Andrew Dillin, Ph.D.

PERSONAL

Name: Andrew Dillin
Citizenship: United States of America
Address: UC Berkeley
Molecular and Cell Biology Department
Li Ka Shing Center, 400A
Berkeley, Ca. 94705

EDUCATION

University of California, Berkeley		
Ph.D.	Molecular and Cell Biology	1993-1998
University of Nevada, Reno		
B.S.	Biochemistry	1989-1993

ACADEMIC APPOINTMENT

2012 - present	Professor, MCB – UC Berkeley
2012 - present	HHMI Investigator, UC Berkeley
2011-2012	Professor, The Salk Institute for Biological Studies, Molecular and Cell Biology Laboratory, La Jolla, California
2009-2012	Adjunct Professor, Department of Neuroscience, University of California, San Diego
2008-2012	Director, Glenn Center for Aging Research at the Salk Institute
2008-2012	HHMI Investigator, The Salk Institute for Biological Studies, Molecular and Cell Biology Laboratory, La Jolla, California
2007-2011	Associate Professor, The Salk Institute for Biological Studies, Molecular and Cell Biology Laboratory, La Jolla, California
2007-2009	Adjunct Associate Professor, Department of Biology, University of California, San Diego
2002- 2007	Assistant Professor, The Salk Institute for Biological Studies, Molecular and Cell Biology Laboratory, La Jolla, California

RESEARCH EXPERIENCE

1998-2002	Postdoctoral Fellow with Dr. Cynthia Kenyon, University of California, San Francisco. Determinants of longevity in the nematode *Caenorhabditis elegans*
1993-1998	Graduate Student with Dr. Jasper Rine, University of California, Berkeley. Studies of transcriptional silencing, regulation of replication initiation and mitosis in yeast
1991-1993	Undergraduate Student with Dr. Ardythe McCracken, University of Nevada. ER associated protein degradation (ERAD)

TEACHING EXPERIENCE

Professor	MCB, UC Berkeley. MCB290 – *Aging,* Bio1A and MCB140L.

AWARDS

Siebel Distinguished Chair in Stem Cell Biology (2013)
Nathan Shock Award (2012)
NIH/NIA MERIT Award (2012-2022)
Vincent Cristofalo Award (2010)

Glenn Foundation for Medical Research Award (2007-2009)
McKnight Neuroscience of Brain Disorders Award (2007-2010)
Pioneer Developmental Chair (2006-2008)
Ellison Medical Foundation Award (2004-2008)
Larry L. Hillblom Junior Faculty Award (2003-2006)
American Diabetes Association Junior Faculty Award (2004-2006)
Damon Runyon-Walter Winchell Postdoctoral Fellowship, UC San Francisco (1999-2002)
Genentech Distinguished Predoctoral Fellowship, UC Berkeley (1997)
Outstanding Graduate Student Instructor, UC Berkeley (1996-1997)
Outstanding Senior, College of Agriculture, University of Nevada (1992-1993)
Howard Hughes Summer Research Fellowship, University of Nevada (1992)
National Science Foundation Research Fellowship, University of Nevada (1991)

GRANT SUPPORT

-- (Dillin, PI) 09/01/2008-08/31/2017
Howard Hughes Medical Institute
Molecular Pathways of Aging
The major goal of this project is to perform high risk, innovative research towards the understanding of aging and age-related diseases.
Role: PI

5 R01 AG055891 (Dillin, PI) 01/01/17-12/31/2022
NIH/NIA
The Collapse of Proteostasis during Aging is Mediated by Cytoskeletal Actin Functions
The major goal of this project is to determine how cytoskeletal integrity is monitored and maintained during the aging process.
Role: PI

R37 AG024365-07 (Dillin, PI) 09/01/2004-08/31/2020
NIH/NIA
The Perception of Mitochondrial Stress in Receiving Cells
The major goal of this project is to determine how distal tissues can sense mitochondrial stress in other tissues, and how their own form and function might change in response to distal mitochondrial signaling.
Role: PI

