurse in Department of Cardiology

Surveyed heart attack patients that underwent primary angioplasty for myocardial infarction to determine hospital response time, and assisted in administration of a Phase II pulse-lowering drug, DTI-0009/003.

Mentoring / Teaching Experience

Discussion Leader, Biological and Biomedical Sciences, HMS

microRNAs in Cancer, part of *Current Topics and Techniques in Cancer Biology Research* – October 2015

Webinar Presenter, BitesizeBio

Techniques for Isolating Circulating Biomarkers – April 2015

<http://bitesizebio.com/webinar/23519/techniques-for-isolating-circulating-biomarkers/>

Liquid Biopsy Sample Handling – September 2015

<http://bitesizebio.com/webinar/25528/liquid-biopsy-sample-handling/>

Webinar Presenter, Invited

Liquid Biopsy Talks: miRNA in Exosome Research with Dr. Brian Adams

Qiagen: <https://youtu.be/0LmNzjRwKI>

MicroRNAs as Biomarkers and Therapeutic Targets in Triple Negative Breast Cancer – January 2016

Abcam: <http://www.abcam.com/webinars/micrnas-as-biomarkers-and-therapeutic-targets-in-triple-negative-breast-cancer-webinar>

All about miRNAs: Practical Tips, Advice, and Applications – July 2016

Bitesizebio: <http://bitesizebio.com/webinar/28830/all-about-mirnas-practical-tips-advice-and-applications/>

Guest Lecturer, Eastern Connecticut State University – December 2013

Discussed concepts & advances in the hematopoietic & cancer stem cell fields to undergraduate students

Rotation and Undergraduate Student Supervisor, *Yale University* – December 2010 to August 2014

Intern Supervisor, *UConn Health Center* – January 2008 to May 2009

Planned research projects for students and mentored students on cell/molecular biology laboratory skills

- **Danielle Cowee**[†] – Studied the anti-proliferative effects of miR-206 on MCF-7 breast cancer cells

- **Emina Begic** – Performed BrdU & TUNEL assays to elucidate anti-proliferative mechanisms of miR-206
- **Danielle Cowee*** – Performed *in-situ* hybridization to determine miR-206 localization in tumor samples
 - + **Poster Presentation Award**, (*The 2008 National Beta Beta Beta Biennial Convention, KY*)
 - * **Awarded Two Student Research Grants**, (2008 – 2009, *Saint Joseph College, CT*)

Adjunct Professor, *St. Joseph College* – September 2007 to December 2008

Proctored biology lab courses for nursing students; taught biological concepts through lab demonstration

Lab Aide, *King's College* – September 2002 to May 2003

Organized laboratory experiments for Molecular Biology and Molecular Genetics classes

Biology/Chemistry Tutor, *King's College* – September 2001 to May 2003

Tutored individuals and small groups in Chemistry, Organic Chemistry, Biology, Physics, and Calculus

Activities and Experiences

Verified Peer Reviewer for Publons	2015 –
Managing Editor For Special Edition on Non-Coding RNA in Cancer, <i>Frontiers in Bioscience</i>	2015 –
The Postdoctoral Advisory Committee for Yale University	2010 – 2011
Associate Member Council, part of the American Association for Cancer Research	2008 – 2010
Congressional Liaison Committee (CLC), part of the Joint Steering Committee (JSC)	2006 – Present
UConn Health Center Multidisciplinary Breast Cancer Research Group	2006 – 2009
Cell Biology Representative of the UCHC Graduate School Student Government	2006 – 2008
UConn Health Center Biomedical Scholars Enrichment Track	2005 – 2007

Professional Societies

Oligonucleotide Therapeutics Society	2015 – Present
The RNA Society	2015 – Present
American Society of Hematology	2011 – 2013
National Postdoctoral Association	2009 – 2015
New York Academy of Sciences	2009 – Present
American Association for Cancer Research	2007 – Present
The Endocrine Society	2007 – Present
The American Society of Cell Biology	2006 – Present
American Association for the Advancement of Science	2005 – Present

