Curriculum Vitae

1. Robert Alan Reenan

Professor of Biology, Department of Molecular Biology,
Cellular Biology and Biochemistry, Brown University.
Robert_Reenan@brown.edu

2. Home address:

20 Newman Ave #3405
Rumford, RI 02916

3. Education:

University of Missouri-Columbia	**A.B.**	1984	Biology
Harvard University	**Ph.D.**	1991	Biochemistry and Molecular Pharm. (grad. advisor- Richard Kolodner)

Thesis title: *"Identification and Characterization of Genes Involved in Mismatch Repair in Saccharomyces cerevisiae*".

4. Professional Appointments:

°Postdoctoral Fellow, Univ. of Wisconsin-Madison,
Laboratory of Genetics (advisor: Barry Ganetzky), **1991-1996**.

°Asst. Prof. of Pharmacology, Univ. of Connecticut Health Center, **1996-1998**

°Asst. Prof. of Genetics and Developmental Biology, UCHC,**1998 to Sep. 2001**

°Assoc. Prof. of Genetics and Developmental Biol., UCHC, **Sep. 2001- July 2006**

°Full. Prof. of Biology, Brown University, **August. 2006- present**

5. Completed publications:

a. books/monographs: **N/A**

b. chapters in books:

Hoopengardner, B., O'Connell, M.A., **Reenan, R.A.**, and Keegan, L.P. Adenosine to inosine RNA editing in animal cells. (2005) In *Fine-Tuning of RNA Functions by Modification and Editing* (Topics Current Genetics Volume 12). H. Grosjean, editor. Springer Verlag New York Inc.

c. refereed journal articles:

Reenan, R.A. and Kolodner, R.D. (1992) Characterization of Insertion Mutations in the *Saccharomyces cerevisiae MSH1* and *MSH2* Genes: Evidence for Separate Mitochondrial and Nuclear Functions. Genetics **132**: 975-985.

Reenan, R.A. and Kolodner, R.D. (1992) Isolation and Characterization of Two *Saccharomyces cerevisiae* Homologues of the Bacterial *hexA* and *mutS* Mismatch Repair Genes. Genetics **132**: 963-973.

Alani, E.; **Reenan, R.A.** and Kolodner, R.D. (1994) Interaction Between Mismatch Repair and Genetic Recombination in *Saccharomyces cerevisiae*. Genetics **137**: 19-39.

B. Pittendrigh, **R.A. Reenan**, R. ffrench-Constant and B. Ganetzky (1997) Point Mutations in the *Drosophil*a *para* Voltage Gated Sodium Channel Gene Confer Resistance to DDT and Pyrethroid Insecticides. Mol Gen Genet **256**: 602-610.

J.W. Warmke; **R.A. Reenan**; P. Wang; S. Qian; J.P. Arena; J. Wang; D. Wunderler; K. Liu; G.J. Kaczorowski; L.H.T. Van der Ploeg; B. Ganetzky and C.J. Cohen (1997) Functional Expression of *Drosophila para* Sodium Channels: Modulation by the Membrane Protein *tipE* and Toxin Pharmacology. J. Gen. Physiology **110**: 119-133.

Reenan, R.A., Hanrahan, C.J. and Ganetzky, B. (2000) The *mle*^{napts} RNA Helicase Mutation in *Drosophila* Results in a Splicing Catastrophe of the *para* Na^+ Channel Transcript in a Region of RNA editing. Neuron **25**: 139-149.

C.J. Hanrahan, M.J. Palladino, B. Ganetzky and **R.A. Reenan** (2000) RNA Editing of the *Drosophila para* Na^+ Channel Transcript: Evolutionary Conservation and Developmental Regulation. Genetics **155**:1149-1160.

M.J. Palladino, L.P. Keegan, M.A. O'Connell and **R.A. Reenan** (2000) *dADAR*, a *Drosophila* Double-stranded RNA-specific Adenosine Deaminase is Highly Developmentally Regulated and is Itself a Target for RNA Editing. RNA **6**:1004

R.L. Martin, B. Pittendrigh, J. Liu, **R.A. Reenan**, R. ffrench-Constant and D.A. Hanck. (2000) Point Mutations in Domain III of a *Drosophila* Neuronal Na^+ Channel Confer Resistance to Allethrin. Insect Biochem. and Mol. Biol. **30**: 1051-1059.

M.J. Palladino, L.P. Keegan, M.A. O'Connell and **R.A. Reenan** (2000) A-to-I pre-mRNA Editing In *Drosophila* is Primarily Involved in Adult Nervous System Function and Integrity. Cell **102**:437-449.

B. Rogina, **R.A. Reenan,** Nilsen, S.P. and S.L. Helfand (2000) Extended Life Span Conferred by Cotransporter Gene Mutations in *Drosophila.* Science **290**:2137-2140.

R.A. Reenan (2001) The RNA World Meets Behavior: A-to-I Pre-mRNA Editing in Animals. Trends in Genetics **17(2)**:53-55.

M. Grauso, **R.A. Reenan**, E. Culetto, D.B. Sattelle. (2002) Novel Putative Nicotinic Acetylcholine Receptor Subunit Genes, Da5, Da6 and Da7, in *Drosophila melanogaster* Identify a New and Highly Conserved Target of Adenosine Deaminase Acting on RNA-Mediated A-to-I Pre-mRNA Editing. Genetics 160(4):1519-1533

B. Hoopengardner, T. Bhalla, C. Staber, and **R.A. Reenan.** (2003) Nervous System Targets of RNA Editing Identified By Comparative Genomics. Science 301:832-836.

