CURRICULUM VITAE

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Education: University of California, Santa Cruz
Bachelor of Art, Chemistry, 1985
University of California, Santa Cruz
Doctor of Philosophy, Chemistry, 1989
Postdoctoral Fellow
Department of Biochemistry and Chemistry
University of California, Los Angeles, 1990-1994

Professional Memberships: American Chemical Society, 1996-Present
Society of Neuroscience, 1999-Present
American Association for the Advancement of Science, 1996-Present
Oxygen Society, 1994-1998

NIH Service: NINDS NSD-B Study Section Member 2003-2007
NIH NINDS NSD-B Review Committee Member 2004-2008
NIH NINDS ZRG1 NDBG (02) Review Committee, Ad hoc, 2005
NIH NINDS CDIN-2 Review Committee, Ad hoc, 2004-present
NIH NINDS ZNS1 SRB-M (S1), Ad hoc, 2007
NIH NINDS NSD-B Review Committee Member, Ad hoc 2008-Present
NIH NINDS CDIN Review Committee Member, 2009-2013
NIH ETTN-M Review Committee Member, Ad hoc 2011-Present
NIH MDCN Review Committee Member, Ad hoc 2009-Present
NIH CMND-Review Committee Member, 2020-2024

Honors: University of California, Santa Cruz,
Outstanding Teaching Assistant Award, 1987

American Cancer Society Postdoctoral Fellowship, 1992-1994

Editorial Board:

Biochemistry Journal, 1999-Present
Plos Huntington's Disease, 2011-Present
Journal of Biological Chemistry, 2003-2015
Journal of Huntington's Disease, Associate Editor, 2012-Present
Journal of Alzheimer's Disease, 2012-Present
American Journal of Stem Cell Research, 2013-Present
Frontiers in Genome Editing, 2020- Present

Ad Hoc Reviewer:

Aging
Autophagy
Biochemistry
Brain Research
Brain Sciences
Cell
Cell Death and Differentiation
Cell Metabolism
Cell Reports
Cell Stem Cell
Developmental Cell
eLIFE
EMBO Journal
Free Radicals in Biology and Medicine
Human Molecular Genetics
International Society of Stem Cell Research
Journal of Neurochemistry
Journal of Biological Science
Journal of Huntington's Disease
Journal of Neuroscience
Molecular Cell
Molecular Psychiatry
Molecular Neurodegeneration
Nature
Nature Communications
Nature Medicine
Nature Methods
Neurobiology of Aging
Neurobiology of Disease
Neuron
Neurotherapeutics
Pharmaceuticals
Plos Biology
Plos Genetics
PNAS
Redox Biology

Stem Cell Reports
Stem Cell Research
Stem Cell Translational Medicine
Science
Scientific Reports
Trends in Neuroscience

Research and Teaching Experience:

01/90-06/90 **Postdoctoral Associate in Protein Chemistry and Enzymology**, University of California, Santa Cruz. Research focus: Protein folding and mechanism of ß-lactamase. Ph.D. advisor Dr. Anthony Fink.

06/90-09/90 **Instructor-General Chemistry,** University of California, Santa Cruz.

11/90-12/91 **Postdoctoral Associate in Bioinorganic Chemistry and Molecular Biology**, University of California, Los Angeles, in laboratory of Dr. Joan S. Valentine, Member National Academy of Sciences. Research focus: Biosensors, biological and mechanistic studies on the function of copper-zinc superoxide dismutase and ALS.

01/92-12/94 **American Cancer Postdoctoral Fellow**, University of California, Los Angeles. Biological and mechanistic studies on the function of copper-zinc superoxide dismutase.

01/95-06/99 **Senior Research Associate in Neurodegenerative Disease and Apoptosis**, Co-Investigator, Program on Aging, The Burnham Institute, La Jolla, CA. Research focus: Elucidating cell death pathways in neurodegenerative diseases such as ALS, and polyglutamine expansion disease.

07/01-07/08 **Assistant Professor**, Buck Institute for Research on Aging, Novato, CA. Research focus: Elucidating cell death pathways in neurodegenerative diseases such as Huntington's disease, and other polyglutamine expansion diseases.

07/08-07/17 **Associate Professor**, Buck Institute for Research on Aging, Novato, CA. Research focus: Elucidating cell death pathways in neurodegenerative diseases such as Huntington's disease, and other polyglutamine expansion diseases.

03/17-Present **Professor**, Buck Institute for Research on Aging, Novato, CA. Research focus: Elucidating molecular mechanisms of neurodegenerative diseases such as Huntington's, Alzheimer's,

and Parkinson's disease. The approach is to use targets relevant to aging to intervene in delaying the onset and disease progression of these diseases. Genome editing technologies are also utilized to model the human disease using iPSCs and corresponding *in vivo* studies aim to "fix" disease causing genetic mutations. Focus on the APOE E2 allele and exceptional longevity.

07/08-Present **Adjunct Professor**, Dominican University, San Rafael, California

07/14-Present **Adjunct Professor**, Davis School of Gerontology, University of Southern California

Administrative Responsibilities and Committees:

07/00-07/10 **Chemical Safety Officer**, Buck Institute for Research on Aging

07/00-07/10 **Chair, Chemical Safety Committee**, Buck Institute for Research on Aging

07/00-07/10 **Chair's Committee Member**, Buck Institute for Research on Aging

03/02-6/06 **IACUC Committee Member**, Buck Institute for Research on Aging

07/02-Present **Director, MPI, NIH NIA T32 Training Grant in Aging and Disease**

07/01-Present **NIH Reviewer**

05/04-10/15 **Editorial Board, Journal of Biological Chemistry**

08/06-08/08 **HDSA Scientific Advisory Board**

05/07 **Reviewer, French National Research Agency**

05/07-present **Reviewer, Ataxia UK, Ataxia Foundation USA**

05/07-present **Reviewer, Kennedy's Disease Association**

05/07-present **Reviewer, Hereditary Disease Foundation**

07/07-07/17 **Chair or Member, Faculty Recruit Committee**, Buck Institute for Research on Aging

02/12 **Organizer, Stem Cell Meeting**, Buck Institute

01/12 **Barrow Foundation Reviews**

03/13	**Scientific Research in Biomedicine,** Europe
07/13-07/14	**Chair, Formal Research Series**, Buck Institute
07/16-Present	**Associate Editor, Journal of Huntington's Disease**
07/20-Present	**Target ALS, Reviewer, Conflict of Interest Committee**
07/00-Present	**Faculty Recruitment Committee, Chair or member**
07/18-Present	**Buck Institute: Mouse Phenotyping Core Director, Equipment Committee, Vivarium Use Committee, Spending Task Committee, Finance Committee, Mentor Committee for Junior Faculty**

BIBLIOGRAPHY

A) Research Overview Ellerby Laboratory

The Ellerby group studies the basic mechanisms of aging and neurodegeneration. As a founding faculty member of one of the first research institutes (Buck Institute for Research on Aging) dedicated to understanding aging and interventions to increase healthspan, I have extensive experience in growing a research program on aging. The goal of the Ellerby lab is the identification of targets that can increase healthspan and prevent neurodegeneration. My lab focuses on rare neurodegenerative diseases, Alzheimer's disease, and Parkinson's disease. The overarching goal is to understand the molecular mechanisms in aging and age-related neurodegenerative diseases and to identify new approaches to treat aging and disease. I serve on numerous faculty committees dedicated to the growth the Buck Institute faculty/aging programs, technology, and I serve as chair of mentor committees to facilitate the success of junior faculty.

We study Huntington's disease with an emphasis on the discovery of new therapeutic targets for this disease. Huntington's disease (HD), one of the most extensively studied of these CAG/polyglutamine diseases, is an inherited neurodegenerative disease characterized by involuntary movements, personality changes, dementia, and early death. Huntington's disease (HD) is an autosomal dominant progressive neurodegenerative disorder resulting in specific neuronal loss and dysfunction in the striatum and cortex. The central theme of our research is to utilize novel approaches to explore the mechanisms, identify therapeutic targets and treatments for the disease. A very exciting research direction for the laboratory has been the use of stem cells models to understand Huntington's disease. Recently, my laboratory has developed an isogenic, allelic induced pluripotent stem cell model of HD using HD patient fibroblasts. We demonstrated that the damaged imposed by mutant huntingtin (HTT) can be restored after the genetic mutation is corrected by homologous recombination in HD induced pluripotent stem cells (iPSCs). We have also reported the first use of TALENs and CRISPR for genetic engineering of new lines of iPSC for disease modeling in polyQ disease or HD transplantation. In addition, we have recently reported the use of RNAseq to demonstrate the

disruption of striatal neuronal development and the identification of therapeutic targets for HD with this model. We have been able to leverage our expertise in disease modeling work with iPSCs to obtain funding for projects in PD and AD.

Our initial studies in the field focused on post-translational modifications and proteolysis of Huntingtin (HTT). We identified several mechanisms by which expanded polyQ proteins confer toxicity such as cleavage by caspases and calpain. My laboratory in collaboration with Dr. Hayden described the findings that the majority of polyQ disease proteins are cleaved by caspases. I translated seven of the eight proteins and treated each of them with different caspase family members and was excited to find that there was selective and specific cleavage of these substrates. Given the number of caspase substrates in the cell, this was statistically higher than expected and suggests a correlation between caspase substrates and polyQ disease. To understand the effect of this in the pathogenesis of polyQ diseases, we constructed forms of the polyQ expansion disease proteins that were resistant to cleavage and found this significantly attenuated toxicity in cell culture models of these diseases. These studies were done *in vitro*. By providing evidence for proteolysis and cleavage of polyQ mutant proteins by caspases we contributed to the fields understanding of neurodegeneration and cell death mechanisms for this class of diseases as well as AD.

To understand if the proteolysis of *in vivo*, my group evaluated if caspases where activated in polyQ expansion diseases, whether the cleavage products were observed in mouse models and human HD postmortem tissue. We then evaluated the impact of proteolysis of ataxin-7 in SCA7. This study describes a critical mechanism for neurodegeneration in polyglutamine expansion diseases, and shows that cleavage by caspase-7 is required for SCA7 neurodegeneration, behavioral phenotypes, and shortened lifespan in transgenic mice. Proteolytic cleavage products in SCA7 patients and mouse models are an early pathological change, yet the relationship between ataxin-7 proteolysis and disease progression in SCA7 had not been addressed. To determine if caspase cleavage is a critical event in SCA7 neuronal degeneration, we generated transgenic mice expressing mutant ataxin-7 (D266N) resistant to caspase-7 proteolysis. In collaboration with Dr. Al La Spada, we compared ataxin-7-92Q-D266 transgenic mice to SCA7 mice lacking the D266N mutation. We documented inhibition of proteolysis, improved motor performance, decreased neurodegeneration, and an extended lifespan by greater than 3-fold in the SCA7 D266N mice. These are the first genetic studies to demonstrate in a transgenic model of polyglutamine expansion that lifespan can be extended 3-fold by a single point mutation, and identify inhibition of caspase-7 cleavage of ataxin-7 as an important therapeutic strategy for this disease. We also evaluated if specific caspase family members were involved in disease progression by performing genetic cross with knockout mice lacking the caspases to HD mouse models. My work along with others in the field established the importance of these enzymes in disease progression and pathogenesis and suggested the caspases maybe a significant therapeutic target in the diseases.

Along with studies on proteases, my laboratory has carried out some of the first studies to fully map the PTMs of the HTT protein using mass spectrometry. For example, we used mass spectrometry to define the phosphorylation sites on the HTT protein and found that modulation of phosphorylation at the calpain site of cleavage-controlled susceptibility to proteolysis. Further, we demonstrated how posttranslational modifications of the polyQ

proteins influence proteolysis or toxicity for ataxin-7 and androgen receptor. In addition, we mapped the acetylation sites in the HTT protein and linked this modification to pharmacological treatment with HDAC inhibitors. We also mapped several key acetylation sites in Tau which have impact on AD disease pathology and progression. This body of work contributes to understanding the influence of PTMs on neurological diseases. We now are finishing up a project on a novel PTM in HTT that provides physiological evidence for a nuclear smaller form of HTT. This work will tie a number of key publications and observations in the field together.
Another major focus of the laboratory is to identify small molecules or novel therapeutic targets to treat HD. We have used a multitude of new approaches to carry out this goal. We have used unbiased siRNA screens to the druggable genome to identify new therapeutic targets for HD. We identified MMPs and RRAS as new targets for HD. In addition, we have developed small molecules or screened for new ones in cellular striatal models of HD. One particularly attractive target we are exploring is the enzyme DGKε which is involved in lipid metabolism and when inhibited normalizing lipid metabolism in HD models.

