

Curriculum Vitae
Eric Lieberman Greer

Department of Pediatrics, Harvard Medical School
Division of Newborn Medicine, Boston Children's Hospital
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Education

07/2010-10/2014 Post-doctoral training, Dr Yang Shi's laboratory, Harvard Medical School, MA

01/2010-06/2010 Post-doctoral training, Dr Anne Brunet's laboratory, Stanford University, CA

09/2004-01/2010 Ph.D. Cancer Biology Program, Stanford University, CA

09/2000-06/2004 B.A. Case Western Reserve University, Cleveland OH
Major: Biochemistry; Minor: History

Research Experience

04/2015- Assistant Professor of Pediatrics, Harvard Medical School, Boston, MA

10/2014- Principal Investigator, Division of Newborn Medicine, Boston Children's Hospital

05/2013-03/2015 Instructor in Pediatrics, Harvard Medical School, Boston, MA
Mechanisms of transgenerational epigenetic inheritance

05/2013-09/2014 Associate Research Staff, Boston Children's Hospital, Boston, MA
Mechanisms of transgenerational epigenetic inheritance

07/2010-05/2013 Post-doctoral fellow, Yang Shi laboratory, Harvard Medical School, Boston, MA
Mechanisms of transgenerational epigenetic inheritance

01/2010-06/2010 Post-doctoral fellow, Anne Brunet laboratory, Stanford University, Palo Alto, CA
Chromatin regulation in C. elegans longevity

09/2004-01/2010 Graduate student, Anne Brunet laboratory, Stanford University, Palo Alto, CA
Dietary restriction pathways and chromatin regulation in C. elegans longevity

2005 Graduate rotation, Andrew Fire laboratory, Stanford University, Palo Alto, CA

06/2001-09/2004 Undergraduate research student, Sanford Markowitz laboratory, Case Western Reserve University School of Medicine, Cleveland, OH
Genome-wide analysis of misregulated genes in colon cancer progression in human siblings.

06/2001-09/2004 Undergraduate research student, Mark Fleming and Nancy Andrews' laboratories, Harvard Medical School, Boston MA
Identification of novel iron metabolism pathways in mouse models

09/1997-09/2000 High School research student, Judy Lieberman laboratory, Harvard Medical School, Boston, MA
Characterization of the cell death pathway induced by the cytotoxic T cell protease, granzyme A

Awards and Honors

2016-2021 NIH New Innovator Award DP2
2016-2018 American Federation for Aging Research Research Grant
2013-2018 NIH Pathway to Independence Award K99/R00
2011-2013 Helen Hay Whitney Fellowship
2010 Life Science Research Foundation Fellowship Finalist (declined)
2010 Runner up for the Aging Cell Best paper prize for 2009
2006-2009 National Science Foundation (NSF) Graduate Research Fellowship (GRF) award
2003 Gamma Sigma Alpha Honor Society
2003 National Dean's List
2002 Mortar Board National Honor Society
2001 Dean's Honor List CWRU (Fall and Spring)
2000 Dean's High Honor List CWRU (Fall)
2000-2004 Provost's Scholarship, CWRU

Teaching and Mentoring Experience

2016 Preliminary Qualifying Exam committee, Joseph Beyene, Harvard School of Public Health, Biological Sciences in Public Health
2016 Supervision of graduate rotation student (Lara Roach)
2016 Supervision of graduate rotation student (David Bellamy)
2016- BBS 330 Critical Thinking and Research Proposal Writing course teacher
2016- Scholarship Oversight Committee, Amy O'Connell, Neonatology Fellowship in the Division of Newborn Medicine, Boston Children's Hospital
2016- Supervision of a post-doctoral fellow (Hui Mao)
2016- Supervision of neonatology fellow (Matthew Smith-Raska)
2016- Supervision of Northeastern University co-op student (Sage Wesenberg)
2016 Dissertation Examining Committee, Benyam Kinde, MD-PhD Candidate, Division of Medical Sciences, Neuroscience, Harvard Medical School
2016- Dissertation Advisory Committee, Aditi Shukla, PhD Candidate, Division of Medical Sciences, Biological and Biomedical Sciences, Harvard Medical School
2016- Lecturer and day-long leader of section of boot camp DRB 330QC: Experimental Approaches to Developmental and Regenerative Biology, Harvard Medical School
2015 Faculty Seminar for Harvard Medical School Program in Biological and Biomedical Sciences
2015-2016 Supervision of a post-doctoral fellow (Hiroki Shibuya)
2015- Supervision of a post-doctoral fellow (Zach O'Brown)