5 R01 ES021667-02 (Dillin, PI) 03/01/2012-12/31/2021
NIH/NIEHS
Distal Mitochondrial Signaling in a Multicellular Organism
The major goal of this project is to discover how mitochondria within the nervous system can communicate a signal that will ensure the survival of an animal under conditions of stress.
Role: PI

5 R01 AG042679 (Dillin, PI) 03/01/2012-12/31/2017
NIH/NIA
The Cell Non-Autonomous Nature of UPR Signaling
The major goal of this project is to discover how the UPR within the endoplasmic reticulum with neurons can communicate with distal tissues to increase the chance of survivorship as the organism ages.
Role: PI

CIRM (Dillin, PI) 01/01/2014-12/31/2018

Proteostasis of stem cells
The major goal of this project is to understand the requirement for genesis of neurons from stem populations with an eye towards protein quality control.
Role: PI

TEVA Pharmaceuticals (Dillin, PI) 01/01/15 – 12/31/18
Investigation of monoclonal antibody treatment towards CGRP for metabolic diseases.
Role: PI

INVITED MEETINGS (2014-2017)
Keystone Meeting- Molecular Mechanisms of Aging 2014
American Thoracic Society- San Diego – 2014
Keystone Meeting – Mitochondrial Dynamics – Santa Fe – 2014
Mosbacher Colloquim – Germany – 2014
FASEB- Protein Folding in the Cell – Vermont – 2014
Cold Spring Harbor – Molecular Chaperones – 2014
Gordon Research Conference – Mitochondria and Chloroplasts – Italy 2014
International Symposium on Ageing – DGIST – South Korea – 2014
AFAR Grantee Workshop – Santa Barbara, Ca. 2014
EMBO workshop – Regulation of Aging and Proteostasis – Jerusalem, Israel 2014
Cold Spring Harbor – Molecular Genetics of Aging - 2014

Wellcome Trust Ageing Conference – Cambridge, England 2015
Fusion Conference – Interventions in Ageing – Cancun, Mexico 2015
EMBL Conference – Frontiers in Metabolism – Heidelberg, Germany – 2015
Les Trelies Foundation – Ageing and Metabolism – Tourtour, France, 2015
Wollogong Conference - Proteostasis and Disease – Wollogong, Australia 2015
Gordon Research Conference – Stress Proteins in Growth and Disease – Italy 2015
Cold Spring Harbor Asia – Molecular Basis of Aging and Disease – China – 2015

Keystone Mitochondria Meeting – Steamboat, CO – 2016
Keystone Epigenetics Meeting – Santa Fe, NM – 2016
Foundation Ipsen – Frontiers of Biology – Phoenix, AZ 2016
Latsis Foundation – New Technologies in aging – Lausanne, CH – 2016

Keystone Mitochondria and Heart Meeting – Santa Fe, NM – 2017
Gordon Research Conference – Stress Biology – Maine – 2017
Helmholtz/Nature Medicine – Frontiers of Metabolism – Munich, Germany 2017
Groningen Aging Symposium – Keyonote Lecture – Groningen, Netherlands 2017
Cold Spring Harbor Asia Mitochondrial Meeting – 2017
Frontiers in Metabolism – Lausanne - 2017

INVITED SEMINARS (2014 - 2017)
U. of Calgary – Jan. 2014
Tufts University – Jan. 2014
U. Pennsylvania – Jan. 2014
Oregon Health Sciences University – May 2014
Yale Cell Biology – 2014

Baylor College of Medicine – Cell Biology – 2015
UCSF Diabetes Center – 2015

IRB Barcelona, Spain 2015
Princeton – Genetics -2015

Max Planck Retreat, Martinsreid – 2016
NYU Honors Lecture -Physiology – 2016
Gulbenkian Institute – Lisbon, PT – 2016
UT Southwestern – 2016
Ohio State Univeristy – 2016
Scripps – Distinguished Lecture – 2016
Stanford – Biochemistry -2016

NIH – General Seminar Series – 2017
NIH – Post-doctoral Fellows Program – 2017
Harvard Cell Biology – 2017
Mount Desert Island Keynote – Bar Harbor, ME – 2017
University of Nevada Bierkamper Lecture – Reno, NV 2017
University of Pittsurgh – 2017
New York Academy of Sciences – 2017
Case Western Reserve – 2017