J. Pedra, A. Hostetler, P. Gaffney, **R.A. Reenan** and B. Pittendrigh. (2004) Hyper-susceptibility to deltamethrin in *para*^{ts1} DDT resistant *Drosophila melanogaster*. Pesticide Biochemistry and Physiology 78:58-66.

T. Bhalla, J. Rosenthal, M. Holmgren and **R.A. Reenan** (2004) Control of human potassium channel inactivation by editing of a small mRNA hairpin. Nature Structural and Molecular Biology 11:950-956

J.W. Park, K. Parisky, A.M. Celotto, **R.A. Reenan** and B.R. Graveley (2004). Identification of alternative splicing regulators by RNA interference in *Drosophila*. P.N.A.S 101:15974-15979.

D. B. Sattelle, A. K. Jones, B. M. Sattelle, K. Matsuda, **R.A. Reenan** and P. C. Biggin (2005) Edit, cut and paste in the nicotinic acetylcholine receptor gene family of *Drosophila melanogaster*. Bioessays 27: 366-376.

R.A. Reenan (2005) Molecular determinants and guided evolution of species-specific RNA editing. Nature 434: 409-413.

L.P. Keegan, J. Brindle, A. Gallo, A. Leroy, **R.A. Reenan** and M.A.O'Connell. (2005) Tuning of RNA editing by ADAR is required in *Drosophila*. EMBO Journal 24(12): 2183-2193.

H.W. Tedford, F. Maggio, **R.A. Reenan** and G. King. (2007) A model genetic system for testing the *in vivo* function of peptide neurotoxins. Peptides 28(1):51-56.

Sixsmith, J. and **R.A. Reenan** (2007) Comparative genomic and bioinformatic approaches for the identification of new adenosine-to-inosine substrates. Methods in Enzymology 424:245- 264.

Jepson, J. and **R.A. Reenan** (2007) Genetic approaches to studying adenosine-to-insosine RNA editing. Methods in Enzymology 424 :265-287.

Drosophila 12 Genomes Consortium (Reenan, member) (2007) Evolution of genes and genomes on the *Drosophila* phylogeny. Nature 450:203-218.

Reenan, R.A. and Rogina, B. (2008) Acquired temperature-sensitive paralysis as a biomarker of declining neuronal function in aging *Drosophila*. Aging Cell 7(2):179-186.

Jepson, J.E. and **Reenan, R.A.** (2008) RNA editing in regulating gene expression in the brain. Biochim Biophys Acta. 1779(8):459-470.

Ryan, M.Y., Maloney, R., **Reenan, R.A.** and Horn R. (2008) Characterization of five RNA editing sites in *Shab* potassium channels. Channels 2(3):202-209.

Ingleby, L., Maloney, R., Jepson, J., Horn, R. and **Reenan, R.A.** (2009) Regulated RNA editing and functional epistasis in *Shaker* potassium channels. J Gen Physiol. 133:17-27.

St. Laurent, G., Savva, Y.A and **Reenan R**. (2009) Enhancing non-coding RNA information content with ADAR editing. Neuroscience Letters 466:89-98.

Jepson, J.E. and **Reenan, R.A.** (2009) Adenosine-to-inosine genetic recoding is required in the adult-stage nervous system for coordinated behavior in Drosophila. J Biol Chem. 284:31391-31400.

Jepson, J.E. and **Reenan, R.A.** (2010) Unraveling pleiotropic functions of A-to-I RNA editing in Drosophila. Fly 4(2):154-8.

Horn, R. and **Reenan, R.** (2010) Channels get in an HUFA: RNA editing gets them out of a jam. EMBO J. 29(13):2097-8.

Staber, C.J., Gell, S., Jepson, J.E. and **Reenan, R.A.** (2011) Perturbing A-to-I RNA Editing Using Genetics and Homologous Recombination. Methods in Molecular Biology 718:41-73.

Jepson JE, Savva YA, Yokose C, Sugden AU, Sahin A, **Reenan RA.** (2011) Engineered alterations in RNA editing modulate complex behavior in Drosophila: REGULATORY DIVERSITY OF ADENOSINE DEAMINASE ACTING ON RNA (ADAR) TARGETS. J Biol Chem. 286(10):8325-8337.

Pittendrigh BR, Berenbaum MR, Seufferheld MJ, Margam VM, Strycharz JP, Yoon KS, Sun W, **Reenan R**, Lee SH, Clark JM. (2011) Simplify, simplify: Lifestyle and compact genome of the body louse provide a unique functional genomics opportunity. Commun Integr Biol. 4(2):188-191.

Bhogal B, Jepson JE, Savva YA, Pepper AS, **Reenan RA,** Jongens TA. (2011) Modulation of dADAR-dependent RNA editing by the Drosophila fragile X mental retardation protein. Nat Neurosci. 14(12):1517-1524.

Savva YA, Rieder LE, **Reenan RA**. The ADAR protein family. (2012) Genome Biol. 13(12):252. [Epub ahead of print]

Ryan MY, Maloney R, Fineberg JD**, Reenan RA**, Horn R. (2012) RNA editing in eag potassium channels: Biophysical consequences of editing a conserved S6 residue. Channels 6(6):443-52

Sun L, Gilligan J, Staber C, Schutte RJ, Nguyen V, O'Dowd DK, **Reenan R.** (2012) A knock-in model of human epilepsy in *Drosophila* reveals a novel cellular mechanism associated with heat-induced seizure. J Neurosci. 32:14145-55

Savva YA, Jepson JE, Sahin A, Sugden AU, Dorsky JS, Alpert L, Lawrence C, **Reenan RA.** (2012) Auto-regulatory RNA editing fine-tunes mRNA re-coding and complex behaviour in *Drosophila*. Nature Communications 3:790. doi: 10.1038/ncomms1789.