Our most recent work focuses on the use of induced pluripotent stem cells to model and identify therapeutic targets in HD and the use of CRISPR/Cas9 to genetically correct HD *in vivo.* The abstracts for three awarded RO1s, one R21 and an innovation award on these topics are shown below:

Genetic Correction of Mutant Huntingtin *in Vivo*
The proposed research is intended to determine if a monogenetic disease such as Huntington's disease (HD) can be treated by using homologous recombination (HR) to genetically correct the disease containing allele *in vivo*. The approach will utilize a genome engineering system, CRISPR (Clustered Regulatory Interspaced Short Palindromic Repeats) delivered *in vivo*. In recent work in HD-iPSCs (induced pluripotent stem cells), we utilized homologous recombination to genetically correct the disease containing cells and found this completely reverses HD disease phenotypes. We have adapted the CRISPR technology to carry out genetic correction/expansion and have found very high levels of homologous recombination in human cells (Preliminary Results). The overall goal is to use this technology *in vivo* and carry out genetic correction of disease-containing mutations such as the CAG expansion in huntingtin (HTT). This work will serve as a proof of concept to demonstrate utility not only for monogenic neurodegenerative diseases but also for other types of genetic diseases. To achieve our goals we will carry out the following aims: Specific Aim 1. To demonstrate robust CRISPR-mediated recombination of the mutant HTT in human HD patient-derived neural cells using lentivirus; Specific Aim 2. To demonstrate robust CRISPR-mediated recombination in mouse models of HD expressing the human HTT protein using viral delivery; Specific Aim 3. To develop a protein-mediated delivery system using the nickase Cas9 D10A protein, gRNA and DNA to mediate homologous recombination in human-patient HD neural stem cells and HD mouse models. These studies will advance our understanding of how to perform genetic correction in cells derived from the brain. The successful demonstration of *in vivo* genetic correction of the disease allele in the brain would be a major leap forward in neuroscience.

Identifying Factors Regulating Medium Spiny Neuron Differentiation or Maintenance as Therapeutic Targets for Huntington's Disease using Induced Pluripotent Stem Cells

Huntington's disease (HD) is a fatal, dominantly inherited neurodegenerative disorder that primarily affects neurons in the striatum and cortex, and for which there is currently no effective treatment. HD is caused by a CAG expansion in the huntingtin gene leading to a polyglutamine (polyQ) expansion in the encoded protein (HTT), and patients with a CAG expansion greater than 38 repeats exhibit chorea, psychological problems, and cognitive decline. Expression of mutant HTT leads to selective neuronal dysfunction and degeneration despite its ubiquitous expression pattern. Recent advances in stem cell research suggest that patient induced pluripotent stem cells (iPSCs) may provide novel models of disease and new treatments for diseases. These studies will utilize iPSCs derived from HD patients (HD-iPSCs) as a human model of HD. Using genetic engineering, we generated an isogenic allelic HD-iPSC series for HD modeling (CAG repeat of 21, 45, 72, 100). To understand the molecular basis for the CAG repeat expansion dependent disease phenotypes inNSCs, we performed transcriptomic analysis of HD iPSCs and HD neural stem cells (NSCs) compared to isogenic controls. Differential gene expression and pathway analysis pointed to TGF-β and netrin-1 as the top dysregulated pathways, and dysregulated genes were enriched for those involved in neuronal development and the formation of the dorsal striatum. The disrupted striatal and neuronal networks could be modulated to correct HD phenotypes and provide therapeutic targets. Therefore, the isogenic HD-iPSCs with corrected alleles provides mechanistic insights into the disease process and allows the identification of novel therapeutic targets for HD. Indeed, our studies suggest that factors that lead to the maturation or maintenance of medium spiny neurons (MSNs) are likely to ameliorate Huntington's disease phenotypes. We have found that netrin leads to enhanced rate of maturation of MSNs with increased spontaneous electrical activity and increased levels of DARPP-32. We will investigate the following aims in this application: **Specific Aim 1.** We will characterize the cellular and functional deficits in normal iPSCs, HD-iPSCs, and genetically corrected HDiPSCs differentiated into medium spiny neurons using "omics" approaches; **Specific Aim 2.** Using DARPP-32 genomic elements that direct gene expression specifically in mature MSNs, we will develop a marker of mature MSNs and identify factors that mediate differentiation and maintenance of MSNs for this cellular HD model; **Specific Aim 3.** We will determine if factors that promote MSN differentiation or maintenance ameliorate HD phenotypes in mouse models of the disease. Therapeutic targets will be identified and new treatments for HD will be explored.

Resilience pathways modeling human longevity-promoting ApoE variants in induced pluripotent stem cells

Specific Aim 1 will characterize the cellular and functional differences in isogenic iPSCs with e2/e2, e3/e3 and e4/e4 genotypes using a systems biology approach. **Specific Aim 2** will determine whether longevity-promoting ApoE variants enhance stress resistance and survival and identify the pathways relevant to the neuroprotective effects of the various variants. **Specific Aim 3** will determine if expression of ApoE2 or factors produced by ApoE cells provide increased health span in aged mice.The aims of this project are to: 1) determine the extent to which senescent cells cause CV system dysfunction in settings of both experimental senescence and natural aging and 2) determine the cellular and molecular mechanisms by which senescent cells negatively impact BBB and 3) to identify novel therapeutic targets for age-related BB dysfunction in humans.

Genetic dissection of trait variation between long-diverged mouse species

Dissecting the molecular basis of naturally occurring trait variation is one of the central goals of modern genetics, but existing methods for this purpose can't be applied to reproductively isolated individuals. We have developed a new method to dissect trait variation between long-diverged, incompatible species; here we propose to apply our approach to a remarkable axonal regeneration phenotype in a little-studied mouse species, *Mus castaneus*. Our work will reveal the genes that underlie resistance to stroke and traumatic brain injury in *M. castaneus*, and will set the stage for dissections of species differences across Eukarya.

Evaluation of the role of RNA toxicity in SCA2 pathogenesis using genome editing in patient iPSCs

There is growing evidence that in neurodegenerative diseases that are caused by CAG repeat expansion mutation, mutant proteins, as well as mutant RNAs that encode for these proteins, contribute to the disease pathogeneses. We propose to develop novel induced pluripotent stem cell models of spinocerebellar ataxia type 2 (SCA2).The cells will be important tools to examine the contributory role that mutant RNAs play in SCA2, as well as to guide the future development of SCA2 therapy.

B) Original Publications (Citations 27,469; h-index 59; i10-index 87)

1. Fink AL, Ellerby LM, Bassett PM. Conformational Changes in the Inactivation of ß-lactamase by penicillin sulfones. *J. Am. Chem. Soc.* 111:6871-6873, 1989.
2. Ellerby LM, Escobar WA, Fink AL, Wells JA. The Role of Lysine-234 in ß-lactamase Catalysis Probed by Site-Directed Mutagenesis. *Biochemistry* 29:5797-5806, 1990.
3. Yamanaka SA, Nishida F, Nishida C, Ellerby LM, Dunn B, Valentine JS, Zink JI. Enzymatic Activity of Glucose Oxidase Encapsulated in Transparent Glass by the Sol-Gel Method. *Chem. Materials* 4:495-497, 1992.
4. Ellerby LM, Nishida CR, Nishida F, Yamanaka SA, Dunn B, Valentine JS, Zink JI. Encapsulation of Proteins in Transparent Porous Glasses Prepared by the Sol-Gel Method. *Science* 255:1113-1115, 1992; cover.
5. Wu S, Ellerby LM, Cohan JS, Dunn B, El-Sayed MA, Valentine JS, Zink JI. Bacteriorhodopsin Encapsulated in Transparent Sol-Gel Glass: A New Biomaterial. *Chem. Materials* 5:115-120, 1993.
6. Tamai KT, Gralla EB, Ellerby LM, Valentine JS, Thiele DJ. Yeast and Mammalian Metallothioneins Functionally Substitute for Yeast Copper-Zinc Superoxide Dismutase. *Proc. Natl. Acad. Sci. USA* 90:8013-8017, 1993.
7. Graden JA, Ellerby LM, Roe JA, Valentine JS. Role of the Bridging Histidyl Imidazolate Ligand in Yeast Copper-Zinc Superoxide Dismutase. Characterization of the His63Ala Mutant. *J. Am. Chem. Soc.* 116:9743-9744, 1994.
8. Ellerby LM, Ellerby HM, Park SM, Holleran AL, Murphy AN, Fiskum G, Kane DJ, Testa MP, Kayalar C, Bredesen DE. Shift of the Cellular Oxidation-reduction Potential in Neural Cells Expressing Bcl-2. *J. Neurochem.* 67:1259-1267, 1996.
9. Ellerby LM, Cabelli DE, Graden JA, Valentine JS. Copper-zinc Superoxide Dismutase: Why not pH-Dependent? *J. Am. Chem. Soc.* 118:6556-6561, 1996.

10. Schultz JR, Ellerby LM, Gralla EB, Valentine JS, Clarke, CF. Autoxidation of Ubiquinol-6 is Independent of Superoxide Dismutase. *Biochemistry* 35:6595-6603, 1996.

11. Lyons TJ, Hongbin L, Goto JJ, Nersissian A, Roe JA, Graden JA, Café C, Ellerby LM, Bredesen DE, Gralla EB, Valentine JS. Mutations in Copper-zinc Superoxide Dismutase that Cause Amyotrophic Lateral Sclerosis Alter the Zinc Binding Site and Redox Behavior of the Protein. *Proc*. *Natl*. *Acad*. *Sci*. *USA* 93:12240-12244, 1996.

12. Bredesen DE, Wiedau-Pazos M, Goto JJ, Rabizadeh S, Roe JA, Gralla EB, Ellerby LM, Valentine JS. Cell Death Mechanisms in ALS. *Neurology 47/4 Suppl.* 2:S36-S38, 1996.

13. Longo V, Ellerby LM, Bredesen DE, Valentine JS, Gralla EB. Human Bcl-2 Reverses Survival Defects in Yeast Lacking Superoxide Dismutase and Delays Death of Wild type Yeast. *J. Cell Biol.* 137:1581-1588, 1997.

14. Ellerby HM, Martin SJ, Ellerby LM, Naiem SS, Rabizadeh S, Salvesen GS, Casciano C, Cashman NR, Green DR, Bredesen DE. Establishment of a Cell-free System for Neuronal Apoptosis: Comparison of Pre-mitochondrial, Mitochondrial, and Post-mitochondrial Phases*. J. Neurosci*. 17:6165-6178, 1997.

15. Bredesen DE, Ellerby LM, Hart PJ, Wiedau-Pazos M, Valentine JS. Do Post-translational Modifications of CuZnSOD Lead to Sporadic ALS? *Ann. Neurol.* 42:135-137, 1997.

16. Martindale D, Hackam A, Wieczorek A, Ellerby LM, Wellington C, McCutcheon K, Singaraja R, Kazemi-Esfarjani P, Devon R, Kim SU, Bredesen D, Tufaro F, Hayden MR. Length of Huntingtin and its Polyglutamine Tract Influences Localization and Frequency of Intracellular Aggregates. *Nature Genet.* 18:150-154, 1998.

17. Jurgensmeier JM, Xie Z, Deveraux Q, Ellerby LM, Bredesen D, Reed JC. Bax Directly Induces Release of Cytochrome c from Isolated Mitochondria. *Proc. Natl. Acad. Sci. USA* 95:4997-5002, 1998.

18. Wellington CL, Ellerby LM, Hackam AS, Margolis RL, Trifiro MA, Singaraja R, McCutcheon K, Salvesen GS, Propp SS, Bromm M, Rowland KJ, Zhang T, Rasper D, Roy S, Thornberry N, Pinsky L, Kakizuka A, Ross CA, Nicholson DW, Bredesen DE, Hayden MR. Caspase Cleavage of Gene Products Associated with Triplet Expansion Disorders Generates Truncated Fragments Containing the Polyglutamine Tract. *J. Biol. Chem*. 273:9158-9167, 1998.

19. Stennicke HR, Jurgensmeier JM, Shin, H, Deveraux Q, Wolf BB, Yang X, Zhou Q, Ellerby HM, Ellerby LM, Bredesen D, Green DR, Reed JC, Froelich CJ, Salvesen GS. Pro-caspase-3 is a Major Physiologic Target of Caspase-8. *J. Biol. Chem.* 273:27084-27090, 1998.

20. Ellerby LM, Hackam AS, Propp SS, Ellerby HM, Rabizadeh S, Cashman NR, Trifiro MA, Pinsky L, Wellington CL, Salvesen GS, Hayden MR, Bredesen DE. Kennedy's Disease: Caspase Cleavage of the Androgen Receptor Is a Crucial Event in Cytotoxicity. *J. Neurochem.* 72:185-195, 1999.

21. Ellerby LM, Andrusiak RL, Wellington CL, Hackam AS, Propp SS, Wood JD, Sharp AH, Margolis RL, Ross CA, Salvesen GS, Hayden MR, Bredesen DE. Cleavage of Atrophin-1 at Caspase Site Aspartic Acid 109 Modulates Cytotoxicity. *J. Biol. Chem.* 274:8730-8736, 1999.

22. Krajewski S, Krajewska M, Ellerby LM, Welsh K, Xie Z, Deveraux QL, Salvesen GS, Bredesen DE, Rosenthal RE, Fiskum G, Reed JC. Release of Caspase-9 from Mitochondria During Neuronal Apoptosis and Cerebral Ischemia. *Proc. Natl. Acad. Sci. USA.* 96:5752-5757, 1999.