Related Work Experience

Northeastern Environmental Labs, *Scranton, PA 18501*

Analytical Chemistry Internship, January 2003 to May 2003

Awards and Honors

Travel Award for Invited Talk, The 11 th Annual OTS Meeting	2015
Aspen Cancer Conference Fellowship, Aspen Cancer Conference	2015
MCDB Genomics & Proteomics Training Grant, <i>Yale University, MCDB</i>	2013 – 2014
Ruth L. Kirschstein National Research Service Award, <i>Yale University, Hematology</i>	2011 – 2012
Abstract Achievement Award for the 53 rd ASH Annual Meeting, <i>American Society of Hematology</i>	2011
Molecular Endocrinology Student Award for an Outstanding Publication, <i>Endocrine Society</i>	2008
Endocrine Scholars Award for the 89 th Endocrine Society Annual Meeting, <i>Endocrine Society</i>	2007
Alpha Epsilon Delta Premedical Honor Society, <i>King's College</i>	2003
Molecular Biology Program Certificate of Completion, <i>King's College</i>	2003
College Reading & Learning Association Advanced Tutoring Certificate, <i>King's College</i>	2003
4 th Degree Sir Knight, <i>Knights of Columbus</i>	2002
Dean's List, <i>King's College</i>	2001 – 2003
Lt. Robert W. Vogel U.S.N. Memorial Scholarship, <i>Newtown Scholarship Association</i>	1999 – 2003
Eagle Scout Rank, <i>Boy Scouts of America</i>	1999

Conferences and Workshops Attended

The 2016 San Antonio Breast Cancer Symposium

December 2016, San Antonio, TX

2016 Door Step Meeting, American Society for Cell Biology

December 2016, San Francisco

The 19th Annual American Society of Gene and Cell Therapy

May 2016, Washington DC

INVITED SPEAKER – miRNAs as Therapeutic Targets in Triple-Negative Breast Cancer

DFHCC Breast and Gynecologic Cancers Symposium

March 2016, Boston, MA

INVITED SPEAKER – miRNAs as Therapeutic Targets in Triple-Negative Breast Cancer

The 11th Annual OTS Meeting

October 2015, Leiden, The Netherlands

INVITED SPEAKER – miR-34a Silences c-SRC to Attenuate Tumor Growth in Triple-Negative Breast

TRAVEL AWARD Cancer

The 30th Aspen Cancer Conference

July 2015, Aspen, CO

POSTER PRESENTATION – Re-Introduction of miR-34a Shows Therapeutic Efficacy in Triple Negative Breast Cancer Through the Regulation of c-SRC

Keystone Symposia; MicroRNAs and Noncoding RNAs in Cancer 2015

June 2015, Keystone, CO

ORAL PRESENTATION – Re-Introduction of miR-34a Shows Therapeutic Efficacy in Triple Negative Breast Cancer Through the Regulation of c-SRC

CONFERENCE ASSISTANT

The 20th Annual Meeting of the RNA Society

May 2015, Madison, WI

ORAL PRESENTATION – miR-34a as an RNA Therapeutic for Triple Negative Breast Cancer

The 2015 Annual American Association for Cancer Research Meeting

April 2015, Philadelphia, PA

POSTER PRESENTATION - Re-Introduction of Tumor Suppressor miR-34a Shows Therapeutic Efficacy in Triple Negative Breast Cancer

4th Annual Yale Center for RNA Science and Medicine

January 2015, New Haven CT - ORAL PRESENTATION

The 2014 San Antonio Breast Cancer Symposium

December 2014, San Antonio, TX

POSTER PRESENTATION - Re-Introduction of Tumor Suppressor miR-34a Shows Therapeutic Efficacy in Triple Negative Breast Cancer

Cell Symposia: Regulatory RNAs

October 2014, Berkeley, CA

POSTER PRESENTATION - Re-Introduction of Tumor Suppressor miR-34a Shows Therapeutic Efficacy in Triple Negative Breast Cancer

A Genomics/Proteomics Forum: New Tools and Methods to Maximize your Research Potential

May 2014, New Haven, CT

ORGANIZER - Coordinated a series of talks from experts discussing high throughput genomics and proteomics approaches to the Yale community; keynote lecture by Dr. Jonathan Rothberg

The 53rd American Society for Hematology Annual Meeting and Exposition

December 2011, San Diego, CA

POSTER PRESENTATION - An *In Vivo* Functional Screen Identifies miRNA-150 As a Regulator of Hematopoietic Regeneration Post Chemotherapeutic Injury