Garber G, Smith LA, **Reenan RA**, Rogina B. (2012) Effect of sodium channel abundance on *Drosophila* development, reproductive capacity and aging. Fly 6(1):57-67.

Jepson JE, Savva YA, Jay KA, **Reenan RA.** (2012) Visualizing adenosine-to-inosine RNA editing in the Drosophila nervous system. Nature Methods 25;9(2):189-94.

Rieder LE, **Reenan RA.** (2012) The intricate relationship between RNA structure, editing, and splicing. Semin Cell Dev Biol. 23(3):281-8

Gell S L, **Reenan RA.** (2013) Mutations to the piRNA Pathway Component aubergine Enhance Meiotic Drive of Segregation Distorter in *Drosophila melanogaster*. Genetics. 193(3):771-784.

Rieder LE, Staber CJ, Hoopengardner B, **Reenan RA**. (2013) Tertiary structural elements determine the extent and specificity of messenger RNA editing. Nature Communications. 4:2232. doi: 10.1038/ncomms3232.

St Laurent G, Tackett MR, Nechkin S, Shtokalo D, Antonets D, Savva YA, Maloney R, Kapranov P, Lawrence CE, **Reenan RA**. (2013) Genome-wide analysis of A-to-I RNA editing by single-molecule sequencing in *Drosophila*. Nat Struct Mol Biol. 20(11):1333-1339.

Savva YA, Jepson JE, Chang YJ, Whitaker R, Jones BC, St Laurent G, Tackett MR, Kapranov P, Jiang N, Du G, Helfand SL, **Reenan RA**. (2013) RNA editing regulates transposon-mediated heterochromatic gene silencing. Nature Communications. 4:2745. doi: 10.1038/ncomms3745.

Zhu C, Chang C, Reenan RA, and Helfand SL. (2014) Indy gene variation in natural populations confers fitness advantage and life span extension through transposon insertion. Aging. 6(1):58-69.

Reenan, RA (2014) Correcting mutations by RNA repair. New England Journal of Medicine. 370(2):172-174.

Savva YA, Reenan RA. (2014) Identification of evolutionarily meaningful information within the mammalian RNA editng landscape. Genome Biol. 2014 Jan 28;15(1):103.

Schutte RJ, Schutte SS, Algara J, Barragan EV, Gilligan J, Staber C, Savva YA, Smith MA, Reenan R, O'Dowd DK. (2014) Knock-in Model of Dravet Syndrome reveals a constitutive and conditional reduction in sodium current. J Neurophysiol. 112(4):903-912.

Juliano CE, Reich A, Liu N, Götzfried J, Zhong M, Uman S, Reenan RA, Wessel GM, Steele RE, Lin H. (2014) PIWI proteins and PIWI-interacting RNAs function in Hydra somatic stem cells. Proc Natl Acad Sci U S A. 2014 Jan 7;111(1):337-42. doi: 10.1073/pnas.1320965111. PMID: 24367095

Rieder LE, Savva YA, Reyna MA, Chang YJ, Dorsky JS, Rezaei A, Reenan RA. (2015) Dynamic response of RNA editing to temperature in Drosophila. BMC Biol. 2015 Jan 3;13:1. doi: 10.1186/s12915-014-0111-3. PMID: 25555396

Savva YA, Laurent GS, Reenan RA. Genome-Wide Analysis of A-to-I RNA Editing. (2016) Methods Mol Biol. 1358:255-68. doi: 10.1007/978-1-4939-3067-8_15. PMID: 26463388

Savva YA, Rezaei A, St Laurent G, Reenan RA. (2016) Reprogramming, Circular Reasoning and Self versus Non-self: One-Stop Shopping with RNA Editing. Front Genet. Jun 7;7:100. doi: 10.3389/fgene.2016.00100. PMID:27458478

Şahin A, Held A, Bredvik K, Major P, Achilli TM, Kerson AG, Wharton K, Stilwell G, Reenan R. (2017) Human SOD1 ALS Mutations in a *Drosophila* Knock-In Model Cause Severe Phenotypes and Reveal Dosage-Sensitive Gain- and Loss-of-Function Components. Genetics. 205(2):707-723.

McKerrow WH, Savva YA, Rezaei A, Reenan RA, Lawrence CE. (2017) Predicting RNA hyper-editing with a novel tool when unambiguous alignment is impossible. BMC Genomics. 2017 Jul 10;18(1):522. doi: 10.1186/s12864-017-3898-9.

Silvestrini MJ, Johnson JR, Kumar AV, Thakurta TG, Blais K, Neill ZA, Marion SW, St Amand V, Reenan RA, Lapierre LR. (2018) Nuclear Export Inhibition Enhances HLH-30/TFEB Activity, Autophagy, and Lifespan.
Cell Rep. 2018 May 15;23(7):1915-1921. doi: 10.1016/j.celrep.2018.04.063.

Kumar AV, Thakurta TG, Silvestrini MJ, Johnson JR, Reenan RA, Lapierre LR. (2018) Give me a SINE: how Selective Inhibitors of Nuclear Export modulate autophagy and aging. Mol Cell Oncol. 2018 Aug 17;5(5):e1502511.
doi: 10.1080/23723556.2018.1502511.