23. Ellerby HM, Arap W, Ellerby LM, Kain R, Andrusiak R, Rio GD, Krajewski S, Lombardo CR, Rao R, Ruoslahti E, Bredesen DE, Pasqualini R. Anti-Cancer Activity of Targeted Pro-Apoptotic Peptides. *Nat. Med.* 5:1032-1038, 1999.

24. Café C, Testa MP, Sheldon PJ, French WP, Ellerby LM*, Bredesen DE. Loss of Oxidation-Reduction Specificity in Amyotrophic Lateral Sclerosis-Associated CuZnSOD Mutants. *J. Mol. Neurosci.* 15:71-83, 2000. **Corresponding Author.*

25. Rabizadeh S, Ye X, Sperandio S, Wang JJ, Ellerby HM, Ellerby LM, Giza C, Andrusiak RL, Frankowski H, Yaron Y, Moayeri NN, Rovelli G, Evans CJ, Butcher LL, Nolan GP, Assa-Munt N, Bredesen DE. Neurotrophin Dependence Domain: A Domain Required for the Mediation of Apoptosis by the p75 Neurotrophin Receptor. *J. Mol. Neurosci.* 15:215-229, 2000.

26. Ellerby LM*, Bredesen DE. Measurement of Cellular Oxidation, Reactive Oxygen Species, and Antioxidant Enzymes During Apoptosis. *Methods Enzymol.* 322:413-421, 2000. **Corresponding Author.*

27. Lu DC, Rabizadeh S, Chandra S, Shayya RF, Ellerby LM, Ye X, Salvesen GS, Koo EH, Bredesen DE. A Second Cytotoxic Proteolytic Peptide Derived from ß-Amyloid Protein Precursor. *Nat. Med.* 6:397-404, 2000.

28. Wellington CL, Singaraja R, Ellerby L, Savill J, Roy S, Leavitt B, Cattaneo E, Hackam A, Sharp A, Thornberry N, Nicholson DW, Bredesen DE, Hayden MR. Inhibiting Caspase Cleavage of Huntingtin Reduces Toxicity and Aggregate Formation in Neuronal and Nonneuronal Cells. *J. Biol. Chem.* 275:19831-19838, 2000.

29. Kluck RM, Ellerby LM, Ellerby HM, Naiem S, Yaffe MP, Margoliash E, Bredesen D, Mauk AG, Sherman F, Newmeyer DD. Determinants of Cytochrome C Pro-Apoptotic Activity. The Role of Lysine 72 Trimethylation. *J. Biol. Chem.* 275:16127-16133, 2000.

30. Stoka V, Turk B, Schendel SL, Kim TH, Cirman T, Snipas SJ, Ellerby LM, Bredesen D, Freeze H, Abrahamson M, Bromme D, Krajewski S, Reed JC, Yin XM, Turk V, Salvesen GS. Lysosomal Protease Pathways to Apoptosis. Cleavage of Bid, Not Pro-Caspases, is the Most Likely Route. *J. Biol. Chem.* 276:3149-3157, 2001.

31. Peel AL, Rao RV, Cottrell BA, Hayden MR, Ellerby LM, Bredesen DE. Double-Stranded RNA-Dependent Protein Kinase, PKR, Binds Preferentially to Huntington's Disease (HD) Transcripts and is Activated in HD Tissue. *Hum. Mol. Genet.* 10:1531-1538, 2001.

32. Rao RV, Hermel E, Castro-Obregon S, del Rio G, Ellerby LM, Ellerby HM, Bredesen DE. Coupling Endoplasmic Reticulum Stress to the Cell Death Program. Mechanism of Caspase Activation. *J. Biol. Chem.* 276:33869-33874, 2001.

33. Lee M, Hyun DH, Marshall KA, Ellerby LM, Bredesen DE, Jenner P, Halliwell B. Effect of Overexpression of Bcl-2 on Cellular Oxidative Damage, Nitric Oxide Production, Antioxidant Defenses, and the Proteasome. *Free Radic. Biol. Med.* 31:1550-1559, 2001.

34. Rao RV, Peel A, Logvinova A, del Rio G, Hermel E, Yokota T, Goldsmith PC, Ellerby LM, Ellerby HM, Bredesen DE. Coupling Endoplasmic Reticulum Stress to the Cell Death Program: Role of the ER Chaperone GRP78. *FEBS Lett* 514:122-128, 2002.

35. Gafni J, Ellerby LM. Calpain Activation in Huntington's Disease. *J. Neurosci.* 22:4842-4849, 2002.

36. Wellington CL*, Ellerby LM*, Gutekunst CA, Rogers D, Warby S, Graham RK, Loubser O, van Raamsdonk J, Singaraja R, Yang YZ, Gafni J, Bredesen D, Hersch SM, Leavitt BR, Roy S, Nicholson DW, Hayden MR. Caspase Cleavage of Mutant Huntingtin Precedes Neurodegeneration in Huntington's Disease. *J. Neurosci.* 22:7862-7872, 2002. **Co-first Authors.*

37. Ellerby LM. Hunting for Excitement: NMDA Receptors in Huntington's Disease. *Neuron* 33:841-842, 2002.

38. Nucifora FC, Ellerby LM, Wellington CL, Wood JD, Herring WJ, Sawa A, Hayden MR, Dawson VL, Dawson TM, Ross CA. Nuclear Localization of a Non-Caspase Truncation Product of Atrophin-1, with an Expanded Polyglutamine Repeat, Increases Cellular Toxicity. *J. Biol. Chem.* 278:13047-13055, 2003.

39. Kaur D, Yantiri F, Rajagopalan S, Kumar J, Mo JQ, Boonplueang R, Viswanath V, Jacobs R, Yang L, Beal MF, DiMonte D, Volitaskis I, Ellerby L, Cherny RA, Bush AI, Andersen JK. Genetic or Pharmacological Iron Chelation Prevents MPTP-Induced Neurotoxicity *in Vivo*: A Novel Therapy for Parkinson's Disease. *Neuron* 37:899-909, 2003.

40. Ellerby HM, Lee S, Ellerby LM, Chen S, Kiyota T, Del Rio G, Sugihara G, Sun Y, Bredesen DE, Arap W, Pasqualini R. An Artificially Designed Pore-Forming Protein with Anti-Tumor Effects. *J. Biol. Chem.* 278:35311-35316, 2003.

41. LaFevre-Bernt MA, Ellerby LM. Kennedy's Disease. Phosphorylation of the Polyglutamine-Expanded Form of Androgen Receptor Regulates Its Cleavage by Caspase-3 and Enhances Cell Death. *J. Biol. Chem.* 278:34918-34924, 2003.

42. Wellington CL, Ellerby LM, Leavitt BR, Hayden MR. Huntington Proteolysis in Huntington Disease. *Clinical Neuroscience Research* 3:129-139, 2003.

43. Sopher BL, Thomas PS, Jr., LaFevre-Bernt MA, Holm IE, Wilke SA, Ware CB, Jin LW, Libby RT, Ellerby LM, La Spada AR. Androgen Receptor YAC Transgenic Mice Recapitulate SBMA Motor Neuronopathy and Implicate VEGF164 in the Motor Neuron Degeneration. *Neuron* 41:687-99, 2004.

44. Berke SJ, Flores Schmied FA, Brunt ER, Ellerby LM, Paulson HL. Caspase-mediated Proteolysis of the Polyglutamine Disease Protein Ataxin-3. *J. Neurochem.* 89:908-918, 2004.

45. Gafni J, Hermel E, Young JE, Wellington CL, Hayden MR, Ellerby LM. Inhibition of Calpain Cleavage of Huntingtin Reduces Toxicity: Accumulation of Calpain/Caspase Fragments in the Nucleus, *J. Biol. Chem.* 279:20211-20220, 2004.

46. Hermel E, Gafni J, Propp S, Leavitt B, Wellington CL, Hackam A, Logvinova A, Peel A, Chen S, Singaraja R, Karjewski S, Goldsmith PC, Ellerby HM, Salvesen GS, Hayden MR, Bredesen DE, Ellerby LM. Specific Caspase Interactions and Amplification Are Involved

in Selective Neuronal Vulnerability in Huntington's Disease. *Cell Death Differ.* 11:424-438, 2004.

47. Jin K, Lafevre-Bernt M, Sun Y, Chen S, Gafni J, Crippen D, Logvinova A, Ross CA, Greenberg DA, Ellerby LM. FGF-2 Promotes Neurogenesis and Neuroprotection and Prolongs Survival in a Transgenic Mouse Model of Huntington's Disease. *Proc. Natl. Acad. Sci. USA.* 102:18189-94, 2005.

48. Iwata A, Christianson JC, Bucci M, Ellerby LM, Nukina N, Forno LS, Kopito RR. Increased Susceptibility of Cytoplasmic over Nuclear Polyglutamine Aggregates to Autophagic Degradation. *Proc. Natl. Acad. Sci. U S A* 102:13135-40, 2005.

49. Tanaka Y, Igarashi S, Nakamura M, Gafni J, Torcassi C, Schilling G, Crippen D, Wood JD, Sawa A, Jenkins NA, Copeland NG, Borchelt DR, Ross CA, Ellerby LM. Progressive Phenotype and Nuclear Accumulation of an Amino-Terminal Cleavage Fragment in a Transgenic Mouse Model with Inducible Expression of Full-Length Mutant Huntingtin. *Neurobiol. Dis.* 21:381-91, 2006.

50. Eric J Bennett, Tom Shaler, Mirella Gonzalez-Zulueta, Howard F Schulman, Atsushi Iwata, Brigit E Riley, Jennifer A Johnston, Mirella Bucci, Noboyuki Nukina, Lisa Ellerby, Ron R Cellular Mechanisms of Quality Control KopitoRinsho shinkeigaku 46: 805-806, 2006.

51. Taylor J, Grote SK, Xia J, Vandelft M, Graczyk J, Ellerby LM, La Spada AR, Truant R. Ataxin-7 Can Export from the Nucleus Via a Conserved Exportin-Dependent Signal. *J. Biol. Chem.* 281:2730-9, 2006.

52. Sandoval CM, Geierstanger BH, Fujimura S, Balatbat C, Williams T, de Unamuno J, Whiles-Lillig JA, Ellerby LM, Michael Ellerby H, Jennings P, Plesniak LA. Structural Evaluation of a Novel Pro-Apoptotic Peptide Coupled to CNRGC Tumor Homing Sequence by NMR. *Chem. Biol. Drug Des.* 67:417-24, 2006.

53. Schilling B, Gafni J, Torcassi C, Row RH, LaFevre-Bernt MA, Cusak MP, Ratovitski T, Hirschhorn R, Ross CA, Gibson BW, Ellerby LM. Huntingtin Phosphorylation Sites Mapped by Mass Spectrometry: Modulation of Cleavage and Toxicity. *J. Biol. Chem.,* 281:23686-97, 2006.

54. Ellerby LM, Orr HT. Neurodegenerative Disease: Cut to the Chase. *Nature* 442:641-642, 2006.

55. Oliveira JMA, Chen S, Almeida S, Riley R, Gonclaves J, Oliveira CR, Hayden MR, Nicholls DG, Ellerby LM, Rego AC. Mitochondrial-dependent Ca^{2+}-handling in Huntington's Disease Striatal Cells: Effect of HDAC Inhibitors. *J. Neurosci.* 26:11174-86, 2006.

56. Oliveira JMA, Jekabsons MB, Chen S, Lin A, Rego AC, Goncalves J, Ellerby LM, Nicholls DG. Mitochondrial Dysfunction in Huntington's Disease: the Bioenergetics of Isolated and In-situ Mitochondria from Transgenic Mice. *J. Neurochem.* 101: 241-249, 2007.

57. Khan AA, Wang Y, Sun Y, Mao XO, Xie L, Miles E, Graboski J, Chen S, Ellerby LM, Jin K, Greenberg DA. Neuroglobin-Overexpressing Transgenic Mice are Resistant to Cerebral and Myocardial Ischemia. *Proc. Natl. Acad. Sci. USA.* 103:17944-8, 2006.

58. Bennett EJ, Shaler T, Gonzalez-Zulueta M, Schulman HF, Iwata A, Riley BE, Johnston JA, Bucci M, Nukina N, Ellerby L, Kopito RR. Cellular Mechanisms of Protein Quality Control. *Rinsho Shinkeigaku.* 46:805, 2006.

59. Kaltenbach LS, Romero E, Becklin RR, Chettier R, Bell R, Phansalkar A, Strand A, Torcassi C, Savage J, Hurlburt A, Cha GH, Ukani L, Chepanoske CL, Zhen Y, Sahasrabudhe S, Olson J, Kurschner C, Ellerby LM, Peltier JM, Botas J, Hughes RE. Huntingtin Interacting Proteins are Genetic Modifiers of Neurodegeneration. *PLoS Genet.*11;3(5):e82, 2007.

60. Khan A, Sun Y, Jin K, Mao XO, Chen S, Ellerby LM, Greenberg DA. A Neuroglobin-Overexpressing Transgenic Mouse. *Gene* 398:172-6, 2007.