UNIVERSITY SERVICE

Instructor – Spring 2014- Present - Bio1A – Introduction to Biology and Genetics (800 students)
Instructor – Spring 2014 – Present MCB140 Genetics Laboratory Class (50 Students)
MCB Graduate Genetics Training Grant Director
Created and Funded the Glenn Center for Aging Research

PUBLIC SERVICE

2014- 2016	CMAD Study section Chairperson
2009-2016	Study Section Member- CMAD NIA
2014 – Present	eLife editorial board
2017 – Present	Morgridge Institute – U. Wisconsin – SAB member
2008-present	Editorial Board- Trends in Endocrinology and Metabolism
2006-present	Alzheimer's Foundation Scientific Advisory Board
2006-present	American Federation for Aging Research Advisory Board

MEETING ORGANIZER

- CSH Asia Mitochondria Meeting – 2015, 2017, 2019
- Keystone Aging Meeting 2014 – Steamboat Springs, Co.
- CSH Chaperone Meeting 2011, 2013, 2015
- Indo-US Frontiers of Science – New Delhi, India, March 2-4, 2011
- ABCAM – "Stem Cells, Neurodegeneration and Proteostasis" Nassau, Bahamas, Feb. 14-16, 2011
- ABCAM- "Molecular Mechanisms of Aging" Puerto Vallarta, Mexico. March 3-5, 2009
- IPSEN, Nature, Nature Reviews Molecular Cell Biology – "Processes of Aging" The Salk Institute for Biological Studies, La Jolla, CA. January 8-10, 2009
- Kavli National Academy of Sciences Meetings- 2008-2010

Peer Reviewed Journal Articles of Andrew Dillin (** indicate 2012-2017):

Nguyen TB, Louie SM, Daniele JR, Tran Q, **Dillin A, Zoncu R, Nomura DK, Olzmann JA. DGAT1-Dependent Lipid Droplet Biogenesis Protects Mitochondrial Function during Starvation-Induced Autophagy. *Dev Cell. 2017 Jul 10;42(1):9-21.*

Riera CE, Tsaousidou E, Halloran J, Follett P, Hahn O, Pereira MMA, Ruud LE, Alber J, Tharp K, Anderson CM, Brönneke H, Hampel B, Filho CDM, Stahl A, Brüning JC, **Dillin A. The Sense of Smell Impacts Metabolic Health and Obesity. *Cell Metab. 2017 Jul 5;26(1):198-211.*

Berendzen KM, Durieux J, Shao LW, Tian Y, Kim HE, Wolff S, Liu Y, **Dillin A. Neuroendocrine Coordination of Mitochondrial Stress Signaling and Proteostasis. *Cell. 2016. 166(6):1553-1563*

Kim HE, Grant AR, Simic MS, Kohnz RA, Nomura DK, Durieux J, Riera CE, Sanchez M, Kapernick E, Wolff S, **Dillin A. Lipid Biosynthesis Coordinates a Mitochondrial-to-Cytosolic Stress Response. *Cell. 2016. 166(6):1539-1552*

Daniele JR, Heydari K, Arriaga EA, **Dillin A. Identification and Characterization of Mitochondrial Subtypes in Caenorhabditis elegans via Analysis of Individual Mitochondria by Flow Cytometry. *Anal Chem. 2016. 88(12):6309-16*

Merkwirth C, Jovaisaite V, Durieux J, Matilainen O, Jordan SD, Quiros PM, Steffen KK, Williams EG, Mouchiroud L, Tronnes SU, Murillo V, Wolff SC, Shaw RJ, Auwerx J, **Dillin A. Two Conserved Histone Demethylases Regulate Mitochondrial Stress-Induced Longevity. *Cell. 2016.165(5):1209-23.*

Tian Y, Garcia G, Bian Q, Steffen KK, Joe L, Wolff S, Meyer BJ, **Dillin A. Mitochondrial Stress Induces Chromatin Reorganization to Promote Longevity and UPR(mt). *Cell. 2016.165(5):1197-208*