Yanagi KS, Wu Z, Amaya J, Chapkis N, Duffy AM, Hajdarovic KH, Held A, Mathur AD, Russo K, Ryan VH, Steinert BL, Whitt JP, Fallon JR, Fawzi NL, Lipscombe D, Reenan RA, Wharton KA, Hart AC. (2019) Meta-analysis of Genetic Modifiers Reveals Candidate Dysregulated Pathways in Amyotrophic Lateral Sclerosis. Neuroscience. 2019 Jan 1;396:A3-A20.
doi: 10.1016/j.neuroscience.2018.10.033.

Held A, Major P, Sahin A, Reenan RA, Lipscombe D, Wharton KA. (2019) Circuit Dysfunction in SOD1-ALS Model First Detected in Sensory Feedback Prior to Motor Neuron Degeneration Is Alleviated by BMP Signaling.
J Neurosci. 2019 Mar 20;39(12):2347-2364. doi: 10.1523/JNEUROSCI.1771-18.2019. Epub 2019 Jan 18.

Agudelo A, St Amand V, Grissom L, Lafond D, Achilli T, Sahin A, Reenan R, Stilwell G. (2020) Age-dependent degeneration of an identified adult leg motor neuron in a Drosophila SOD1 model of ALS. Agudelo A, St Amand V, Grissom L, Lafond D, Achilli T, Sahin A, Reenan R, Stilwell G.
Biol Open. 2020 Oct 21;9(10):bio049692. doi: 10.1242/bio.049692.

d. non-refereed journal articles:

C.J. Hanrahan, M.J. Palladino, L.J. Bonneau and **R.A. Reenan** (1999) RNA Editing of a *Drosophila* Sodium Channel. Ann. NY Acad. Sci. **868**: pp 51-66.

e. book reviews:

Reenan, R.A. (2001) RNA Talking Back. Cell **107**:267-269.

f. abstracts **N/A**

g. invited lectures (recent/upcoming):

Stowers Institute (Kansas City, MO) "The RNA Double Helix and Disease" 3/23/2017

SUNY Stony Brook- (Long Island, NY) Feb. 2nd, 2017 "RNA Editing in Neurons, why? Evolution is cleverer than you are"

Instituto Gulbenkian de Ciência (Lisbon, Portugal) "The Revision of the Genome by RNA Editing; in Sickness and in Health" 12/9/2016

Univ. of Wisconsin (Madison, WI) "The breaking in of a scientist" 6/17/2016

Johns Hopkins (Baltimore, MD) "RNA Editing, The Persnicketiness of (Genetic) Memory, and Disease" 5/12/2016

Univ. of Illinois (Urbana-Champaign, Illinois) "From Dimensionality to Disease: Lessons from the RNA World" 2/1/2016

Bogazici University (Istanbul, TR)- Suna Kirac Workshop on Neuro-degenerative Disease (1/19-25/2015): From Genetic models to therapies. "*Validation and Studies of Human Neurological Disease in Drosophila"*

Gordon Research Conference on RNA Editing (Reenan- Invited speaker) (Lucca, ITALY) - "Regulation of RNA editing in Drosophila"- 3/8-13/2015

Washington University (St. Louis, MO) - "Editing the Brain in Health and Disease: from RNA to ALS" 11/6/2014

ALS Association Meeting (Philadelphia, PA) 10/19-22/2014- "Genetic Suppression of SOD1 based ALS in Drosophila"

16th Annual International Behavioral and Neural Genetics Society (IBANGS)

(Chicago, IL) “Intersection of RNA editing with gene expression and silencing:Implications for disease” 5/10-14/2014

Indiana University- (Bloomington, IN) "RNA Editing and the Flow of Genetic Information - Stay Tuned" 2/26-28/2014

University of Puerto Rico (San Juan, PR) “The Very Different Roles of RNA Editing in Regulating Gene Activity” 1/4-6/2014

Gordon Research Conference on Nucleosides, Nucleotides & Oligonucleotides- Salve Regina University (Newport, RI) (invited speaker) "Regulation of Gene Silencing by A-to-I RNA Editing" 6/30-7/5/2013

Univ. of N. Carolina- Chapel Hill – (Chapel Hill, NC) **“**Running the Light at the Intersection Between RNA Editing and Gene Silencing” 4/2/2013

Bogazici University (Istanbul, TR)- Suna Kirac Workshop on Neuro-degenerative Disease (1/16-18/2013): From Genetic models to therapies. “*Validation and Studies of Human Neurological Disease in Drosophila”*

Gordon Research Conference on RNA Editing (Reenan- Chair of meeting) (Galveston , TX) - "RNA Editing meets RNA Silencing"- 1/6/2013

Jackson Laboratories (Bar Harbor- Maine)- "RNA Editing, Gene Silencing, and the Single Fly" – 12/6/2012

University of Connecticut (Storrs, CT)- “Rewriting Genomes by RNA Editing”, 11/15/2011

Bogazici University (Istanbul, TR)- Suna Kirac Conference on Neuro-degenerative Disease (6/20/2011) “Accurate Genetic Models of ALS”

Bogazici University (Istanbul, TR)- Suna Kirac Workshop on Neuro-degenerative Disease (1/18-21/2011): From Genetic models to therapies. “*Taming Medusa: Genetic and Molecular Dissection of a Complex Nervous System Process”*

Gordon Research Conference on RNA Editing (Galveston , TX) - "Regulation of ADAR activity *in vivo*: Specific and non-specific activities"- 1/13/2011 (vice chair of meeting)

Bogazici University (Istanbul, TR)- Istanbul: Ideas and Initiatives, Genetics of Neurological Diseases (10/15-17/2010) “*Accurate Modeling of Human Inherited Neurological Disease- What can Drosophila tell us?”*

Michael J. Fox Foundation LRRK2 Biology Consortium (NYC) 8/5/2010 "Accurate *Drosophila* Genetic Models of LRRK2-based Parkinson's Disease"

Brandeis University (MA) 12/7/2009 "Regulation of RNA editing in the nervous system- a very tangled RNA web".