61. Young JE, Gouw L, Propp S, Sopher BL, Taylor J, Lin A, Hermel E, Logvinova A, Chen SF, Chen S, Bredesen DE, Truant R, Ptacek LJ, La Spada AR, Ellerby LM. Proteolytic Cleavage of Ataxin-7 by Caspase-7 Modulates Cellular Toxicity and Cleavage Correlates with *in Vivo* Ataxin-7 Proteolysis. *J. Biol. Chem.* 282:30150-60, 2007.

62. Young JE, Garden GA, Martinez RA, Tanaka F, Sandoval CM, Smith AC, Sopher BL, Lin A, Fischbeck KH, Ellerby LM, Morrison RS, Taylor JP, La Spada AR. Polyglutamine-Expanded Androgen Receptor Truncation Fragments Activate a Bax-dependent Apoptotic Cascade Mediated by JNK, c-Jun, and DP5/Hrk. *J. Neurosci.* 29:1987-97, 2009.

63. Papanikolaou T, Ellerby LM. IGF-1: Elixir for Motor Neuron Disease. *Neuron*, 63:277-8, 2009.

64. Gafni J, Cong X, Chen SF, Gibson BW, Ellerby LM. Calpain-1 Cleaves and Activates Caspase-7. *J. Biol. Chem.* 284:25441-9, 2009.

65. Mookerjee S, Papanikolaou T, Guyenet SJ, Sampath V, Lin A, Vitelli C, DeGiacomo F, Sopher BL, Chen SF, La Spada AR, Ellerby LM. Posttranslational Modification of Ataxin-7 at Lysine 257 Prevents Autophagy-Mediated Turnover of an N-Terminal Caspase-7 Cleavage Fragment *J. Neurosci.* 29: 15134-15144, 2009.

66. Duncan C, Papanikolaou T, Ellerby LM. Autophagy: PolyQ Toxic Fragment Turnover. *Autophagy* 6:2, 1-3, 2010.

67. Landles C, Sathasivam K, Weiss A, Woodman B, Moffitt H, Finkbeiner S, Sun B, Gafni J, Ellerby LM, Trottier Y, Richards WG, Osmand A, Paganetti P, Bates GP. Proteolysis of Mutant Huntingtin Produces an Exon 1 Fragment that Accumulates as an Aggregated Protein in Neuronal Nuclei in Huntington's Disease. *J. Biol. Chem.* 285:8808-23, 2010.

68. Miller JP, Holcomb J, Al-Ramahi I, de Haro M, Gafni J, Zhang N, Kim E, Sanhueza M Torcassi C, Kwak S, Botas J, Hughes RE, Ellerby LM. Matrix Metalloproteinases are Modifiers of Huntingtin Proteolysis and Toxicity in Huntington's Disease. *Neuron* 67:199-212, 2010. **Cover Article**

69. Zhang N, An MC, Montoro D, Ellerby LM. Characterization of Human Huntington's Disease Cell Model from Induced Pluripotent Stem Cells. *PloS Curr*. 2:RRN1193, 2010.

70. Leyva MJ, DeGiacomo F, Kaltenbach LS, Holcomb J, Zhang N, Gafni J, Park H, Lo DC, Salvesen GS, Ellerby LM, Ellman JA. Identification and Evaluation of Small Molecule Pan-Caspase Inhibitors in Huntington's Disease Models. *Chem. & Biol.* 17:1189-1200, 2010.

71. Cong X, Held JM, DeGiacomo F, Bonner A, Chen J, Schilling B, Czerwieniec GA, Gibson BW, Ellerby LM. Mass Spectrometric Identification of Novel Lysine Acetylation Sites in Huntingtin [Oct;10(10):M111.009829. Epub 2011 Jun 18]. *Molecular and Cellular Proteomics.* 2011.

72. Zhang N, Al-Ramahi I, Cong X, Held JM, Kim E, Botas J, Gibson BW, Ellerby LM. Inhibition of Lipid Signaling Enzyme Diacyglycerol Kinase Epsilon Attenuates Mutant Huntingtin Toxicity. *J. Biol. Chem.* 287:21204-13, 2012.

73. Gafni J, Papaninikolaou T, DeGiacomo F, Holcomb J, Chen S, Menalled L, Kudwa A, Fizpatrick J, Miller S, Ramboz S, Tuunanen PI, Pehtimaki KK, Yang XW, Park L, Kwak S, Howland D, Park H, Ellerby LM. Caspase-6 Activity in a BACHD Mouse Modulates Steady-State Levels of Mutant Huntingtin Protein is Not Necessary for Production of a 586 Amino Acid Proteolytic Fragment. *J. Neurosci.* 32:7454-7465, 2012.

74. An MC, Zhang N, Scott G, Montoro D, Wittkop T, Mooney S, Melov S, Ellerby LM. Genetic Correction of Huntington's Disease Phenotypes in Induced Pluripotent Stem Cells. *Cell Stem Cell* 11: 253-263, 2012. **Cover Article**

75. Miller JP, Yates BE, Al-Ramahi I, Sanhueza M, Berman, AE, Sanhueza M, Kim E, de Haro M, DeGiacomo F, Torcassi C, Holcomb J, Gafni J, Mooney SD, Botas J, Ellerby LM, Hughes RE. A Genome-Scale RNA-Interference Screen Identifies RRAS Signaling as a Pathologic Feature of Huntington's Disease. *PLOS Gene.* 8, e1003042, 2012.

76. Zou Y, Zhang N, Ellerby LM, Davalos AR, Zeng X, Campisi J, Desprez PY. Responses of Human Embryonic Stem Cells and their Differentiated Progeny to Ionizing Radiation. *Biochem. Biophys. Res. Commun*. 426: 100-105, 2012.

77. Klionisky DJ et al. Guidelines for the Use and Interpretation of Assays for Monitoring Autophagy. *Autophagy* 8, 445-544, 2012.

78. Santos M, Papanikolaou T, Ellerby LM, Hughes RE. Pizotifen Activates ERK1/2 and is Neuroprotective in Huntington's Disease, *J. Huntingtons Dis*. 1, 195-210, 2013.

79. Duncan CE, An MC, Papanikolaou T, Rugani C, Vitelli C, Ellerby LM. Histone Deacetylase-3 Interacts with Ataxin-7 and is Altered in a Spinocerebellar Ataxia Type 7 Mouse Model. *Molecular Neurodegeneration* 8:42, 2013.

80. An MC, O'Brien RN, Zhang N, Patra BN, De La Cruz M, Ray A, Ellerby LM. Polyglutamine Disease Modeling: Epitope Based Screen for Homologous Recombination using CRISPR/Cas9 System. *PLoS Curr.* 15;6, pii: ecurrents .hd.0242d2e7ad72225efa72f6964589369a. doi: 10.1371/currents.hd.0242d2e7 ad72225efa72f6964589369a, 2014.

81. Guyenet SJ, Mookerjee S, Lin A, Custer SK, Chen SF, Sopher BL, La Spada AR, Ellerby LM. Proteolytic Cleavage of Ataxin-7 Promotes SCA7 Retinal Degeneration and Neurological Dysfunction, Human Molecular Genetics 24, 3908-3917, 2015.

82. O'Brien, R, DeGiacomo F, Holcomb J, Bonner A, Zafar K, Weiss A, Schilling B, Gibson BW, Kwak S, Ellerby LM. Integration Independent Transgenic Huntington's Disease Fragment Mouse Models Reveal Distinct Neurodegeneration *in vivo*, J. Biol. Chem. 290, 19287-19306, 2015.

83. Min SW, Chen X, Tracy TE, Li Y, Zhou Y, Wang C, Shirakawa K, Minami SS, Defensor E, Mok SA, Sohn PD, Schilling B, Cong X, Ellerby L, Gibson BW, Johnson J, Krogan N, Shamloo M, Gestwicki J, Masliah E, Verdin E, Gan L. Critical Role of Acetylation in Tau-mediated Neurodegeneration and Cognitive Deficits. Nat. Med. 10, 1154-1162, 2015.

84. Zhang N, Bailus BJ, Ring KL, Ellerby LM (2016). iPSC-based Drug Screening for Huntington's Disease. Brain Res., 1638(Pt A):42-56.

85. Ring K, An MC, Zhang N, O'Brien RN, Gao F, Atwood R, Bailus BJ, Melov S, Mooney S, Coppola G, Ellerby LM. Genomic Analysis Reveals Disruption of Striatal Neuronal Development and Therapeutic Targets in a Human Neural Stem Cell Model of Huntington's Disease, Stem Cell Reports 5:1023-1038, 2015. Highlighted in Science Translational Medicine.

86. Tracy TE, Sohn PD, Minami SS, Wang C, Min SW, Li Y, Zhou Y, Le D, Lo I, Ponnusamy R, Cong X, Schilling B, Ellerby LM, Huganir RL, Gan L. Acetylated Tau Obstructs KIBRA-mediated Signaling in Synaptic Plasticity and Promotes Tauopathy-Related Memory Loss, Neuron 90:245-260, 2016.

87. Quinti L, Dayalan Naidu S, Träger U, Chen X, Kegel-Gleason K, Llères D, Connolly C, Chopra V, Low C, Moniot S, Sapp E, Tousley AR, Vodicka P, Van Kanegan MJ, Kaltenbach LS, Crawford LA, Fuszard M, Higgins M, Miller JRC, Farmer RE, Potluri V, Samajdar S, Meisel L, Zhang N, Snyder A, Stein R, Hersch SM, Ellerby LM, Weerapana E, Schwarzschild MA, Steegborn C, Leavitt BR, Degterev A, Tabrizi SJ, Lo DC, DiFiglia M, Thompson LM, Dinkova-Kostova AT, Kazantsev AG. KEAP1-modifying Small Molecule Reveals Muted NRF2 Signaling Responses in Neural Stem cells from Huntington's Disease Patients. PNAS 114:E4676-E4685, 2017.

88. Naphade S, Embusch A, Madushani L, Ring K, Ellerby LM. Altered Expression of Matrix Metalloproteinases and their Endogenous Inhibitors in a Human Isogenic Stem Cell Model of Huntington's Disease. Frontiers in Neuroscience, 018 Feb 5;11:736. doi: 10.3389/fnins.2017.00736. eCollection 2017.

89. Tousley A, Iuliano M, Weisman E, Sapp E, Zhang N, Vodicka P, Alexander J, Aviolat H, Gatune L, Reeves P, Li X, Khvorova A, Ellerby LM, Aronin N, DiFiglia M, Kegel-Gleason KB. Rac1 Activity Is Modulated by Huntingtin and Dysregulated in Models of Huntington's Disease. J Huntington's Dis. 8(1):53-69. doi: 10.3233/JHD-180311, 2019.

90. Gao R, Chakraborty A, Geater C, Pradhan S, Gordon KL, Snowden J, Yuan S, Dickey AS, Choudhary S, Ashizawa T, Ellerby LM, La Spada AR, Thompson LM, Hazra TK, Sarkar PS. Mutant huntingtin impairs PNKP and ATXN3, disrupting DNA repair and transcription. Elife Apr 17;8:e42988. doi: 10.7554/eLife.42988, 2019.

91. Taki M, Rohilla KJ, Barton M, Funneman M, Benzabeh N, Naphade S, Ellerby LM, Gagnon KT, Shamsi MH. Novel probes for label-free detection of neurodegenerative GGGGCC repeats associated with amyotrophic lateral sclerosis. Anal Bioanal Chem. Oct;411(26):6995-7003. doi: 10.1007/s00216-019-02075-8, 2019.

92. Cirnaru MD, Melis C, Fanutza T, Naphade S, Tshilenge KT, Muntean BS, Martemyanov KA, Plotkin JL, Ellerby LM, Ehrlich ME. Nuclear Receptor Nr4a1 Regulates Striatal Striosome Development and Dopamine D_1 Receptor Signaling.

93. Naphade S, Tshilenge KT, Ellerby LM. Modeling Polyglutamine Expansion Diseases with Induced Pluripotent Stem Cells. Neurotherapeutics. Oct;16(4):979-998. doi: 10.1007/s13311-019-00810-8, 2019.