Clinical/Translational Cancer Research for Basic Research Scientists: An AACR Educational Workshop

October 2011, Boston, MA

WORKSHOP SERIES - Provided an introduction to translational cancer research – including cancer medicine, the clinical cancer research environment, and collaborative and team science – for basic scientists in transition to clinical/translational research

The Third Annual Yale Stem Cell Center Retreat

October 2010, New Haven, CT

POSTER PRESENTATION - A Role for microRNAs in Hematopoietic Regeneration Post Chemotherapeutic Challenge

The 2010 New England Stem Cell Consortium Junior Investigator Symposium

October 2010, Burlington, VT

ABSTRACT JUDGE/REVIEWER - Judge and organizer for the NESC symposium

The Hundred-First Annual American Association for Cancer Research Meeting

April 2010, Washington, DC

ASSOCIATE MEMBER COUNCIL - Supported and co-ran the planned “Meet-the-Expert” and “Professional Advancement” Sessions, along with the AMC Resource Center (ARC)

The Hundredth Annual American Association for Cancer Research Meeting

April 2009, Denver, CO

POSTER PRESENTATION - The Role of miR-206 in the EGF-induced Repression of ER α Signaling and a Luminal Phenotype in MCF-7 Breast Cancer Cells (**Highly Rated**: Top 3% of accepted abstracts)

ASSOCIATE MEMBER COUNCIL - Supported and co-ran the planned “Meet-the-Expert” and “Professional Advancement” Sessions, along with the AMC Resource Center (ARC)

The Third Annual NIH National Graduate Student Research Festival

September 2008, Bethesda, MD

POSTER PRESENTATION - Argonaute 2 Expression is Hormonally Regulated in Breast Cancer Cell Lines and Correlates with an Aggressive Phenotype

The AACR Edward A. Smuckler Memorial Pathobiology of Cancer Workshop

July 2008, Aspen, CO

WORKSHOP SERIES - Provided an overview of cancer biology, pathology, and the morphologic aspects of human cancer for scientists working in basic cancer research

The Role of Non-Coding RNAs in Cancer: An AACR Special Conference in Cancer Research

October 2007, Cambridge, MA

POSTER PRESENTATION - Argonaute 2 Expression is Hormonally Regulated in Breast Cancer Cell Lines and Correlates with an Aggressive Phenotype

University of Connecticut Health Center 24th Annual Graduate Student Research Day

June 2007, Farmington, CT

STUDENT RESEARCH PODIUM PRESENTATION FOR THE DEPARTMENT OF CELL BIOLOGY

The Endocrine Society 89th Annual Meeting

June 2007, Toronto, Canada

RECIPIENT OF ENDOCRINE SCHOLARS AWARD

The American Society for Cell Biology 46th Annual Meeting

December 2006, San Diego, CA

POSTER PRESENTATION - The microRNA miR-206 Regulates ER α in Human Breast Cancer Cells

The Carole and Ray Neag Comprehensive Cancer Center Breast Cancer Research Retreat

October 2006, Westbrook, CT

POSTER PRESENTATION - The microRNA miR-206 Targets ER α in Human Breast Cancer Cells

Research Support

Yale Lung in Spore Career Development Award Adams, BD (PI) \$50,000 11/01/2015 – 10/31/2016

Yale University Medical School

Identifying Non-Small Cell Lung Cancer Associated circRNAs for Therapeutic Intervention

Career Development Award: This proposal seeks to develop pre-clinical data showing that the targeting of circRNA can be developed into a therapeutic strategy to reduce NSCLC cancer-related mortality within the next decade.

AUM Science and Innovation In-Kind Award Adams, BD (PI) \$12,500 07/01/15 – Present

Beth Israel Deaconess Medical Center, Department of Pathology

Elucidation & Therapeutic Exploitation of miRNAs in Triple Negative Breast Cancer

Career Development Award: To better understand the landscape of miRNA expression and function in TNBC in order to develop rational and novel miRNA-based therapeutic approaches to treat TNBC patients. The specific support via AUM to provide oligonucleotide technologies, and other resources, will allow for the rapid functional characterization and elucidation of miRNA-mediated tumorigenic processes in TNBC.