University of Minnesota (MN) 11/19/2009 "Rewriting the Genome in Neurons through RNA Editing"

Gordon Research Conference on RNA Editing (Galveston , TX) - "ADAR-mediated Fine-Tuning of Behavior"- 1/14/2009

Colloquium on the Biology of Aging (CSHL/MBL) 8/5/2009 **"***Genetic Recoding by RNA Editing and the Aging Process"*

Templeton Consortium Symposium - From the Molecules of Life through the Evolution of Form & Behaviour to Becoming Fully Human (Cambridge, UK) 10/20/2008 **"**Big A, Little a, and the Fine-tuning of Natural Selection"

University College Cork (UCC) (Ireland) 5/13/2009 "RNA Editing in Drosophila"

MIT- Picower Institute 10/30/2008

University of Pittsburgh *4/11/2008 "Fine-tuning of neuronal excitability by RNA editing"*

Carnegie Mellon (Pittsburgh) 4/9/2008 "Travels with RNA: In Search of Shape and Behavior in Hyperspace"

Stockholm University (Sweden) 10/11/2007

ASBMB Annual Meeting (Washington, D.C.) 5/2/2007 "Fine Tuning of Behavior by RNA Editing"

Gordon Research Conference on RNA Editing- "Regulation of the Drosophila Phenome by ADAR"- 1/14/2007

Gordon Research Conference on Ion Channels- 7/9-14/2006 "Evolutionary Diversification of Ion Channels by RNA Editing-Why?"

University College Dublin (Ireland)- - 5/18/2006 "*Drosophila*: probing nervous system function using behavioural genetics"

Thomas Jefferson University- - 4/11/2006

UCLA- 2/22/2006 ***"RNA Recoding and Signaling in the Brain: An Evolving Story"***

Duke University- "*Genetic Recoding of Ion Channels and Receptors: Adventures in the Forbidden Zone*"- 3/3/05

Brown University- "*Rewriting the genome in the animal brain by RNA editing*"- 2/1/2005

Gordon Research Conference on RNA Editing- *"Genetic reprogramming of the animal brain by ADARs"*- 1/23/2005

University of Pennsylvania- *"Genetic reprogramming by RNA editing in animal brains- insufficiency of the "almost right word?"* -12/2/2004

Trinity College-"*The Twisted World of RNA and Animal Behavior*"- 11/18/2004

Yale University- "*The RNA World Meets Behavior*" -11/8/2004

Univ. of Texas: Austin- "*RNA Editing in the Metazoan Nervous System*" - 4/14/2004

Baylor College of Medicine- *"RNA Editing in the Animal Brain- Perfecting Through Perversion"*- 3/9/2004

UCONN Health Center-" *A-to-I RNA Editing in Drosophila*"- 2/5/2004

Harvard University- "*RNA Editing and Excitability Issues in the Animal Brain*" - 1/21/2004

The Jackson Laboratory-*"Mixed Messages in the Brain: Lessons About pre-mRNA Editing from Flies"*- 12/18/2003

Vanderbilt University-"*RNA Editing in the Animal Nervous System: Lessons from Flies*"- 12/2/2003

Gordon Research Conference on RNA Editing- "*Regulation of RNA editing in Drosophila*" 1/25/2003

Purdue University- "*Expanding genomic diversity in neurons through RNA editing*" -11/19/2002

h. papers read; N/A

i. work in review:

N/A

j. work in progress:

1. Research Grants:

a. current grants (agency, title, dates, role on grant, total award amount)

NIH-NIA RF1 RF1 AG024353-16 (Helfand, PI. Reenan,key personnel)
9/30/04 – 5/31/24
"Control of Gene Expression and Life Span"
The major goals are to study the role of Sirt6 in Drosophila aging and Alzheimer's Disease.

NIH/NIA R01AG067306-01 (Helfand, PI. Reenan, key personnel)
4/01/20 – 3/31/25
"The Effect of Life Span Modifying Interventions on Alzheimer's Disease in Drosophila and Mice."
The major goals are to determine whether potential genetic and pharmacological geroprotectors known to extend life span or health span in flies and mice delay the onset and progression of neurodegeneration and other AD-related phenotypes in AD models in mice and flies.

b. completed grants (same data as a.)