94. Qamar AZ, Asefifeyzabadi N, Taki M, Naphade S, Ellerby LM, Shamsi MH. Characterization and application of fluidic properties of trinucleotide repeat sequences by wax-on-plastic microfluidics. Jan 28;8(4):743-751. doi: 10.1039/c9tb02208b, 2020.
95. Ellerby, LM. Repeat Expansion Disorders: Mechanisms and Therapeutics. Oct;16(4):924-927. doi: 10.1007/s13311-019-00823-3, 2019.
96. García-Huerta P, Troncoso-Escudero P, Wu D, Thiruvalluvan A, Cisternas-Olmedo M, Henríquez DR, Plate L, Chana-Cuevas P, Saquel C, Thielen P, Longo KA, Geddes BJ, Lederkremer GZ, Sharma N, Shenkman M, Naphade S, Sardi SP, Spichiger C, Richter HG, Court FA, Tshilenge KT, Ellerby LM, Wiseman RL, Gonzalez-Billault C, Bergink S, Vidal RL, Hetz C. Insulin-like growth factor 2 (IGF2) protects against Huntington's disease through the extracellular disposal of protein aggregates. 2020 Nov;140(5):737-764. doi: 10.1007/s00401-020-02183-1.
97. Voisin J, Farina F, Naphade S, Fontaine M, Tshilenge KT, Galicia Aguirre C, Lopez-Ramirez A, Dancourt J, Ginisty A, Sasidharan Nair S, Lakshika Madushani K, Zhang N, Lejeune FX, Verny M, Campisi J, Ellerby LM, Neri C. FOXO3 targets are reprogrammed as Huntington's disease neural cells and striatal neurons face senescence with p16INK4a increase. Aging Cell. Nov;19(11):e13226. doi: 10.1111/acel.13226, 2020.
98. Sorek M, Oweis W, Nissim-Rafinia M, Maman M, Simon S, Hession CC, Adiconis X, Simmons SK, Sanjana NE, Shi X, Lu C, Pan JQ, Xu X, Pouladi MA, Ellerby LM, Zhang F, Levin JZ, Meshorer E. Pluripotent stem cell-derived models of neurological diseases reveal early transcriptional heterogeneity. Genome Biol. Mar 4;22(1):73. doi: 10.1186/s13059-021-02301-6, 2021.
99. Bailus BJ, Scheeler SM, Simons J, Sanchez MA, Tshilenge KT, Creus-Muncunill J, Naphade S, Lopez-Ramirez A, Zhang N, Lakshika Madushani K, Moroz S, Loureiro A, Schreiber KH, Hausch F, Kennedy BK, Ehrlich ME, Ellerby LM. Modulating FKBP5/FKBP51 and Autophagy Lowers HTT levels, Autophagy, 2021 May 24;:1-22. doi: 10.1080/15548627.2021.1904489.
100. Ehrlich ME, Ellerby, LM Neuronal Intranuclear Inclusion Disease: Polyglycine Protein is the Culprit. Neuron, 109, 1757-1760, 2021.
101. Cirnaru M-D, Sicheng Song S, Tshilenge K-T, Corwin C, Mleczko J, Galicia Aguirre C, Houda Benlhabib H, Bendl J, Apontes P, Fullard JF, Creus-Muncunill J, Reyahi A, Nik AM, Carlsson P, Roussos P, Mooney SD, Ellerby LM Ehrlich ME Unbiased identification of novel transcription factors in striatal compartmentation and striosome maturation, ELife, under revision.
102. Scott GK, Mahoney S, Scott M, Loureiro A, Lopez-Ramirez A, Tanner JJ, Ellerby LM, Benz CC. Propargylglycine: a unique suicide inhibitor of proline dehydrogenase with anticancer activity and brain-enhancing mitohormesis properties. Amino Acids, doi: 10.1007/s00726-021-03012-9, 2021.

C) Manuscripts in Preparation/Submitted

1. O'Brien, R, DeGiacomo F, Zhang, N, Schilling B, Gibson BW, Ellerby LM. Mapping the Acetylation sites of full-length Htt. In preparation.

2. Gafni J, Zafar K, Holcomb, J, Crippen D, Chen S, Hermel E, Melov S Ellerby LM. Calpain Activation in Huntington's Disease R6/2 Mouse Model. *Cell Death and Disease*, in revision.

4. Zafar K, Ellerby LM. Neurogenesis is Required for Functional Recovery in Huntington's Disease, in preparation.

5. Holcomb J, Zafar K, Ellerby LM. FGF Family Members are Neuroprotective in Huntington's Disease, in preparation.

6. Papanikolaou T, Sampath V, Ellerby LM. FOXO is a Regulator of Ataxin-7 Function, in preparation.

7. Cong X, Cheng JM, Gafni J, Gibson BW, Ellerby LM. Caspase-7 Phosphorylation Site at the Active Site Regulates Activity, in preparation.

D) Book Chapters and Reviews

1. Studies of CuZnSOD in *Sacharomyces cerevisiae.* Gralla, E.B., Ellerby, L.M. and Valentine, J.S., in "Biological Oxidants and Antioxidants" Cardenas, E., ed., 1994.

2. Copper-zinc Superoxide Dismutase: Mechanistic and biological studies. Valentine, J.S., Ellerby, L.M., Graden, J.A., Nishida, C.R., Gralla, E.B., in "Metals in Biology" Nato, 1994.

3. Dentatorubral-pallidoluysian Atrophy (DRPLA): Model for Huntington's Disease and Other Polyglutamine Diseases. Ross, C.A., Ellerby, L.M., Wood, J.D., and Nucifora, F.C. in "Neurodegenerative Diseases – Neurobiology Pathogenesis and Therapeutics." Beal MF et al, eds., December 2004.

4. Spinal Ataxia Type 7: Clinical Features to Cellular Pathogenesis, Garden, G.A., Truant, R., Ellerby, L.M, LaSpada, A. in "Genetic Instabilities and Neurological Diseases." Eds Wells, R, Ashizawa, T., July, 2006.

5. Stem Cell Therapy and Huntington's disease: an update, Papanikolau, T., An, M., Ningzhe, Z., Zafar, K. in "Neurogenesis and CNS Disease" Eds Jin, K, March, 2009.

6. iPSC-based Drug Screening for Huntington's Disease, Brain Research, Zhang N, Bailus BJ, Ring KL, Ellerby LM, 1638(Pt A):42-56.

7. Diseases of Protein Folding: Huntington's Disease and Amyotrophic Lateral Sclerosis, Bailus, B and Ellerby, LM, in "Encyclopedia of Cell Biology", Elsevier, 2016.

8. Huntington's Disease and Stem Cells, Ring, K, O'Brien, R, Zhang, N, Ellerby, LM, in "Stem Cells" Taylor and Francis, 2016.

9. Using Genome Engineering to Understand Huntington's Disease, Bailus, B Zhang, N and Ellerby, LM in R. Jaenisch et al. (eds.), Genome Editing in Neurosciences, Research and Perspectives in Neurosciences, DOI 10.1007/978-3-319-60192-2_9.

E) Patent Applications

1. Sol-Gel Encapsulated Enzyme. Zink, J.I., Dunn, B., Valentine, J.S., Ellerby, L.M., Nishida, F., Nishida, C., Yamanaka, S. A. Serial No. 07/744,524, 1993.

2. A Cell-Free System of Mitochondria-Dependent Apoptosis, and Methods of Use, Thereof. Ellerby, H.M, Bredesen, D.E., Ellerby, L.M. Serial No. 08/919,801, 1997.

3. Hunter-Killer Peptides and Methods of Use. H.M. Ellerby, Ellerby, L.M., Bredesen, D.E. Rabizadeh, S. U.S. Patent Application No. 60/558,448, 2004.

4. Fibroblast Growth Factor-2 Promotes Neurogenesis and Neuroprotection and Prolongs Survival in Huntington's Disease. Ellerby, L.M., Greenberg, D.A., Jin, K.L., Andersen, J. U.S. Patent Application No. 60/701,752, 2006; European Patent Application No. 06788314.0 – 1521 / 1904092, 2006.

5. Caspase Inhibitors and Uses Thereof. Ellerby, L.M., Ellman, J. Levy, M. U.S. Patent Application P018US, 2009.

6. The Treatment of Huntington's Disease with Serotonin Receptor Antagonists. Ellerby, L.M., Hughes, R.E. 61/384,151, 2010

7. BUCK Ref. BI-449; WAVS Ref. BUCKP063PUS "ZIKA as a Cell Penetrating Peptide for Delivery to the Brain, Patent Number 11066448.

8. A p16INK4a inhibitor for use in preventing and/or modifying the evolution of Huntington's disease, European Patent Application.

9. BuckP072P, N-proparglyglycine: A unique inhibitor of proline dehydrogenase with brain enhancing mitohormesis properties capable of mitigating the proteotoxic pathogenesis of neurodegenerative disorders. Gary Scott, Christopher Benz, Lisa Ellerby

F) Abstracts, Meetings and Presentations-Not updated through 2021.

1. Symposium on Neurobiology & Neuroendocrinology of Aging, "Using Stem Cells to Model Huntington's Disease" Austria, July 15-19, 2018

2. NIH Study Group, ZRG1 BDCN, July 19th, 2018

3. 5th Annual Workshop on X-Linked Dystonia-Parkinsonism, XDP Meeting, "Elucidating Factors that Promote Patch and Matrix MSN Differentiation for XDP Disease Modeling and Drug Discovery" MGH, Boston, Massachusetts, June 9-10, 2018

4. Buck Institute Journal Club, "The "Big Bang" For Modern Glial Biology", June 26, 2018

5. NIH Study Group, Special Emphasis Panel, RFA, "Interdisciplinary Research to Understand the Complex Biology of Resilience to Alzheimer's Disease Risk", June 22, 2018

6. NIH Study Group, Special Emphasis Panel, "Expand the Human Genome Editing Repertoire", May 24, 2018

7. American Federation for Aging Research, AFAR Big Awards (The Glenn Foundation for Medical Research Breakthroughs in Gerontology), Review Panel, Santa Barbara, June 7, 2018

8. 7th Ataxia Investigators Meeting, "Disease Modeling and Therapeutic Targets for Huntington's Disease", National Ataxia Foundation, Philadelphia, Pennsylvania, April 2-5, 2018

9. NIH NINDS/ZNS1 SRB-A(16) Study Group, March 12, 2018

10. UCSF BUCK Meeting, "New Technology Applied to Neurodegenerative Disease and Aging", Buck Institute for Research on Aging, October 13, 2017

11. NIH ZNS1 T32 Study Group, Washington DC, October 30-31, 2017

12. BAC Meeting, "New Technology Applied to Neurodegenerative Disease and Aging", Buck Institute for Research on Aging, October 16-17, 2017

13. Neuropharmacology and Human Stem Cell Models, "Modeling Huntington's Disease with Stem Cells", Banbury, September 10-13, 2017

14. Society of Biomolecular Imaging and Informatics (SBI2) 4th Annual "High Content" Conference, "Therapeutic Targets in Huntington's Disease" September 13-15, San Diego, 2017

15. NIH Common Fund, Francis Collins, NIH Director, Making Somatic Cell Genome Editing Therapies a Reality Workshop, July 24, 2017

16. NIH CMND Study Group, San Francisco, CA, June 1-2, 2017

17. Collaborative Center for XDP, Workshop, Boston, MA, May 8-9, 2017

18. NIH ZNS1 SBR-A(10) Integrated Review Study Group, Teleconference, May 3, 2017

19. Southern Methodist University Biology Seminar Series, "Using Stem Cells to Model HD and Identify Therapeutic Targets", Dallas, April 21, 2017

20. 13th Annual Huntington Disease Research Symposium, HDSA, "Huntington's Disease: Therapeutic Targets" UC San Francisco, Mission Bay Campus-Genetech Hall, November 19, 2016

21. Buck Institute for Research on Aging Geoscience Course, "Huntington's Disease and Aging", Buck-USC Graduate Program (GERO 601), Buck Institute, November 10, 2016

22. NIH NOMD Study Group, Crystal City, VA, October 24-25, 2016

23. NIH MDCN Integrated Review Study Group, Teleconference, October 21, 2016

24. Institute of Biology Paris-Seine, University Pierre and Marie Curie, "Approaches to Identifying Therapeutic Targets in Huntington's Disease", Paris, France, September 30, 2016

25. Institute of Biology Paris-Seine, University Pierre and Marie Curie, Thesis committee member, Jessica Voisin, "FOXO in HD stress resilience", Paris, France, September 29, 2016

26. Columbia University, Thesis committee member, Leora Fox, "Autophagy-linked FYVE Protein Mediates the Turnover of Mutant Huntingtin and Modifies Pathogenesis in Mouse Models of Huntington's disease", New York, New York, September 15, 2016

27. 10th Neurodegenerative Conditions Research and Development, "Using Huntington's Disease with Induced Pluripotent Stem Cells to Identify Therapeutic Targets", Boston, MA, September 11-12, 2016

28. NIH ZRG1 BDCN-Q, NIH Special Emphasis Study Group, July 15, 2016

29. NIH NST-1 BDCN-W, NIH Special Emphasis Study Group, June 16, 2015

30. ISSCR 2016 Annual Meeting 22-25, Faculty mentor luncheon and poster judge, San Francisco June, 2016

31. Fondation IPSEN, Genome Editing in Neurosciences, "Using Genome Engineering to Understand Huntington's Disease", Paris, France, April 22, 2016

32. Buck Institute for Research on Aging Geoscience Course, "Huntington's Disease and Aging", Buck-USC Graduate Program (GERO 601), Buck Institute, April 14, 2016

33. XDP Consortium, "Using iPSC to understand XDP, Harvard University, March 2, 2016

34. CHDI meeting, Huntington's Disease Therapeutics, February 22-25, 2016

35. HDSA local chapter, Huntington's Disease Therapeutics, January 23, 2016

36. Calico Presentation, "DGKepsilon as a Therapeutic Target in HD an Epilepsy", Buck Institute, January 6, 2016

37. Faculty Chalk Talk, "Using Genome Engineering Tools to Understand Aging and Disease" Buck Institute, October 5, 2015

38. ZRG1 BDCN-W, NIH Special Emphasis Study Group, September 24, 2015

39. 9th Neurodegenerative Conditions Research and Development, "System Biology Approaches to Understand Huntington's Disease with Induced Pluripotent Stem Cells", Philadelphia, PA, September 9-10, 2015