2015 Supervision of a graduate rotation student (Steven Burger)
 2015-2016 Supervision of medical fellow (Hanine Hajj)
 2015 Supervision of undergraduate student (Sanjana Kumar)
 2015- Supervision of staff scientist (Konstantinos Boulias)
 2015 Professional Development Seminar Series Academic Panel at Northeastern University
 2014 Panel on advice to prepare a K award application at Boston Children's Hospital
 2013-2014 Supervision of post-doctoral fellow (David Aristizábal Corrales)
 2011-2013 Supervision of post-doctoral fellow (Ruggero Spadafora)
 2008-2010 Supervision of undergraduate student (Anna Hauswirth)
 2008 Supervision of graduate rotation student (Dena Leeman)
 2007 Supervision of graduate rotation student (Dara Dowlatshahi)
 2002, 2003 Teaching Assistant, Biology 215: Cells and Proteins, Case Western Reserve University

Professional Service

Ad hoc reviewer: Aging Cell, BMC Genetics, Current Biology, Experimental Gerontology, Genome Biology, Integrative and Comparative Biology, Molecular Cell, Nature Chemical Biology, Nature Methods, Nucleic Acids Research, PLoS Genetics, PLoS One, Science, Science Advances

Editorial Boards: Environmental Epigenetics

Grant Application Reviewer: European Cooperation in the field of Scientific and Technical Research COST Switzerland, Biotechnology and Biological Sciences Research Council (BBSRC) Institute Strategic Programme Grant (ISPG) UK

Publications

Peer reviewed articles

Greer EL[§], Becker B, Latza C, Antebi A, and Shi Y[§], Mutation of *C. elegans* demethylase *spr-5* extends transgenerational longevity **Cell Research** 26(2):229-38 (2016) [§] co-corresponding authors

Greer EL^{*§}, Blanco MA^{*}, Gu L, Sendinc E, Liu J, Aristizábal-Corrales D, Hsu C-H, Aravind L., He C, and Shi Y[§] DNA methylation on N⁶-adenine in *C. elegans* **Cell** 161(4):868-78 (2015) (Cover Article) * co-first author [§] co-corresponding authors (Commented on in Cell Minireview 161(4):710-3 (2015), Oncotarget 6(18): 15744-5 (2015), Angew Chem Int Ed Engl (2015))

Greer EL, Beese-Sims SE, Brookes E, Spadafora R, Zhu Y, Rothbart SB, Aristizábal-Corrales D, Chen S, Badeaux AI, Jin Q, Wang W, Strahl BD, Colaiacovo MP, and Shi Y, A

histone methylation network regulates transgenerational epigenetic memory in *C. elegans*, **Cell Reports** 7(1):113-26 (2014)

Greer EL, Maures TJ, Ucar D, Hauswirth AG, Mancini E, Lim JP, Benayoun BA, Shi Y, and Brunet A. Transgenerational Epigenetic Inheritance of Longevity in *C. elegans*, **Nature** (Article) 479(7373):365-71 (2011). (Commented on in *Nature* 479(7373):302-3 (2011), *Nature News* doi:10.1038/news.2011.602 (2011), Research Highlight, *Cell* 147(5):957 (2011) Leading Edge Select, *Nat Rev Genet* 12(12):806-7 (2011), Preview *Cell Metab* 15(1):6-7 (2012), *Bioessays* 34(8):652-4 (2012))

Maures TJ, **Greer EL**, Hauswirth AG, and Brunet A. The H3K27 Demethylase UTX-1 Regulates *C. elegans* Lifespan in a Germline-Independent, Insulin-Dependent, Manner **Ageing Cell** 10(6):980-90 (2011)

Greer EL, Maures TJ, Hauswirth AG, Green EM, Leeman DS, Maro GS, Han S, Banko MR, Gozani O, and Brunet A. Members of the H3K4 Trimethylation Complex Regulate Lifespan in a Germline-dependent Manner in *C. elegans*. **Nature** 466(7304):383-7 (2010). (Preview, *Cell Metab* 2010 12(3):209-10)

Greer EL and Brunet A, Different Dietary Restriction Regimens Extend Lifespan by both Independent and Overlapping Genetic Pathways in *C. elegans*, **Ageing Cell** 8(2):113-27 (2009) (Runner up for Aging Cell Best paper prize for 2009).