Seah NE, de Magalhaes Filho CD, Petrashen AP, Henderson HR, Laguer J, Gonzalez J, **Dillin A, Hansen M, Lapierre LR. Autophagy-mediated longevity is modulated by lipoprotein biogenesis. *Autophagy. 2016;12(2):261-72.*

Douglas PM, Baird NA, Simic MS, Uhlein S, McCormick MA, Wolff SC, Kennedy BK, **Dillin A. Heterotypic Signals from Neural HSF-1 Separate Thermotolerance from Longevity. *Cell Rep. 2015. 12(7):1196-204.*

Heimbucher T, Liu Z, Bossard C, McCloskey R, Carrano AC, Riedel CG, Tanasa B, Klammt C, Fonslow BR, Riera CE, Lillemeier BF, Kemphues K, Yates JR 3rd, O'Shea C, Hunter T, **Dillin A. The Deubiquitylase MATH-33 Controls DAF-16 Stability and Function in Metabolism and Longevity. *Cell Metab. 2015. 22(1):151-63.*

Wilkinson DS, Jariwala JS, Anderson E, Mitra K, Meisenhelder J, Chang JT, Ideker T, Hunter T, Nizet V, **Dillin A, Hansen M. Phosphorylation of LC3 by the Hippo kinases STK3/STK4 is essential for autophagy. *Mol Cell. 2015. 57(1):55-68.*

Patti GJ, Tautenhahn R, Johannsen D, Kalisiak E, Ravussin E, Brüning JC, Dillin A**, Siuzdak G. Meta-analysis of global metabolomic data identifies metabolites associated with life-span extension. *Metabolomics. 2014 Aug 1;10(4):737-743.*

Baird NA, Douglas PM, Simic MS, Grant AR, Moresco JJ, Wolff SC, Yates JR 3rd, Manning G, **Dillin A. HSF-1-mediated cytoskeletal integrity determines thermotolerance and life span.

Science. 2014. 346(6207):360-3.

Fonslow BR, Moresco JJ, Tu PG, Aalto AP, Pasquinelli AE, **Dillin AG, Yates JR 3rd. Mass spectrometry-based shotgun proteomic analysis of C. elegans protein complexes. *WormBook. 2014 Jun 24:1-18.*

Riera CE, Huising MO, Follett P, Leblanc M, Halloran J, Van Andel R, de Magalhaes Filho CD, Merkwirth C, **Dillin A. TRPV1 pain receptors regulate longevity and metabolism by neuropeptide signaling. *Cell. 2014. 157(5):1023-36.*

Carrano AC, **Dillin A, Hunter T. A Krüppel-like factor downstream of the E3 ligase WWP-1 mediates dietary-restriction-induced longevity in Caenorhabditis elegans. *Nat Commun. 2014;5:3772.*

Lapierre LR, De Magalhaes Filho CD, McQuary PR, Chu CC, Visvikis O, Chang JT, Gelino S, Ong B, Davis AE, Irazoqui JE, **Dillin A, Hansen M. The TFEB orthologue HLH-30 regulates autophagy and modulates longevity in Caenorhabditis elegans. *Nat Commun. 2013;4:2267.*

Taylor RC and **Dillin A. The UPR^{ER} is a Cell Non-Autonomous Regulator of Stress Resistance and Longevity. *Cell. 2013; 153(7):1435-47.*

Russell RC, Tian Y, Yuan H, Park HW, Chang YY, Kim J, Kim H, Neufeld TP, **Dillin A, Guan KL. ULK1 induces autophagy by phosphorylating Beclin-1 and activating VPS34 lipid kinase. *Nat Cell Biol. 2013; 15(7):741-50.*

Riedel CG, Dowen RH, Lourenco GF, Kirienko NV, Heimbucher T, West JA, Bowman SK, Kingston RE, **Dillin A, Asara JM, Ruvkun G. DAF-16 employs the chromatin remodeller SWI/SNF to promote stress resistance and longevity. *Nat Cell Biol. 2013;15(5):491-501.*