40. Calico Presentation, "Using CRISPR/Cas9 for HD treatments", Buck Institute, July 15, 2015

41. NIH NST-2, NIH Study Group, Washington, DC, June 29-30, 2015

42. Gordon Conference, CAG Triplet Repeat Disorders, "Modeling Huntington's Disease with Induced Pluripotent Stem Cells" Lucca (Barga), Italy, May 31-June 5, 2015

43. The American Society for Neural Therapy and Repair, "Systems Biology Approaches to Modeling HD with Induced Pluripotent Stem Cells" Sheraton Sand Key Resort, Clearwater Beach, Florida, USA

44. NIH ZRG1 MDCN-Q, Special Emphasis Study Group, March 27th, 2015

45. Touro University, "Huntington's Disease Stem Cells and Therapeutic Targets", Vallejo, California, March 10, 2015

46. CHDI Conference, "The role of TGF-β in Huntington's Disease" Palm Springs, California, February 23-26, 2015

47. Duke University, "Modeling Huntington's Disease with Induced Pluripotent Stem Cells" Durham, North Carolina, January 20, 2015

48. CHDI Stem Cell Platform Conference, "Using Isogenic HD Cell Lines to Model Huntington's disease", Princeton, New Jersey, January 7-9, 2015

49. University of California, Davis, "Modeling Huntington's Disease with Induced Pluripotent Stem Cells", Davis, California, December 12, 2014

50. Society for Free Radical Biology and Medicine 21st Annual Meeting, "Discovery New Therapeutic Targets for Huntington's Disease using Stem Cells", Seattle, Washington, November 19-23, 2014

51. NIH NST-2 Study Group, Washington, DC, October 27-28, 2014

52. EMBL conference, "Modeling Huntington's Disease with iPSCs", Stem Cells in Cancer and Regenerative Medicine, Heidelberg, Germany, October 9-12, 2014

53. American Chemical Society, Bay Area Chapter Meeting, "Using Chemical Approaches to Understand Huntington's Disease", Buck Institute, September 25, 2014

54. 11th Annual Huntington Disease Research Symposium, HDSA, "Huntington's Disease: Using iPSCs to Identify New Therapeutic Targets" UC San Francisco, Mission Bay Campus-Genetech Hall, September 13th, 2014

55. HDF Meeting, "Systems Biology Approaches to HD", Boston, MA, August 6-10, 2014

56. NIH ZRG1 MDCN-E Study Group, Teleconference, July 9, 2014

57. Abcam Stem Cell Meeting, "Stem Cells in Huntington's Disease", Singapore, June 26, 2014

58. ISSCR Meeting, "Systems Biology Approaches to HD", Vancouver, Canada, June 18-23, 2014

59. NIH CDIN Study Group, Washington, DC, June 14-15, 2014

60. Baylor School of Medicine, "Stem Cells in Huntington's Disease", May 13, 2014

61. CHDI, Modifiers Workshop, " HD-iPCS: RNAseq analysis", Los Angeles, CA, November 15, 2013

62. SFN, Neurobiology of Disease Workshop: Human Brain Disorders in a Dish: Induced Pluripotent Stem Cell Models of Disease, "Modeling Huntington's disease with Induced Pluripotent Stem Cells" San Diego, November 8, 2013

63. Case Western Reserve, Department of Physiology and Biophysics, "What can Stem Cells Tell us About Huntington's Disease", Cleveland, Ohio, October 28, 2013

64. San Antonio Nathan Shock Aging Center, Stem cells and Aging. "Stem Cells in Huntington's Disease and Aging" Majan Ranch, Bandera, Texas, October 17-20, 2013

65. Treat PolyQ disease Course, "MMPs in Huntington' Disease", "Stem Cells and Huntington's Disease", "Women in Science", Corsica, France, October 7-11, 2013

66. SFN, Neurobiology of Disease Workshop: Human Brain Disorders in a Dish: Induced Pluripotent Stem Cell Models of Disease, Dress rehearsal, Washington, DC, September 6, 2013

67. Northern California Board Meeting, HDSA, Novato, CA, July 27, 2013

68. Gordon Research Conference, Chair, Emerging Methods and Models: Illuminating New Paths to Therapeutics", Waterville Valley Resort, Waterville Valley, NH, June 22-23, 2013

69. The International Society of Stem Cell Research, "Disease Modeling for HD", Boston, Massachusetts, June 12-15, 2013

70. The Buck Advisory Council, "Panel Discussion: Lost in Translation: Why Do So Many Experimental Drugs for Neurodegenerative Disorders Fail", Novato, CA, May 20-21, 2013

71. UCSF Ground Rounds, "What Stem Cells Can Tell Us About Huntington's Disease", San Francisco, CA, May 17, 2013

72. CHDI Meeting, "PTMs in Huntington's Disease Workshop", New York, NY, May 8-9, 2013

73. Keck Graduate Institute, 3rd Annual Research Symposium, Huntington's Disease: From Basic Science to Therapy, "Modeling Huntington's Disease with Induced Pluripotent Stem Cells", Claremont, CA April 4-5, 2013

74. CHDI Meeting "System Biology Approaches to HD", New York, February 28, 2012

75. NIH CDIN Study Group, San Francisco, CA, February 14-15, 2013

76. The Buck Advisory Council, "Fixing the Brain: Collaboration to Cure Neurodegenerative Diseases", Muscat, Oman, November 10-12, 2012

77. NIH ZRG1 ETTN-C Study Group, Small Business: Neuropharmacology, New Orleans, Louisana, October 11-12, 2012

78. NIH CDIN Study Group, Washington, DC, Oct 4-5, 2012

79. Euro Huntington's Disease Meeting, "Stem Cell Models of Huntington's Disease", Stockholm, Sweden, September 13-16, 2012

80. "HDF Meeting, "Genetic Correction of HD Phenotypes in Induced Pluripotent Stem Cells", Boston, August 1-4, 2012

81. Biological Modifiers Working Group, "Stem Cell Models of Huntington's Disease", Boston, August 1, 2012

82. CHDI Meeting "Target validation establishing whether high priority targets such as syntaxin-1, RNF128, DGK-epsilon and R-RAS *in vivo* modulate HD disease progression and pathophysiology", Boston, July 30-31, 2012

83. NIH CDIN Study Group, Washington, DC, June 7-8, 2012

84. Buck Advisory Council Meeting, "Therapies for Neurodegenerative Diseases", The Buck Institute for Research on Aging, May 20-22, 2012

85. HDF, Milton Wexler Interdisciplinary Workshop, "Huntingtin Protein" UCLA, May 9-10, 2012

86. CHDI Meeting "Target validation establishing whether high priority targets such as syntaxin-1, RNF128, DGK-epsilon and R-RAS *in vivo* modulate HD disease progression and pathophysiology", Buck Institute for Research on Aging, April 2, 2012

87. Organizer and Speaker, 2012 Buck Symposium: Stem Cell Research and Aging, "Designing Stem Cells in Huntington's Disease" Buck Institute for Research on Aging, March 1-2, 2012.

88. HD Therapeutics Conference: A Forum for Drug Discovery & Development, CHDI Foundation, "Defining Posttranslational Modifications in Huntingtin" Palm Springs, California, February 27-March 1, 2012

89. 9th Annual Huntington Disease Research Symposium, HDSA, "Therapeutic Targets in Huntington's Disease" UC San Francisco, Mission Bay Campus-Genetech Hall, February 11th, 2012

90. NIH, ZCA1 RPRB-7 Study Group, Spore in Lymphoma, Brain Head/Nick and Lung Cancers, and Sacroma, Washington, DC, February 8-9, 2012

91. CHDI Meeting "Target validation establishing whether high priority targets such as syntaxin-1, RNF128, DGK-epsilon and R-RAS *in vivo* modulate HD disease progression and pathophysiology", Buck Institute for Research on Aging, February 2, 2012

92. CHDI Meeting "Target validation establishing whether high priority targets such as syntaxin-1, RNF128, DGK-epsilon and R-RAS *in vivo* modulate HD disease progression and pathophysiology", New York, NY, November, 2011

93. Thermavance, Inc., "Huntington's Disease: Target Validation" South San Francisco, October, 2011

94. Buck Institute for Research on Aging, Novato, CA, Scientific Advisory Board Meeting, "Huntington's Disease: Proteolysis and Neurogenesis", August, 2011

95. Chair, NIH ZRG1 MDCN-E Study Group, Teleconference, July 15, 2011

96. NIH ZRG1 ETTN-C Study Group, Small Business: Neuropharmacology, Seattle, Washington, June 23-24, 2011

97. CAG Triplet Repeat Disorders, Session Chair "Protein Cell and Genomics Effects" Lucca, Italy, June 5-10, 2011

98. NIH CDIN Study Group, Washington, DC, June 2-3, 2011

99. Buck Institute for Research on Aging, Novato, CA, Internal Geroscience Seminar, "Huntington's Disease: Proteolysis and Neurogenesis", June 15, 2011

100. Neurogenetics Affinity Group & Consortium for Neuropsychiatric Phenomics, UCLA, Los Angeles, CA, "Huntington's Disease: Targets and Therapeutics", April 28, 2011

101. BioMarin, Novato, CA "Target Validation in Huntington's Disease", March 29, 2011

102. CHDI Meeting "Target validation establishing whether high priority targets such as syntaxin-1, RNF128, DGK-epsilon and R-RAS *in vivo* modulate HD disease progression and pathophysiology", Princeton, NJ, April 26, 2011

103. External Advisory Board, Buck Institute for Research on Aging, Novato, CA, "HDACs in Neurodegeneration and Aging", February 23, 2011

104. 8th Annual UCSF/UCD HD Research Symposium, Genetech Hall, UCSF Mission Bay, "Huntington's Disease: Targets and Therapeutics", February 5, 2011

105. NIH CDIN Study Group, Washington, DC, January 27-28, 2011

106. Buck Institute for Research on Aging, Novato, CA, Internal Geroscience Seminar, "Huntington's Disease Research Directions", December 15, 2010

107. ACARM8, All California Ataxia Research Meeting, “Therapeutic Strategies for Huntington’s Disease”, December 12, 2010

108. Sonoma State University, “Therapeutic Targets in Huntington’s Disease”, Rohnert Park, CA, November 19, 2010

109. NIH CDIN Study Group, Washington, DC, October 7-8, 2010

110. CHDI Meeting “Huntington’s Disease: Target Validation”, New York, NY, October 6, 2010

111. NIH CDIN Study Group, Washington, DC, June 10-11, 2010

112. NIH NCGC CHDI Meeting “Post-translational Modifiers of Huntington’s Disease”, Rockville, MD, March 11, 2010

113. 7th Annual UCSF/UCD HD Research Symposium, Genetech Hall, UCSF Mission Bay, February 20, 2010

114. NIH ETTM-C-02 Study Group, February 17, 2010

115. NIH BDCN CDIN Study Group, Washington, DC, January 28-29, 2010

116. NIH BDCN-Y-04 Special Emphasis Panel, October 26, 2009

117. NIH NINDS CDIN Study Group, Washington, DC, September 24-25, 2009

118. NIH NIA ARRA P30 Core Grants, July 15, 2009

119. NIH NINDS CDIN Study Group, Bethesda, MD, June 11-12, 2009

120. NIH NINDS NSDB Study Group, San Diego, California, February 26-27, 2009

121. Buck Institute for Research on Aging, Geroscience Meeting, HDACs and Neurodegeneration, February 25, 2009

122. CHDI, “Polyglutamine Disease and Proteolysis” February 15, 2009

123. NIH CMND Study Group, Washington, DC, February 10-11, 2009

124. UCSF, “Polyglutamine Disease and Proteolysis” December 15, 2008

125. Buck Institute for Research on Aging, Therapeutic Targets in Huntington’s Disease, November 12, 2008

126. Buck Institute for Research on Aging, Therapeutic Targets in Huntington’s Disease, October 28, 2008

127. NIH ZRG1 BDCN-Y Study Group, San Francisco, California, October 14, 15-2008

128. NIH CMND Study Group, San Francisco, California, October 23-24, 2008

129. ACARM7, All California Ataxia Research Meeting, Target Validation in HD, September 14, 2008

130. NIH NINDS NSDB Study Group, Washington, DC, February 28-29, 2008

131. CHDI 3rd Annual Huntington Disease Therapeutics Conference, February 04 - 07, 2008

132. 5th Annual UCSF/UCD HD Research Symposium, Genetech Hall, UCSF Mission Bay, January 26, 2008

133. NIH ZAG1 Z1J-4 (J3) Cell Quiencence, Washington, DC, December 13-14, 2007

134. The Biology of Calpains in Health and Disease. “Calpains and Huntington’s Disease” Snow Mass, Colorado, July 14-19, 2007

135. Anthony L Fink Symposium, “Enzymes and Neurodegenerative Diseases” University of California, Santa Cruz, California, May 26, 2007

136. CAG Triplet Repeat Disorders, “HD Target Validation: siRNA Screens in HD Cell Culture Models” Aussois, France, May 13-18, 2007

137. CAG Triplet Repeat Disorders, “Impact of Normal Function/Metabolism of Polyglutamine Proteins on Disease”, Structured Discussion Leader, Aussois, France, May 13-18, 2007