Collaborative & Translational Research Breast Cancer Seed Grant Adams, BD (PI) 2007 – 2009

University of Connecticut Health Center, The Carole and Ray Neag Comprehensive Cancer Center

Role of miRNAs in Breast Cancer

Student Pilot Award: To identify microRNA biomarkers as classifiers of triple negative breast cancer

Patents

Adams BD and Veenu Aishwarya. Using 5' FANA oligonucleotides to cleaves miRNA precursors. Provisional Patent, filed June 2016, SUNY – Albany

Adams BD, Guo S, Bai H, and Lu J. "Modulating microRNAs to regulate hematopoietic recovery". Provisional Patent, filed Sept 2012, Yale University: 61/701,946

Adams BD, and Slack FJ. "A miR-34a Gene Signature with Prognostic Value in Triple Negative Breast Cancer" Provisional Patent, filed Sept 2015, Beth Israel Deaconess Medical Center:

Published Book Chapters

Hysolli E, Zhou XL, Liu R, Kim JH, **Adams BD**, Sullivan G, Park IH. Role of pluripotent Stem Cells in Regenerative Medicine. In: Hay DC, (ed). Regenerative Medicine, Stem Cells and the Liver. Enfield: Science Publishers, 2012:21-37.

Published Abstracts

Adams BD, Wali V, Cheng C, Inukai S, Rimm DL, Pusztai L, Saltzman WM, and Slack FJ. Reintroduction of tumor-suppressor miR-34a shows therapeutic efficacy in triple-negative breast cancer. Annual Meeting of the American Association for Cancer Research. 2015 August; Denver CO. Philadelphia (PA): AACR; 2015. Late Breaking Abstract #LB-300. DOI: 10.1158/1538-7445.

Adams BD, Guo S, Bai H, Xiao C, Reddy EP, and Lu J. An *In Vivo* Functional Screen Identifies miRNA-150 as a Regulator of Hematopoietic Regeneration Post Chemotherapeutic Injury. 53rd American Society of Hematology Annual Meeting and Exposition (San Diego, CA). Blood 2011; 118:(2333). ASH Annual Meeting Abstracts.

Adams BD, Cowee DM, and White BA. The Role of miR-206 in the EGF-induced Repression of ER α Signaling and a Luminal Phenotype in MCF-7 Breast Cancer Cells. In: Proceedings of the 100th Annual

Meeting of the American Association for Cancer Research; 2009 Apr 18-22; Denver, CO. Philadelphia (PA): AACR; 2009. Late Breaking Abstract #LB-28. (CD-ROM)

Adams BD, Furneaux H, and White BA. The microRNA miR-206 Regulates ER α in Human Breast Cancer Cells. 46th Annual Meeting of the American Society for Cell Biology (San Diego, CA). *Mol Biol Cell* 2006; 17:(Suppl.), Late Abstract #L137. (CD-ROM)

Published Manuscripts / Reviews

Adams BD*, Parsons C*, Walker L, Zhang WC, and Slack FJ. Targeting Noncoding RNAs in Disease. *JCI* 2017; *Manuscript in Press*

Metheetrairut. C*, **Adams BD***, Nallur S, Weidhaas J, and Slack FJ. cel-mir-237 and its Homologue, hsa-miR-125b, Modulate the Cellular Response to Ionizing Radiation. *Oncogene* 2016; 36:512-524. DOI: 10.1038/onc.2016.222

Martin AG, **Adams BD**, Lai M, Shepherd J, Salvador-Bernaldez M, Salvador JM, Lu J, Nemazee D, and Xiao C. The microRNA miR-148a functions as a critical regulator of B cell tolerance and autoimmunity. *Nat Immunol* 2016; 17:433-440. DOI: 10.1038/ni.3385

Adams BD, Wali VB, Cheng CJ, Inukai S, Booth CJ, Agarwal S, Rimm DL, Györfy B, Santarpia L, Pusztai L, Saltzman WM, and Slack FJ. miR-34a Silences c-SRC to Attenuate Tumor Growth in Triple Negative Breast Cancer. *Cancer Res* 2016; 76:927-939. DOI: 10.1158/0008-5472.CAN-15-2321