Vilchez D, Boyer L, Lutz M, Merkwirth C, Morantte I, Tse C, Spencer B, Page L, Masliah E, Berggren WT, Gage FH, **Dillin A. FOXO4 is necessary for neural differentiation of human embryonic stem cells. *Aging Cell. 2013;12(3):518-22*

Vilchez D, Boyer L, Morantte I, Lutz, M, Merkwirth C, Joyce D, Spencer B, Page L, Masliah E, Berggren WT, Gage FH, and **Dillin A. Regulation of FOXO4 and PSMD11/rpn-6 determines proteasome activity and human stem cell function. *Nature. 2012. 489(7415):304-8.*

Vilchez D, Morantte I, Liu Z, Douglas PM, Merkwirth C, Rodrigues' APC, Manning G, and **Dillin A. RPN-6/PSMD11 is a determinant of C. elegans longevity and proteasomal activity. Nature. 2012. 489(7415):263-8.

Parrish AR, She X, Xiang Z, Coin I, Shen Z, Briggs SP, **Dillin A, Wang L. Expanding the genetic code of Caenorhabditis elegans using bacterial aminoacyl-tRNA synthetase/tRNA pairs. *ACS Chem Biol. 2012 Jul 20;7(7):1292-302.*

Volovik Y, Maman M, Dubnikov T, Bejerano-Sagie M, Joyce D, Kapernick EA, Cohen E, **Dillin A. Temporal requirements of heat shock factor-1 for longevity assurance. *Aging Cell. 2012;11(3):491-9.*

Mair W, Morantte I, Rodrigues AP, Manning G, Montminy M, Shaw RJ, Dillin A. Lifespan extension induced by AMPK and calcineurin is mediated by CRTC-1 and CREB. *Nature. 2011;470(7334):404-8. PMCID: 3098900.*

Kim H, Scimia MC, Wilkinson D, Trelles RD, Wood MR, Bowtell D, Dillin A, Mercola M, Ronai ZA. Fine-tuning of Drp1/Fis1 availability by AKAP121/Siah2 regulates mitochondrial adaptation to hypoxia. Mol *Cell. 2011;44(4):532-44.*

Egan DF, Shackelford DB, Mihaylova MM, Gelino S, Kohnz RA, Mair W, Vasquez DS, Joshi A, Gwinn DM, Taylor R, Asara JM, Fitzpatrick J, Dillin A, Viollet B, Kundu M, Hansen M, Shaw RJ. Phosphorylation of ULK1 (hATG1) by AMP-activated protein kinase connects energy sensing to mitophagy. Science. 2011;331(6016):456-61. PMCID: 3030664.

Durieux J, Wolff S, Dillin A. The cell-non-autonomous nature of electron transport chain-mediated longevity. Cell. 2011;144(1):79-91. PMCID: 3062502.

Du D, Murray AN, Cohen E, Kim HE, Simkovsky R, Dillin A, Kelly JW. A kinetic aggregation assay allowing selective and sensitive amyloid-beta quantification in cells and tissues. Biochemistry. 2011;50(10):1607-17. PMCID: 3051019.

Cohen E, Du D, Joyce D, Kapernick EA, Volovik Y, Kelly JW, Dillin A. Temporal requirements of insulin/IGF-1 signaling for proteotoxicity protection. Aging Cell. 2010;9(2):126-34. PMCID: 3026833.

Mair W, Panowski SH, Shaw RJ, Dillin A. Optimizing dietary restriction for genetic epistasis analysis and gene discovery in C. elegans. PLoS One. 2009;4(2):e4535. PMCID: 2643252.

Cohen E, Paulsson JF, Blinder P, Burstyn-Cohen T, Du D, Estepa G, Adame A, Pham HM, Holzenberger M, Kelly JW, Masliah E, Dillin A. Reduced IGF-1 signaling delays age-associated proteotoxicity in mice. Cell. 2009;139(6):1157-69.