138. Emory University, “Huntington’s Disease: Proteolysis and Neuroprotection” Whitehead Auditorium, Whitehead Biomedical Research Bldg, Emory University, Atlanta, Georgia, April 16, 2007

139. NIH NINDS NSDB Study Group, Washington, DC, February 22-23, 2006

140. 2nd Annual Huntington Disease Therapeutic Conference: A Forum for Drug Discovery & Development, “Quantification of Huntingtin Cleavage Products Using an Enzyme-Linked Immunosorbent Assay”, Palm Springs, California, February 5-8, 2007

141. National Ataxia Foundation All California Ataxia Research Meeting (ACARM), “Huntington’s Disease and Neurogenesis” Embassy Suites, San Francisco, California, November 19, 2006

142. NIH NINDS NSDB Study Group, Washington, DC, October 25-27, 2006

143. Buck Institute Scientific Advisory Board Review, “PolyQ disease” Presentation to Scientific Advisory Board at the Buck, Annual Review, September 28-29, 2006

144. 2nd Annual Dependence Receptors Symposium, “Factors Determining the Toxicity of the Androgen Receptor and other Polyglutamine Proteins.” Buck Institute, September 14-16, 2006

145. HD 2006: Changes, Advances, and Good News, Session Chair, Royal Sonesta Hotel, Boston, August 11-13, 2006

146. NIH NINDS NSDB Study Group, Savoy Hotel, Washington, DC, June 21-22, 2006

147. Huntington’s Disease Society of America 2006 Northern California Chapter Convention, “Update on HD Research” UC Davis MIND Institute, Davis, CA, May 6, 2006

148. NIH NINDS NSDB Study Group, Renaissance Hotel, Washington, DC, February 21-22, 2006

149. NIH ZRG1 NDGB-A Study Section, Washington, DC, February 13-14, 2006

150. NIH ZRG1 NDBG09F Study Section, Washington Circle Hotel, Washington, DC, December 28, 2005

151. CHDI (High Q Foundation) Conference, Howard Hughes Center, Los Angeles, CA, November 3, 2005

152. NIH ZRG1 NDBG Study Group, Washington, DC, October 24-25, 2005

153. NIH/NINDS Study Section, Bethesda, MD, October 20-21, 2005

154. Symposium in Honor of Joan Selverstone Valentine, "Neurogenesis and Huntington's Disease" University of California, Los Angeles, September 2, 2005

155. NSD-B Study Section, Rockville, MD, June 23-24, 2005

156. AACR 99th Annual Meeting, "Abraxane (ABI-007) acts synergistically with targeted antiangiogenic pro-apoptotic peptides (HKP) in MDA-MB-435 human tumor xenografts." Anaheim/Orange County, California, April 16-20, 2005

157. ASBMB Annual Meeting and IUBMB Conference, "Mass spectrometric characterization of immunoprecipitated full-length huntingtin: Post-translational modification, April 1-5, 2005

158. ZRG1 CDIN Study Section, Washington, DC, March 23-25, 2005

159. NIH/NINDS NSDB Study Section, Arlington, Virginia, February 24-25, 2005

160. NIH ZRG1 NDBG02S Study Section, Mitochondria and Neurodegeneration, Washington, DC, February 15-17, 2005

161. Buck Institute Public Seminar. "Movement disorders and New Hope for Therapy" February 10, 2005

162. Winter Conference on Brain Research, Breckenridge, CO, January 22-27, 2005

163. Johns Hopkins University, Mock NIH Review for HD center grant, "Mass spectrometric characterization of immunoprecipitated full-length huntingtin: Post-translational modification" January 6, 2005

164. American Society for Cell Biology 4th Annual Meeting, "Mass spectrometric characterization of immunoprecipitated full-length huntingtin: Post-translational modification" Washington, DC, December 4-8, 2004

165. Huntington's Disease Research Symposium, "FGF-2 promotes neurogenesis and neuroprotection and prolongs survival in HD transgenic mice" University of California, San Francisco, December 4, 2004

166. Society For Neuroscience Annual Meeting. "Fibroblast growth factor-2 promotes neurogenesis and neuroprotection and prolongs survival in a transgenic mouse model of Huntington's disease." San Diego, California, October 23-27, 2004

167. Kennedy's Disease Conference and Symposium. "Kennedy's Disease: Mouse Models and Mechanistic Studies" Presentation and panel Discussion. San Diego, California, October 21-22, 2004

168. NIH/NINDS NSD-B Peer Review Panel Study Group, San Francisco, California, October 13-15, 2004

169. HDSA Eighth Annual Scientific and Coalition for the Cure Meeting, "Inducible Huntington's Disease Models Expressing Full-length Huntingtin: Identification of an N-Terminal Fragment of Mutant Huntingtin" Cleveland, OH, October 1-3, 2004

170. HDSA Meeting: Huntington Disease's Proteolysis Team Progress Update, Vancouver, Canada, August 27-29, 2004

171. HDF Symposium, HD 2004: Changes, Advances and Good News $(CAG)_{n,}$ Cambridge, MA, August 12-15, 2004

172. FEBS Advanced Course, New Molecular Strategies to Treat Neurodegenerative Diseases, "Kennedy's disease: Mechanistic Studies on Motor Neuron Loss" Ofir, Portugal, July 17-23, 2004

173. NIH/NINDS NSD-B Peer Review Panel Study Group, Washington DC, June 21-24, 2004

174. NIH/NINDS NSD-B Peer Review Panel Study Group, Washington DC, June 17-18, 2004

175. ASBMB Annual Meeting and IUBMB Conference, "Kennedy's Disease: Altered MAP Kinase, CBP and p53 Signaling" Boston, Massachusetts, June 12-16, 2004

176. IPAM Proteomics Workshop II, Medical Applications and Protein Networks, Organizer and Presenter, UCLA, "Mass Spectrometry Applied to Questions in Polyglutamine Expansion Diseases" April 19-23, 2004

177. Encino Tarzana Medical Center Continuing Medical Education Program, "Age-Dependent Neurodegenerative Diseases and Cell death" Tarzana Hospital, Tarzana, California, March 2, 2004

178. NIH/NINDS NSD-B Peer Review Panel Study Group, Washington DC, February 26-27, 2004

179. Buck Institute Staff Seminar Series, "Kennedy's disease: Mouse Models and Therapeutics" February 18, 2004

180. Winter Conference on Brain Research, "Pathogenic Mechanisms and Therapeutic Implications in Models of Alzheimer's and Huntington's Diseases" Copper Mountain, Colorado, January 24-30, 2004

181. Buck Institute Staff Seminar Series, "Therapeutic Strategies for Huntington's Disease" December 17, 2003

182. American Society for Cell Biology 43rd Annual Meeting. "TSAP11: A Novel Regulator of the Androgen Receptor" San Francisco, California, December 13-17, 2003

183. Huntington's Disease Research Update. "Cell Death Proteases in Huntington's Disease" UC Davis Medical Center, Sacramento, California, December 6, 2003

184. Weekly Department of Biochemistry & Biophysics Seminar Series. "Role of Calpains in Huntington's Disease" Oregon State University, Corvalis, Oregon, November 14, 2003

185. Society For Neuroscience Annual Meeting. "Role of Calpains in Huntington's Disease" New Orleans, Louisiana, November 8-12, 2003

186. Kennedy's Disease Conference and Symposium. "Kennedy's Disease: Proteolytic Cleavage Events" New Orleans, Louisiana, November 4-7, 2003

187. NIH/NINDS NSD-B Peer Review Panel Study Group, Washington DC, October 15-18, 2003

188. Dependence Receptor Conference: Seeing How the Other Half Die. "Androgen Receptor & Dependence" La Fondation des Trielles, France, July 2-7, 2003

189. NIH/NINDS NSD-B Peer Review Panel Study Group, Washington DC, June 26-27, 2003

190. "Polyglutamine Expansion Diseases." Taught one-week Graduate Course. University of Coimbra, Coimbra, Portugal, May 12-16, 2003

191. Gordon Research Conference: CAG Triplet Repeat Disorders. “Kennedy’s Disease: MEK1/2 Pathway is Required for Cell-Death Induced by Mutant Androgen Receptor.” Il Ciocco, Barga, Italy, May 4-9, 2003

192. Huntington’s Disease Society of America, “Toward a Cure: An Update on Research for the Lay Perspective.” HDSA Annual California Chapter Convention, UC Davis Medical Center, Davis, California, May 3, 2003

193. ASBMB Board & Experimental Biology Meeting, “Editorial Board Training.” San Diego, California, April 10-14, 2003

194. Economics of Aging Seminar “Highlights of Buck Institute Research.” Margaret Todd Senior Center, Novato, California, March 26, 2003

195. Winter Conference on Brain Research, “Proteolytic Cleavage Events in Huntington’s Disease.” Snowbird, Utah, January 27-30, 2003

196. Poster Presentation at the Society for Neuroscience. S.J. Shoesmith-Berke, F.A. Flores Schmied, L.M. Ellerby, E.R.P. Brunt, H.L. Paulson. “Caspase-Mediated Proteolysis of the Polyglutamine Disease Protein Ataxin-3.” Society for Neuroscience, Orlando, Florida, Nov 2-7, 2002

197. Poster Presentation at the Society for Neuroscience. J. Gafni, L. Ellerby. “Huntington’s Disease: The Role of Calpain Cleavage.” Society for Neuroscience, Orlando Florida, November 2-7, 2002

198. Poster Presentation at the Society for Neuroscience. M.A. LaFevre-Bernt, L. M. Ellerby. “Kennedy’s Disease: MEK 1/2 Pathway is Required for Cell-Death Induced by Mutant Androgen Receptor.” Society for Neuroscience, Orlando, Florida, November 2-7, 2002

199. Poster Presentation at the Society for Neuroscience. J.E. Young, L. Gouw, L.J. Ptacek, Y.H. Fu, L.M. Ellerby “Spinocerebellar Ataxia Type 7: Caspase Cleavage of Ataxin-7 Alters Nuclear Location and Cytotoxicity.” Society for Neuroscience, Orlando, Florida, November 2-7, 2002

200. The Kennedy's Disease Association invitation KDA Conference and Symposium, "Reaching for the Stars" Baltimore, Maryland, October 13-15, 2002

201. “A Time for All Ages” the Marin County Commission on Aging. Marin County television show hosted by Jack Hanson. Interview of Dr. L. Ellerby and Dr. D. Greenberg on Aging Research and HD at the Buck Institute. Broadcast throughout August, 2002

202. Buck Institute Staff Seminar Series, “Huntington’s Disease” August 21, 2002

203. Hereditary Disease Foundation. “Kennedy’s Disease: MEK1/2 Pathway is Required for Cell-Death Induced by Mutant Androgen Receptor.” Boston, Massachusetts, August 9-12, 2002

204. “Kennedy’s Disease” Buck Institute Informal Seminar Series, July 30, 2002

205. Scientific Panel member for the Huntington's Disease Society of America, North California Chapter, Annual Chapter Convention. UC Davis Medical Center, Davis, California, May 4, 2002

206. Huntington's Disease Society of America. "Calpain Activation in Huntington's Disease." Chicago, Illinois, April 26-28, 2002

207. Huntington's Disease Society of America. "Kennedy's Disease: Toxic Fragments Synergistically Enhance Androgen Receptor Induced Cell Death." Chicago, Illinois, April 26-28, 2002

208. Poster Presentation at the Society for Neuroscience. "Kennedy's Disease: Toxic Fragments Synergistically Enhance Androgen Receptor Induced Cell Death." Society for Neuroscience, San Diego, California, November 10-15, 2001

209. Presentation for the Scientific Advisory Board for the Buck Institute Symposium. "Specific Caspase Interaction and Amplication are Involved in Selective Neuronal Vulnerability in Huntington's Disease" September 9, 2001

210. "Huntington's Disease" Buck Institute Staff Seminar Series, August 12, 2001

211. Gordon Research Conference. "Specific Caspase Interaction and Amplication are Involved in Selective Neuronal Vulnerability in Huntington's Disease" CAG Triplet Repeat Disorders, Gordon Conference. Mount Holyoke College, South Hadley, Massachusetts, July 15-20, 2001

212. "Kennedy's Disease" Buck Institute Informal Seminar Series, July 15, 2001

213. Poster Presentation. Huntington Disease Society of America, Philadelphia, Pennsylvania, May 4-5, 2001

214. Chemistry Seminar Series. "Huntington's Disease: Role of Cell Death Proteases." University of California, Santa Cruz, March 19, 2001

215. "Proteases in Polyglutamine Expansion Disease" Joint Buck Institute and Parkinson's Institute Symposium, January, 2001

216. Poster Presentation at the Society for Neuroscience. "Specific Caspase Interaction and Amplication are Involved in Selective Neuronal Vulnerability in Huntington's Disease" New Orleans, Louisiana, November 4-8, 2000

217. Poster Presentation. Huntington Disease Society of America, Miami, Florida October 23-28, 2000

218. Buck Institute Staff Seminar Series, "Polyglutamine Repeat Disease" October 18th, 2000

219. Poster Presentation. Hereditary Disease Symposium, Boston, Massachusetts August 18-20, 2000

220. Oral Presentation. "Huntington's Disease: Role of Cell Death Proteases." Winter Conference on Brain Research, Breckenridge, Colorado, January 24-26, 2000

221. Gordon Conference Poster, The Structural and Kinetic Requirements for pH-Independent Superoxide Dismutase Catalysis, Joan S. Valentine, Lisa M. Ellerby, Janet A. Graden, and Diane E. Cabelli* Department of Chemistry and Biochemistry, University of California, Los Angeles, 1995

*Chemistry Department, Brookhaven National Labs, Upton, New York

222. Oxygen Society, 1995. Glutathione Levels in *Saccharomyces cerevisiae* Lacking Key Antioxidant Enzymes Lisa M. Ellerby, Grace Huang, Edith B. Gralla, Joan S. Valentine Department of Chemistry and Biochemistry, University of California, Los Angeles, 1995

G) Research Support

ACTIVE (direct cost/year)

R01 NS094422 (Ellerby) **09/1/16 – 08/31/22**
NIH/NINDS $250,000
Genetic Correction of Mutant Huntingtin in Vivo
We have recently developed the tools to use CRISPR/Cas9 to genetically correct the mutant Htt gene in human cells and in vivo HD mouse models. This application will extend this technology to genetically correct mouse models of HD.