Adams BD*, Parsons C*, and Slack FJ. The Tumor-Suppressive and Potential Therapeutic Functions of miR-34a in Epithelial Carcinomas. *Expert Opin Ther Targets* 2016; 20:737-753. DOI: 10.1517/14728222.2016.1114102

Adams BD, Anastasiadou E, Esteller M, He L, and Slack FJ. The Inescapable Influence of Noncoding RNAs in Cancer. *Cancer Res* 2015; 75:5206-5210. DOI: 10.1158/0008-5472.CAN-15-1989

Adams BD, and Slack FJ. MicroRNA Signatures as Biomarkers in Cancer. In: eLS. (June 2015) 1-20. John Wiley & Sons, Ltd: Chichester. DOI: 10.1002/9780470015902.a0025346

Adams BD*, Kasinski AL*, and Slack FJ. Aberrant Regulation and Function of MicroRNAs in Cancer. *Curr Biol* 2014; 24:R762-R776. DOI: 10.1016/j.cub.2014.06.043

Bryniarski K, Ptak W, Jayakumar A, Püllmann K, Caplan MJ, Chairoungdua A, Lu J, **Adams BD**, Sikora E, Nazimek K, Marquez S, Kleinstein SH, Sangwung P, Iwakiri Y, Delgado E, Redegeld F, Blokhuis BR, Wojcikowski J, Daniel AW, Groot Kormelink T, and Askenase PW. Antigen Specific Antibody Coated Exosome-Like Nanovesicles Deliver Suppressor T Cell microRNA-150 to Effector T Cells to Inhibit Contact Sensitivity. *J Allergy Clin Immunol* 2013; 132:170-181. DOI: 10.1016/j.jaci.2013.04.048

Adams BD, Guo S, Bai H, Guo Y, Megyola CM, Cheng J, Heydari K, Xiao C, Reddy EP, and Lu J. An In Vivo Functional Screen Uncovers miR-150-Mediated Regulation of Hematopoietic Injury Response. *Cell Rep* 2012; 2:1048-1060. DOI: 10.1016/j.celrep.2012.09.014

<http://www.sciencedaily.com/releases/2012/10/121018162648.htm>

<http://news.yale.edu/2012/10/18/yale-team-finds-way-save-blood-ravages-chemo-treatment>

Gutilla IK, **Adams BD**, and White BA. ER α , microRNAs, and the epithelial-mesenchymal transition in breast cancer. *Trends Endocrinol Metab* 2012; 23:73-82. DOI: 10.1016/j.tem.2011.12.001

Adams BD, Cowee DM, and White BA. The Role of miR-206 in The Epidermal Growth Factor (EGF) Induced Repression of Estrogen Receptor-alpha (ER α) Signaling and a Luminal Phenotype in MCF-7 Breast Cancer Cells. *Mol Endocrinol* 2009; 23:1215-1230. DOI: 10.1210/me.2009-0062

Adams BD, Claffey KP, and White BA. Argonaute-2 Expression is Regulated by EGFR/MAPK Signaling and Correlates with a Transformed Phenotype in Breast Cancer Cells. *Endocrinology* 2009; 150:14-23. DOI: 10.1210/en.2008-0984

Adams BD, Guttilla IK, and White BA. Involvement of MicroRNAs in Breast Cancer. *Semin Reprod Med* 2008; 26:522-536. DOI: 10.1055/s-0028-1096132

Adams BD, Furneaux H, and White BA. The micro-RNA miR-206 Targets the Human Estrogen Receptor- α , and Represses ER α mRNA and Protein Expression in Breast Cancer Cell Lines. *Mol Endocrinol* 2007; 21:1132-1147 – (On cover of journal: Cited 350 times). DOI: 10.1210/me.2007-0022

Milstone LM, **Adams BD**, Zhou J, Bruegel-Sanchez VL, and Shofner J. Stratum-specific Expression of Human Transferrin Receptor Increases Iron in Mouse Epidermis. *J Invest Dermatol* 2006; 126:648-652

Adams BD, Lazova R, Andrews NC, and Milstone LM. Iron in Skin of Mice with Three Etiologies of Systemic Iron Overload. *J Invest Dermatol* 2005; 125:1200-1205. DOI: 10.1111/j.0022-202X.2005.23949

(*these authors contributed equally)

([†] denotes corresponding authorship)