Carrano AC, Liu Z, Dillin A*, Hunter T. A conserved ubiquitination pathway determines longevity in response to diet restriction. Nature. 2009;460(7253):396-9. PMCID: 2746748. * Corresponding author

Bieschke J, Cohen E, Murray A, Dillin A, Kelly JW. A kinetic assessment of the C. elegans amyloid disaggregation activity enables uncoupling of disassembly and proteolysis. Protein Sci. 2009;18(11):2231-41. PMCID: 2788278.

Raices M, Verdun RE, Compton SA, Haggblom CI, Griffith JD, Dillin A, Karlseder J. C. elegans telomeres contain G-strand and C-strand overhangs that are bound by distinct proteins. Cell. 2008;132(5):745-57.

Baiga TJ, Guo H, Xing Y, O'Doherty GA, Dillin A, Austin MB, Noel JP, La Clair JJ. Metabolite induction of Caenorhabditis elegans dauer larvae arises via transport in the pharynx. ACS Chem Biol. 2008;3(5):294-304. PMCID: 2692194.

Panowski SH, Wolff S, Aguilaniu H, Durieux J, Dillin A. PHA-4/Foxa mediates diet-restriction-induced longevity of C. elegans. Nature. 2007;447(7144):550-5.

Dong MQ, Venable JD, Au N, Xu T, Park SK, Cociorva D, Johnson JR, Dillin A, Yates JR, 3rd. Quantitative mass spectrometry identifies insulin signaling targets in C. elegans. Science. 2007;317(5838):660-3.

Cohen E, Bieschke J, Perciavalle RM, Kelly JW, Dillin A. Opposing activities protect against age-onset proteotoxicity. Science. 2006;313(5793):1604-10.

Wolff S, Ma H, Burch D, Maciel GA, Hunter T, Dillin A. SMK-1, an essential regulator of DAF-16-mediated longevity. Cell. 2006;124(5):1039-53.

Raices M, Maruyama H, Dillin A, Karlseder J. Uncoupling of longevity and telomere length in C. elegans. PLoS Genet. 2005;1(3):e30. PMCID: 1200426.

Hansen M, Hsu AL, Dillin A, Kenyon C. New genes tied to endocrine, metabolic, and dietary regulation of lifespan from a Caenorhabditis elegans genomic RNAi screen. PLoS Genet. 2005;1(1):119-28. PMCID: 1183531.

Venable JD, Dong MQ, Wohlschlegel J, Dillin A, Yates JR. Automated approach for quantitative analysis of complex peptide mixtures from tandem mass spectra. Nature methods. 2004;1(1):39-45.

Dillin A, Hsu AL, Arantes-Oliveira N, Lehrer-Graiwer J, Hsin H, Fraser AG, Kamath RS, Ahringer J, Kenyon C. Rates of behavior and aging specified by mitochondrial function during development. Science. 2002;298(5602):2398-401.

Dillin A, Crawford DK, Kenyon C. Timing requirements for insulin/IGF-1 signaling in C. elegans. Science. 2002;298(5594):830-4.

Arantes-Oliveira N, Apfeld J, Dillin A, Kenyon C. Regulation of life-span by germ-line stem cells in Caenorhabditis elegans. Science. 2002;295(5554):502-5.

Dillin A, Rine J. Roles for ORC in M phase and S phase. Science. 1998;279(5357):1733-7.

Dillin A, Rine J. Separable functions of ORC5 in replication initiation and silencing in Saccharomyces cerevisiae. Genetics. 1997;147(3):1053-62. PMCID: 1208233.

McCracken AA, Karpichev IV, Ernaga JE, Werner ED, Dillin AG, Courchesne WE. Yeast mutants deficient in ER-associated degradation of the Z variant of alpha-1-protease inhibitor. Genetics. 1996;144(4):1355-62. PMCID: 1207689.

Loo S, Laurenson P, Foss M, Dillin A, Rine J. Roles of ABF1, NPL3, and YCL54 in silencing in Saccharomyces cerevisiae. Genetics. 1995;141(3):889-902. PMCID: 1206852.

Fox CA, Loo S, Dillin A, Rine J. The origin recognition complex has essential functions in transcriptional silencing and chromosomal replication. Genes & Development. 1995;9(8):911-24.