Greer EL, Dowlatshahi D, Banko MR, Villen J, Hoang K, Blanchard D, Gygi SP, and Brunet A, An AMPK-FOXO pathway mediates longevity induced by a novel method of dietary restriction in *C. elegans*, **Curr Biol** 17(19):1645-56 (2007)

Greer EL, Oskoui PR, Banko MR, Maniar JM, Gygi MP, Gygi SP, and Brunet A, The energy sensor AMP-activated protein kinase directly regulates the mammalian FOXO3 transcription factor, **J Biol Chem** 282(41):30107-19 (2007)

Pondarré C Antiochos BB, Campagna DR, Clarke SL, **Greer EL**, Deck KM, McDonald A, Han AP, Medlock A, Kutok JL, Anderson SA, Eisenstein RS, and Fleming MD, The mitochondrial ATP-binding cassette transporter Abcb7 is essential in mice and participates in cytosolic iron-sulfur cluster biogenesis, **Hum Mol Genet** 15(6):953-64 (2006)

Ohgami RS, Campagna DR, **Greer EL**, Antiochos B, McDonald A, Chen J, Sharp JJ, Fujiwara Y, Barker JE and Fleming MD, Identification of a ferrireductase required for efficient transferrin-dependent iron uptake in erythroid cells, **Nat Genet** 37(11):1264-9 (2005)

Gunshin H, Starr CN, Drenzo C, Fleming MD, Jin J, **Greer EL**, Sellers VM, Galica SM, and Andrews NC, Cybrd1 (duodenal cytochrome b) is not necessary for dietary iron absorption in mice, **Blood** 106(8):2879-83 (2005)

Beresford PJ, Zhang D, Oh D, Fan Z, **Greer EL**, Russo M, Jaju M and Lieberman J, Granzyme A Activates an Endoplasmic Reticulum-associated Caspase-independent Nuclease to Induce Single-stranded DNA Nicks, **J Biol Chem** 276; 43285-43293, (2001)

Reviews

Boulias K, Lieberman J, and **Greer EL**, An Epigenetic Clock Measures Accelerated Aging in Treated HIV Infection, **Mol Cell** 62(2):153-5 (2016) (preview)

Luo G-Z, Blanco MA, **Greer EL**, He C^{\$}, and Shi Y^{\$}, DNA N6-Methyladenine: a new epigenetic mark in eukaryotes?, **Nat Rev Mol Cell Biol** 16(12):705-10 (2015) ^{\$} co-corresponding authors

Greer EL and Shi Y, What's the *Mtrr* with your grandparents? **Cell Metab** 18(4):457-9 (2013) (preview)

Greer EL and Shi Y, Histone methylation: a dynamic mark in health, disease, and inheritance **Nat Rev Genet** 13(5):343-57 (2012)

Greer EL, Banko MR, and Brunet A, AMP-activated protein kinase and FoxO transcription factors in dietary restriction induced longevity, **Ann N Y Acad Sci** 1170:688-92 (2009)

Greer EL and Brunet A, Signaling networks in aging, **J Cell Sci** 121:407-12 (2008)

Greer EL and Brunet A, FOXO transcription factors in ageing and cancer, **Acta Physiol** 192(1):19-28 (2008)

Greer EL and Brunet A, FOXO transcription factors at the interface between longevity and tumor suppression, **Oncogene** 24(50):7410-25 (2005)

Book Chapter

O'Brown ZK and **Greer EL** N6-methyladenine: a conserved and dynamic DNA mark for the **DNA Methyltransferases – Role and Function** (2016) (*in press*)

Greer EL and Brunet A, The Genetic Network of Longevity by Dietary Restriction for the **Handbook on the Biology of Aging** 7th Edition (2010)

Scientific presentations

EMBO workshop on “Developmental Circuits in Aging” May 22nd-25th 2017 Crete, Greece, “Towards a Mechanism of Transgenerational Inheritance of Longevity” (Invited Talk)

Basel Worm Meeting March 16th 2017 Basel, Switzerland, “DNA methylation on N6-adenine (Keynote talk)

Gordon Research “RNA Editing” March 12th-17th 2017 Ventura, CA, US, “DNA methylation on N6-adenine in Metazoans” (Invited talk)

2nd Interventions in Aging Conference March 2nd-5th 2017, Cancun, Mexico “Towards a Mechanism of Transgenerational Inheritance of Longevity” (Invited Talk)

UCSF Seminars in Biomedical Sciences Feb 15th 2017 San Francisco, CA, US “Towards a Mechanism of Epigenetic Inheritance: DNA Methylation on N6-Adenine” (Invited talk)

Vienna Biocenter Feb 2nd 2017 Vienna, Austria, “Towards a Mechanism of Transgenerational Inheritance” (Invited talk)