ALS Finding a Cure Reenan(co-PI)
"Accelerating Identification of Cross-species Suppressor Genes and Elucidating Early Pathophysiology in ALS" total award to Brown $578,163

INBRE Rhode Island College (Co-PI: Reenan)
Motor Neuron Degeneration in Drosophilia Melanogaster
The INBRE is a collaborative project award and we are Characterizing enhancers in a Drosophila model of Amyotrophic Lateral Sclerosis. 6/1/2018-5/31/2021 $24,390

BBII- Innovation award. Internal Funding (Reenan)
Institutional Award. The major goals of this project are to humanize a model suppressor gene for SOD1 based ALS and develop lead compounds as potential therapies. 7/1/2017 – 6/30/2018 $50,000 total

NIH-NIA 1R56AG057410-01 R56 PI-Reenan/Helfand
"Systems Biology of Humanized models of AD and genetic suppression in Drosophila"
09/15/2017 – 08/31/2018 $745,880

Investigator-Initiated Research Grant ALS Association **Reenan(PI)**
8/01/2013-7/31/2016 $240,000

Grant Number: ALSA #2279
Principal Investigator: REENAN, ROBERT A.
Project Title: GENETIC SUPPRESSION STUDIES OF HUMAN SOD1-BASED ALS MUTATIONS IN A DROSOPHILA MODEL
Institution: BROWN UNIVERSITY

EUREKA award in the Epilepsies
Reenan(PI)
2/15/2011-1/31/2015 $1,296,000
Grant Number: 1 R01 NS074686-01
Principal Investigator: REENAN, ROBERT A.
Project Title: Genetic Suppression studies of human epilepsy mutations in a model genetic system
Institution: BROWN UNIVERSITY

Michael J. Fox Foundation Rapid Response Award
Reenan(PI) 11/1/09-10/31/10
"Accurate Drosophila Genetic Models of LRRK2-based Parkinson's Disease"
-The major aim is to introduce human Parkinson's disease-causing mutations into the fly orthologue of the LRRK2 gene to generate new and novel models of PD in Drosophila.

Ellison Medical Foundation Senior Scholar Award (Reenan-PI)
11/1/05-10/31/09
"Genetic Recoding by RNA Editing and the Aging Process" $600,000

Cambridge-Templeton Consortium (UK) (Reenan-PI)
Emergence of Biological Complexity Grant Competition 1/1/06-12/31/07
"Fine Tuning the Molecules of Behavior in Animals"
$300,000

5R01 GM62291-05 (Reenan-PI) 5/1/01-4/30/06
NIH $700,000
"Genetic Dissection of A-to-I pre-mRNA Editing in *Drosophila*"

F01-107 (Reenan-PI**)** 1/1/02-12/31/06
Donaghue Foundation $525,000
"Neurogenetics of Ion Channel Function and Dysfunction"
-The major goal of this project is to characterize several areas of ion channel function and regulation/dysregulation.

Coins for Alzheimer's Research Trust (Reenan-PI**)** 6/1/04-5/31/06
AFAR-CART $250,000
"Testing the Amyloid Hypothesis in *Drosophila* "

-The major goal of this project is to use *Drosophila melanogaster* producing amyloid proteins as a model of neurodegenerative processes in humans.

MCB-0424639 (Reenan-PI) 9/1/04-8/31/07
National Science Foundation $450,000
"**Natural History and Functional Evolutionary Studies of A-to-I-pre-mRNA Editing-ARB"
-The major goal of this project is the continued use of comparative genomics to analyze RNA editing in *Drosophila* as at starting point for generating a natural history of RNA editing. **This is an accomplishment-based renewal (ARB) of MCB-0091142.

MCB-0234648 (King) (Reenan co-PI) 5/15/03-4/30/06
National Science Foundation $450,000
"Insecticide Design: Insights from Venomous Spiders"
-The major goal of this project is to identify and characterize novel insecticides.

Donaghue New Investigator Award (DF96-037)(Reenan-PI) 7/1/96-6/30/99
Donaghue Foundation $176,149
"Molecular and Genetic Analysis of a Novel *Drosophila* Sodium Channel"
-The major goal of this proposal was the characterization of the DSCI channel.

MCB-9728737 (Reenan-PI) 3/1/98-2//28/01
National Science Foundation $270,000
"Molecular Genetic Analysis of RNA Editing in *Drosophila*"
-The major goal of this project is to use generate *Drosophila* lacking ADAR activity and characterize *Drosophila* ADAR genes and activities.

MCB-0091142 (Reenan-PI) 3/1/01-2/28/04
National Science Foundation $330,000
"Natural History and Functional Evolutionary Studies of A-to-I-pre-mRNA Editing"
-The major goal of this project is to use comparative sequence analysis on RNA editing in *Drosophila* as at starting point for generating a natural history of RNA editing.

Patterson Trust (Reenan-PI) 1/1/04-12/31/04
"Development of a Fruit Fly Model of Alzheimer's Disease" $68,750
-The major goal of this project is to use *Drosophila melanogaster* to develop a system to express the Abeta peptide to generate a model system to study AD.

c. proposals submitted:

2. **Service:** (I) to the University, (ii) to the profession and (iii) to the community, each category organized separated and chronologically.

(I) to the University of Connecticut Health Center:

Co-Director- Developmental Biology Graduate Program 1997-1999.
Assistant Director- Genetics, Microbiology and Molecular Biology Graduate Program 1999-2000.
Associate Director- Genetics, Microbiology and Molecular Biology Graduate Program 2000-2002.
Director- Genetics, Microbiology and Molecular Biology Graduate Program 2002-2003.
Graduate Programs Committee 1999-2003.
Graduate Admissions Committee 1997-2003.
Undergraduate Summer Fellowship Committee 1996-1997.
Genetics Department Faculty Recruitment Committee 1999-2002.
Service on Thesis Committees (Dana Phillips, Katerina Rougowski, Zhou Han, Jake Campos, Zuo Zhang, Jenny Webb, Steve Nilsen, Brie Sollod, Frank Maggio)
Service on Preliminary Exam Committees (3-4/yr)

(II) <u>to the profession:</u>

(a) Reviewer for the following journals (previous 10 years):

J. Neuroscience (4)
Neuron (5)
Cell (2)
Molecular Cell (1)
JBC (6)
Nature Structural and Molecular Biology (3)
P.N.A.S. (2)
Nucleic Acid Research (1)
Neuroscience (3)
Nature Communications (4)
RNA (8)
Genetics (4)
Physiological Genomics (2)
Bioinformatics (1)
Genes and Development (1)
Trends in Genetics (4)
Nature Neuroscience (1)
Biochemical Journal (1)
Brain Research (1)

(b) Regular reviewer of grant proposals for the NSF (3-6grants/yr) 2002-2012

(c) Appointed as NSF Panel Member (8/2005- 2007) - Biochemistry of Gene Expression

(d) Appointed to NIH study section Molecular, Cellular and Developmental Neuroscience (MDCN-K) 10/2005.