Joslin Diabetes and Metabolism Seminar Series Dec 15th 2016 Boston, MA, US “Towards a Mechanism of Epigenetic Inheritance: DNA methylation on N6-adenine” (Invited talk)

Harvard Medical School Epigenetics Symposium Oct 20th 2016 Boston, MA, US “DNA Methylation on N6-Adenine in *C. elegans*” (Invited talk)

***C. elegans* Aging, Metabolism, Stress, Pathogeneis, and Small RNAs** July 21st-24th 2016 Madison, WI, US “DNA Methylation on N6-Adenine in *C. elegans*” (Invited talk/session chair)

Keystone conference “Epigenetic and Metabolic Regulation of Aging and Aging-Related Diseases May 1st-5th 2016 Sante Fe, NM, US “DNA Methylation on N6-Adenine in *C. elegans*” (Selected Talk)

Tel Aviv University March 31st 2016 Tel Aviv, Israel “Towards a Mechanism of Transgenerational Inheritance of Longevity” (Invited Talk)

Woods Hole March 4th 2016 Woods Hole, MA, US “Towards a Mechanism of Epigenetic Inheritance: DNA methylation on N6-adenine” (Invited talk)

Brown University Feb 18th 2016 Providence, RI, US “Towards a Mechanism of Transgenerational Inheritance of Longevity” (Invited talk)

Abcam conference “Chromatin: Structure and Function 2015” Nov 16th-19th 2015 Grand Cayman Island, BWI “DNA methylation on N⁶-adenine in *C. elegans*” (Selected talk)

Harvard/Paul F. Glenn Center for the Biology of Aging Nov 10th 2015 Boston, MA, US “Towards a Mechanism of Transgenerational Inheritance of Longevity” (Invited talk)

Sun Yat-Sen Memorial Hospital and Sun Yat-Sen University Oct 19th 2015 Guangzhou, China “DNA methylation on N⁶-adenine in Metazoans” (Invited talk)

Abcam conference “Epigenetics, Obesity and Metabolism” Oct 11th-14th 2015 Cambridge, UK “DNA methylation on N⁶-adenine in *C. elegans*” (Invited talk)

3rd International Symposium of the TRR81 “Chromatin Changes in Differentiation and Malignancy” Sept 14th-16th 2015 Marburg, Germany “DNA methylation on N⁶-adenine in *C. elegans*” (Invited talk)

Boston Area Worm Meeting May 20th 2015 Cambridge, MA, US “DNA methylation on N⁶-adenine in *C. elegans*”

Abcam conference “Non-coding RNA: New Mechanisms and Approaches” May 18th-19th 2015 Boston, MA, US “DNA methylation on N⁶-adenine in *C. elegans*” (Invited talk)

The XXIII North American Testis Workshop “Healthy Sperm-Healthy Children” April 15th-18th 2015 Salt Lake City, UT, US “Heritable Epigenetics of Complex Traits in *C. elegans*” (Invited talk)

Longwood Worm Meeting March 20th 2015 Boston, MA, US “Identification of N⁶-adenine methylation in *C. elegans* DNA”

Eight Annual Division of Aging Biology New Investigators Forum June 10th 2014 Bethesda, MD, US “Identifying the Molecular Mechanisms of Transgenerational Epigenetic Inheritance” (Invited talk)

Boston Children’s Hospital Division of Newborn Medicine and Harvard Medical School Department of Pediatrics May 29th 2014 Boston, MA, US “Mechanisms of transgenerational epigenetic inheritance” (Invited talk)

Keystone Symposium on Epigenetic Programming and Inheritance Apr 7th 2014 Boston, MA, US “A Histone Methylation Network Regulates Transgenerational Epigenetic Memory in *C. elegans*” (Selected talk)

Keystone Symposium on Chromatin Mechanisms and Cell Physiology Mar 27th 2014 Oberstdorf, Germany “A Histone Methylation Network Regulates Transgenerational Epigenetic Memory in *C. elegans*” (Selected talk)

Weill Cornell Medical College Department of Pharmacology Feb 21st 2014 New York, NY, US “Mechanisms of transgenerational epigenetic inheritance” (Invited talk)

National Institute of Health National Institute of Aging Feb 12th 2014 Bethesda, MD, US “Mechanisms of transgenerational epigenetic inheritance” (Invited talk)

Vanderbilt University Department of Biological Sciences Feb 10th 2014 Nashville, TN, US “Mechanisms of transgenerational epigenetic inheritance” (Invited talk)

Washington University in St. Louis Department of Genetics Feb 6th 2014 St. Louis, MO, US “Mechanisms of transgenerational epigenetic inheritance” (Invited talk)

University of Texas Southwestern Departments of Pharmacology and Green Center for Reproductive Biology Sciences Feb 4th 2014 Dallas TX, US “Mechanisms of transgenerational epigenetic inheritance” (Invited talk)

University of Michigan Geriatrics Center and Department of Molecular and Integrative Physiology Jan 28th 2014 Ann Arbor MI, US “Mechanisms of transgenerational epigenetic inheritance” (Invited talk)

University of Minnesota Department of Biochemistry, Molecular Biology & Biophysics Jan 8th 2014 Minneapolis, MN, US “Mechanisms of transgenerational epigenetic inheritance” (Invited talk)

Harvard Medical School’s Gene Expression and RNA Series Dec 12th 2013 Boston, MA, US “Mechanisms of transgenerational epigenetic inheritance in *C. elegans*” (Invited talk)

University of Michigan Department of Molecular, Cellular, and Developmental Biology Dec 10th 2013 Ann Arbor, MI, US “Mechanisms of transgenerational epigenetic inheritance” (Invited talk)

National Institute of Health Chromosome Biology/Epigenetics Dec 6th 2013 Bethesda MD, US “Mechanisms of transgenerational epigenetic inheritance” (Invited talk)

National Cancer Institute Center of Excellence in Integrative Cancer Biology and Genomics (NIH) Seminar Series April 12th 2013 Bethesda, MD, US “Chromatin Modifiers in Transgenerational Inheritance of Complex Traits in *C. elegans*” (Invited talk)

Longwood Worm Meeting March 8th 2013 Boston, MA, US “Mechanisms of Transgenerational Epigenetic Inheritance”

Department of Medicine **Children’s Hospital Boston Chief’s of Medicine Conference** Nov 15th 2012 Boston, MA, US “Mechanisms of Transgenerational Epigenetic Inheritance in *C. elegans*”

Age UK speaker **Ageing and Basic Bioscience Conference** Sept 20th-21st 2012 Cambridge, UK “Transgenerational epigenetic inheritance of longevity induced by chromatin modifiers in *C. elegans*” (Invited talk)

FASEB Conference on Transcriptional Regulation During Cell Growth, Differentiation, and Development July 15th-20th 2012 Snowmass Village CO, US “Transgenerational epigenetic inheritance of extended longevity in *C. elegans*” (Selected talk)

Keynote speaker **4th Australian Scientific Conference: Epigenetics 2012** May 7th-9th 2012 Adelaide, Australia “Transgenerational epigenetic inheritance of longevity induced by chromatin modifiers in *C. elegans*” (Invited Keynote talk)

Longwood Worm Meeting Feb 10th 2012 Boston, MA, US “Transgenerational Epigenetic Inheritance”

Abcam Conference on Chromatin: Structure & Function 2011 Dec 5th-8th 2011 Aruba “Transgenerational epigenetic inheritance of longevity induced by chromatin modifiers in *C. elegans*” (Selected talk)

Boston Area Worm Meeting Nov 2nd 2011 Cambridge, MA, US “Transgenerational epigenetic inheritance of extended longevity induced by chromatin modifiers in *C. elegans*”

Cell Symposium: Epigenetics and the Inheritance of Acquired States Oct 30th-Nov 1st 2011 Boston, MA, US “Transgenerational epigenetic inheritance of extended longevity induced by chromatin modifiers in *C. elegans*” (Selected talk)

Longwood Worm Meeting March 23rd 2011 Boston, MA, US “Transgenerational Epigenetic Inheritance of Longevity by Chromatin Modifiers”

Cell and Molecular Biology seminar series of the Department of Biology Stanford University Oct 14, 2008. Stanford, CA, US “An AMPK-FoxO pathway mediates dietary restriction induced longevity in *C. elegans*” (Invited talk)

Cold Spring Harbor Laboratory Meeting “Molecular Genetics of Aging” Sept 24-28, 2008 Cold Spring Harbor, NY, US “Different methods of dietary restriction evoke independent, but overlapping, genetic pathways in *C. elegans*.” (Selected talk)

Cold Spring Harbor Laboratory Meeting “Molecular Genetics of Aging” Oct 4-8, 2006 Cold Spring Harbor, NY, US “The energy sensor AMP-activated protein kinase mediates caloric restriction-induced longevity by regulating FOXO transcription factors” (Selected talk)

Current Issues in Genetics seminar series of the Department of Genetics at Stanford University May 5th, 2005 Stanford, CA, US “AMPlifying lifespan: Control of FOXO by AMPK”