(III) to the community:

I generally give about 1-2 seminars a year to the general public or high school students in the local community on the excitement of doing science or occasionally, on invited topics (such as the Human Genome Project).

Service to Brown University

Center for Translational Neuroscience- Exec. Committee (2020-to-present)

- MCB Department Executive Committee (member: 2010-present)
- Chair, MCB Admissions committee (2007-2008, 2008-2009)
- MCB Graduate Program Executive Committee (member: 2007-2008)
-Service on Preliminary Exam Committees (4-5/yr)

-Service on Thesis Committees:
Kathryn Coser
Marcela Sorucco
Aron Guyris
Melissa Ho
Heather Bennett
Catherine Pratt
Summer Allen
Spiro Marangoudakis
William Holmes
Rachel Whitaker
Emmette Hutchison (NIH-Brown GPP)
Arjun Ray
Aaron Held
Brian Jones
Jaqueline Howells

-First Readings Seminar (2008-2016)

-First Year Advisor (6 students) (2008-2011) (2021)

-Concentration Advisor (6 students) (2011-present)

3. **Academic honors**, fellowships, honorary societies, listed chronologically.
Member AAAS.
2008-2009 National Academies Education Fellow in the Life Sciences

4**. Teaching**:
Medical School Teaching (UCHC):
Human Biology- Lectures in population genetics and multifactorial genetics. Fall 2001- Fall 2004 (2hrs contact).
Human Biology Conferences- Genetics: ~12 contact hours/yr, Fall 2004-05
Human Biology Conferences and Lab- Axonology: Fall 1996-Fall 2002, 4 contact hours.
Graduate School Teaching (UCHC):
MEDS 365- Genetics I (3 credits)- Basic graduate level core course in genetics. Responsible for first 6 weeks, 3 lectures/wk, Mendelian genetics, through first exam. Fall 2000- Fall 2004 ~24 contact hours including conference sections on problem solving.

MEDS 369- Advanced Genetics (3 credits)- 4-1.5 hour contact hour sessions, critical reading course, Fall 1996- Fall 2005.

MEDS 341- Molecular Neurobiology of Excitable Membranes (3 credits)- Course director. Lecture and critical reading. (36 student contact hours) Spring 1996-Spring 2005.

BROWN TEACHING (2006- present):
BIOL 0200 SPRING 2008 overall instructor evaluation, 3.71 (n=166)
BIOL 0470 FALL 2008 overall instructor evaluation, 1.94 (n=95)
BIOL 2290C SPRING 2009 Current Topics in Cell Biology: Neuronal Signaling

Meets the RNA World overall instructor evaluation, 1.0 (n=1)

BIOL 0470 FALL 2009 overall instructor evaluation, 1.88 (n=113)

BIOL 2290C SPRING 2010 Current Topics in Cell Biology: Neuronal Signaling Meets the RNA World overall instructor evaluation, 1.50 (n=8)

BIOL 0470 FALL 2010 overall instructor evaluation, 2.14 (n=117)

BIOL 0470 FALL 2011 overall instructor evaluation, 2.18 (n=170), overall course evaluation, 2.49

BIOL 2320A FALL 2011 Neurogenetics and Disease, overall instructor evaluation, 1.29 (n=17), overall course evaluation, 1.53

BIOL 0470 FALL 2012 overall instructor evaluation, 2.07 (n=134), overall course evaluation, 2.84

BIOL 2320A FALL 2012 Neurogenetics and Disease, overall instructor evaluation, 1.33 (n=12), overall course evaluation, 1.25

BIOL 0470 GENETICS, FALL 2013
overall instructor evaluation, 2.1 (n=116), overall course evaluation, 2.0

BIOL 2340 Neurogenetics and Disease, FALL 2013
overall instructor evaluation, 1.5 (n=15), overall course evaluation, 1.5

BIOL 0470 GENETICS, FALL 2014
overall instructor evaluation, 1.9 (n=120), overall course evaluation, 1.66

BIOL 2340 Neurogenetics and Disease, FALL 2014
overall instructor evaluation, 1.33 (n=15), overall course evaluation, 1.4

BIOL 0470 GENETICS, FALL 2015
overall instructor evaluation, 1.81 (n=124), overall course evaluation, 1.65

BIOL 2340 Neurogenetics and Disease, FALL 2015
overall instructor evaluation, NOT AVAILABLE, overall course evaluation, NA

BIOL 0470 GENETICS, FALL 2016
overall instructor evaluation, 1.86 (n=153), overall course evaluation, 1.80

BIOL 2340 Neurogenetics and Disease, FALL 2016

BIOL0047 (GENETICS) FALL 2017 Coinstructor/Johnson N=111 responses (~140 in class)
Overall course effectiveness: 1.74 Instructor overall effectiveness: 2.09

BIOL2340 (NEUROGENETICS OF DISEASE) FALL 2017 Coinstructor/Webb N=12 responses (16 total in class). Overall effectiveness:1.42 Instructor effectiveness: 1.25 overall instructor evaluation, 1.36 (n=16), overall course evaluation, 1.55

BIOL0047 (GENETICS) FALL 2020 Coinstructors/Johnson, Larschan
N=143 responses (~176 in class) *Overall course effectiveness*: **4.39/5**
REENAN Instructor overall effectiveness: **3.96/5**

BIOL2340 (NEUROGENETICS OF DISEASE) FALL2020 Coinstructor/Webb
N=4 responses (5 total in class). Overall course effectiveness: 5/5
REENAN Instructor effectiveness: 5/5

BIOL1540 (Molecular Genetics) SPRING 2020 Coinstructor/Bender
N=3 responses (4 total in class). Overall course effectiveness: 5/5
REENAN Instructor effectiveness: 5/5

BIOL0047 (GENETICS) FALL 2021 Coinstructors/Johnson, Larschan
N=151 responses 197 in class) *Overall course effectiveness*: **4.13/5**
REENAN Instructor overall effectiveness: **3.92/5**

BIOL2340 (NEUROGENETICS OF DISEASE) FALL2021 Coinstructor/Valdez
N=7 responses (8 total in class). Overall course effectiveness: 4.71/5
REENAN Instructor effectiveness: 4.86/5

BIOL0047 (GENETICS) FALL 2022 Coinstructors/Johnson, Larschan
N=129/153 responses) *Overall course effectiveness*: **4.02/5**
REENAN Instructor overall effectiveness: **3.31/5**

BIOL2340 (NEUROGENETICS OF DISEASE) FALL2022 Coinstructor/Valdez
N=10 responses (12 total in class). Overall course effectiveness: 4.8/5
REENAN Instructor effectiveness: 4.80/5

Undergraduates who pursued **BIOL 1950** research in the Reenan Lab:

Kyle Jay (2007-2008)

Jaqueline Dorsky (2007-2009)

Stellar Hur (2007-2009)

Jeff Gilligan (2007-2009)

Andrew Kuo (2007-2009)

Ryan Bell (2007-2011)

Sarah Goldgar (2008- 2011)

Jonathan Poggi (2009- 2012)

Malory Kerner (2010-2012

Helen Johnson (2010-2012)

Abigail Kerson (2011-2012)

Kasia Sierzputowska (2011-2013)

Corbyn Nchako (2012-2014)

Emily Jang (2013-2014)

Kirsten Bredvik (2014-2016)

Ali Rezeai (2014-2016)

Rakeem Marcelle (2015-2016)

Yuki Inaba (2016-2018)

Zach Zuckowski (2016-2018)

Halle Kreiger (2019-2021)

Troy Kanji (present)

Grace Johnson (present)

Annette Izumi (present)

Past graduate thesis students:

1. Christopher Hanrahan (6/1996- 9/1999- M.D.-Ph.D. September, 1999)
Resident in Diagnostic Radiology, Research Track,
University of Utah Hospitals and Clinics, Salt Lake City, UT
2. Michael Palladino (1/1997 to 8/2000- Ph.D. August, 2000)
PostDoctoral fellow, University of Wisconsin-Madison 8/2000-10/2003)
Asst. Professor, Univ. of Pittsburgh, Dept. of Pharmacology 10/2003-present.
3. Lee Ann Smith (6/1999 to 7/2004- Ph.D, July, 2004)
Assistant Professor of Biology, Benedictine University, IL.
4. Tarun Bhalla (6/2001 to 6/2004- Ph.D. June 2004)
Currently Tarun is in his third year of medical school as a M.D.-Ph.D. student.
5. Katherine Parisky (6/1999 to 8/2004- Ph.D, August, 2004)
Currently postdoctoral fellow, Brandeis University, Mentor: Leslie Griffith
6. Ariel Weathers-Lowin (Master's degree, Jan. 2004) Dartmouth College,
Research assistant.

7. Taiwo Koyejo 6/2001 to 8/2006- Ph.D, August, 2006. Currently research scientist at Monsanto.
8. Rachael Maloney 6/2004-2010 Currently postdoctoral fellow at UMASS-Worcestor.
9. Yiannis Savva Ph.D. 4/2011, currently finishing work as postdoctoral fellow in Reenan lab.
10. Selena Gell- Ph.D. 9/2011, currently postdoctoral fellow at Harvard Univ.
11. Leila Rieder- Ph.D. 5/2013, currently postdoctoral fellow at Brown Univ.
12, Asli Sahin- Ph.D. 9/2015 Bogazici University (Istanbul –TR)
*** Yao-Jen Chang** (Neuroscience)- terminal masters (2013)

Current Brown graduate thesis students:

Victoria St. Amand

Rotation graduate students (Brown in bold):

Kimberly Wilhelm	Alexander Gorenbeyn
Kirk Dzenko	Steven Nilsen
Stephan Goupil	Margaret Calciano
Alicia Celotto	Brianna Sollod
Jing Zhou	**Rachel Whitaker**
Judson Belmont	**Arjun Mather**

Post Doctoral Fellows:
Barry Hoopengardner 1999-2005 currently, Assistant Professor, Central Connecticut State University.
Jaimie Sixsmith, PhD (Univ. of Newcastle)
James Jepson (Feb. 2006)
Yiannis Savva (5/2011 – 5/2013)