R01 NS100529 (Ellerby) **09/01/16 – 08/30/22**
NIH/NINDS $428,015
Identifying Factors Regulating Medium Spiny Neuron Differentiation or Maintenance as Therapeutic Targets for Huntington's Disease using Induced Pluripotent Stem Cells
These studies will utilize induced pluripotent stem cells (iPSCs) derived from HD patients (HD-iPSCs) as a human model of HD. Using genetic engineering, we generated an isogenic allelic HD-iPSC series for HD modeling (CAG repeat of 21, 45, 72, 100). Recent advances in stem cell research suggest that iPSCs may provide novel models of disease and new treatments for diseases. Our recently generated isogenic HD-iPSCs with corrected alleles will allow novel mechanistic insights into the disease process and establish methods for their eventual use *in vivo*.

R01AG061879-03 (Ellerby, Melov) **09/30/18 – 05/31/23**
NIH/NIA $453,398
Resilience Pathways Modeling Human Longevity-Promoting ApoE Variants in Induced Pluripotent Stem Cells
Specific Aim 1 will characterize the cellular and functional differences in isogenic iPSCs with e2/e2, e3/e3 and e4/e4 genotypes using a systems biology approach. Specific Aim 2 will determine whether longevity-promoting ApoE variants enhance stress resistance and survival and identify the pathways relevant to the neuroprotective effects of the various variants. Specific Aim 3 will determine if expression of ApoE2 or factors produced by ApoE cells provide increased health span in aged mice.

R01AG055822-02S2 (PI: Melov) **06/01/121-01/31/22**
NIH/NIA $12,423
Role of Cellular Senescence in Cardiovascular Aging
The aims of this project are to: 1) determine the extent to which senescent cells cause CV system dysfunction in settings of both experimental senescence and natural aging and 2) determine the cellular and molecular mechanisms by which senescent cells negatively impact

cardiovascular tissue and 3) to identify novel therapeutic targets for age-related CV dysfunction in humans.

NIH T32 AG000266-17 (Campisi, Ellerby) **04/29/00– 04/29/23**
NIA
Training in Aging and Age-Related Diseases $647,654
This postdoctoral training Program will prepare scientists from a range of disciplines for independent careers in research that aims to understand the mechanisms of aging and age-related disease. We will train the next generation of scientists and provide them with the broad knowledge, interdisciplinary skills and scientific interactions they will need to alleviate, through research, the enormous human and financial burdens caused by aging and age-related diseases.

Taube Family/Stanford **09/01/17 – 08/31/22**
Cell models and gene therapy for Huntington's Disease

Taube Family/Stanford **12/01/19 – 11/30/23**
Neurodegenerative Disorders Research Collaboration with the Tel Aviv University

Blade Therapeutics **11/05/19 – 11/04/21**
Proprietary

R01NS116992-02 (MPI: Brem, Verdin, Ellerby) **09/30/19 – 06/30/24**
UCB/NIH/NINDS $46,633
"Genetic dissection of trait variation between long-diverged mouse species"
Dissecting the molecular basis of naturally occurring trait variation is one of the central goals of modern genetics, but existing methods for this purpose can't be applied to reproductively isolated individuals. We have developed a new method to dissect trait variation between long-diverged, incompatible species; here we propose to apply our approach to a remarkable axonal regeneration phenotype in a little-studied mouse species, *Mus castaneus*. Our work will reveal the genes that underlie resistance to stroke and traumatic brain injury in *M. castaneus*, and will set the stage for dissections of species differences across Eukarya.

R21NS112796-01 (MPI: Li, Ellerby) **07/01/2019 – 06/30/2021**
NIH/NINDS $99,195
Evaluation of the Role of RNA Toxicity in SCA2 Pathogenesis Using Genome Editing in Patient iPSCs
There is growing evidence that in neurodegenerative diseases that are caused by CAG repeat expansion mutation, mutant proteins, as well as mutant RNAs that encode for these proteins, contribute to the disease pathogeneses. We propose to develop novel induced pluripotent stem cell models of spinocerebellar ataxia type 2 (SCA2).The cells will be important tools to examine the contributory role that mutant RNAs play in SCA2, as well as to guide the future development of SCA2 therapy.

PENDING
R01AG070705-01A1 (MPI: Kapahi, Ellerby) **07/01/21 – 06/30/26**

NIH/NIA ``````````````````````. $438,873

Determining the role of OXR1 in aging and Alzheimer's disease

The goals of this project are: 1) Determine the regulation of mtd/OXR1 and its role in DR mediated enhancement of lifespan and slowing age-related neurodegeneration. 2) Determine how OXR1 modulates retromer function to mediate the DR-dependent slowing of aging and age-related neurodegeneration. 3) Determine the impact of manipulating OXR1 in fly and human iPSC-derived models of AD.

PPG NIA (MPI: Campisi, Ellerby) 07/01/21 – 06/30/26

Aging, Senescence Responses & Alzheimer's and related Dementias $1,500,000

Aging is by far the most important driver and risk factor for developing a host of neurodegenerative pathologies. Among these pathologies are Alzheimer's disease and related dementias (ADRD). These degenerative changes in brain function exact enormous emotional and economic tolls on patients and their families. While progress has been made in understanding the molecular etiologies of rare familial forms of ADRD, little is known about how the common forms of ADRD and overall age-related decline in cognition, much less how and why aging so greatly increases the risk of their development. Importantly, to date, there are no strongly effective treatments that delay, much less reverse, the onset or progression of age-related neurodegeneration. Clearly, new approaches to understanding and treating age-associated ADRD are needed. This Program Project Grant (PPG) proposal aims to fill this serious gap in our knowledge, with the long-term goal of providing novel and effective treatment approaches.

PAST

Private Donor Research in Epilepsy (Ellerby) 04/01/13– 03/31/16

NA $169,000

Therapeutics for Treatment of Epilepsy

This research will evaluate DGKepsilon inhibitors in HD epilepsy models.

Collaborative Center for X-linked Dystonia PD (Ehrlich, Ellerby) 02/01/16– 07/31/18

Harvard Medical School $244,00

Understanding XDP using mouse models and human iPSCs

This work is directed at understanding how the XDP mutations cause the disease. The aim of this collaboration is to characterize the XDP iPSC and develop methods to make MSNs characteristic of striosome vs. patch. We will apply this expertise to the novel induced pluripotent stem cell lines to understand the molecular mechanisms of N-TAF1 mutations in XDP.

U19AG023122 (Cummings) 05/01/16-9/30/17

CPMC/NIH/NIA $70,000

Longevity Consortium Pilot Project (Ellerby)

Resilience Pathways modeling human longevity-promoting ApoE variants in iPSCs

Role: Subaward PI

The aims of this pilot project are; ***Specific Aim 1:*** To test if ApoE is a neuroprotective factor in neurodegenerative disease and aging we will generate novel of models of aging using human induced pluripotent stem cells (iPSCs) and; ***Specific Aim 2*** will determine whether longevity-

promoting ApoE variants enhance stress resistance and survival and identify the pathways relevant to the neuroprotective effects of the various variants.

1R01 NS074408-01 (Ellerby) **07/01/13 – 06/30/18**
NIH $250,000
Matrix Metalloproteinases: Therapeutic Targets for Huntington's Disease
Huntington's disease (HD) is a fatal autosomal dominant neurodegenerative disease characterized by emotional disturbances, uncontrolled movements and loss of intellectual abilities. We will determine how MMPs affect the processing of huntingin (Htt) in brain samples of Huntington's disease mouse models. Furthermore, we will investigate if pharmacological or genetic reduction of MMP-10 or MMP-14 modifies disease progression or pathogenesis in HD mouse models. By crossing MMP-10 or MMP-14 knockout mice to HD mouse models, we will determine if deficiency of MMPs in the brain can ameliorate HD-like pathologies or behavioral deficits in HD mice. We will also use MMP inhibitors to treat HD mouse models and determine if HD pathogenesis or disease progression is modified by treatment. Together, our studies will determine if MMP are valid targets for HD treatment.

R21 NS095312 (Ellerby) **09/1/15 – 08/31/18**
NIH $150,000
Comprehensive Synaptosome Proteomics Targeting HD Protein Expresssion, PTMs & Synthesis
An essential goal of quantitative proteomics is to understand how proteins in cells and tissues change in their expression levels and posttranslational modification (PTM) status, ideally with knowledge of their spatial and temporal reorganization, protein interaction networks and functional status. As we have extensive experience in mouse models of Huntington's disease (HD), we propose to use an Htt-polyQ expanded knockin mouse, HdhQ175 compared to littermate controls (B6/J background), as our model system. Synaptosomes isolated from the cortex and striatum will be examined using these proteomic strategies, as these brain regions are known to be effected in HD. In summary, this rich integrated data set of changes in synaptic protein levels, half-lives, and PTM status will provide a greater understanding of the synapse that is integral to the function of the brain and will help elucidate the dysfunctions underling neuronal diseases of the brain.

U19AG023122 (Cummings) **05/01/16-9/30/17**
CPMC/NIH/NIA $70,000
Longevity Consortium Pilot Project (Ellerby)
Resilience Pathways modeling human longevity-promoting ApoE variants in iPSCs
Role: Subaward PI
The aims of this pilot project are; ***Specific Aim 1:*** To test if ApoE is a neuroprotective factor in neurodegenerative disease and aging we will generate novel of models of aging using human induced pluripotent stem cells (iPSCs) and; ***Specific Aim 2*** will determine whether longevity-promoting ApoE variants enhance stress resistance and survival and identify the pathways relevant to the neuroprotective effects of the various variants.

Delos Pharmaceuticals (Ellerby) **04/01/14 – 03/31/15**
NA
Rapalogs in HD

This sponsored research grant will test Rapalogs in HD models and evaluate the mechanism of action for mTOR1 and mTOR2 inhibition in HD.

R01 NS056420 (Ellerby) **12/15/07 – 11/30/14**
NIH/NINDS $208,490
Huntington's Disease and Neurogenesis
Mechanistic studies directed at understanding the role of neurogenesis in Huntington's disease.

RL1 NS062413 (Ellerby: 7 of 11) **09/30/07 – 07/30/14**
NIH/NINDS/NCRR Interdisciplinary Res Consortium (U54) $225,000
HDACs in Neurodegeneration and Aging
Our hypothesis is that compromised acetylation homeostasis is coupled to neurodegeneration and identification of particular HDAC family members involved in this process will identify therapeutic targets critical to neurodegeneration and aging.

RL1 GM084432 (Hughes: 6 of 11) **09/28/07 – 06/30/12**
NIH/NIGMS/NCRR Interdisciplinary Res Consortium (U54) $245,250
Protein Interactions and Protein Conformation in Aging and Disease
We propose to define and characterize protein interactions and protein conformational states relevant to a network involving human orthologs of proteins known to increase longevity when mutated in model systems of aging.

A-4066 (Ellerby, Hughes) **02/01/11 – 06/01/13**
CHDI, Inc. $1,490,660
Joint Steering Committee
Target Validation Establishing Whether High Priority Targets Such as Syntaxin-1, RNF128, DGK-Epsilon and R-RAS *in Vivo* Modulate Huntington's Disease Progression and Pathophysiology.

A-3589 (Ellerby) **03/15/07 – 10/15/11**
CHDI, Inc. $386,701
Development of Enzyme-Linked Immunosorbent Assay (ELISA)-Based Assays Quantifying Caspase Cleavage Products of Huntingtin (Htt)
This research proposal will continue our first year efforts in which we have developed reagents and assays to quantity caspase cleavage products of huntingtin *(Htt).*

A-3515 (Ellerby) **09/01/10 – 08/31/11**
CHDI, Inc. $258,994
Characterization of Post-Translational Modifications of Huntingtin (Htt) Protein
Our aim is to map the post-translational modification (PTM) in the huntingtin (Htt) protein that have an impact on Htt turnover and toxicity.

RL1 NS062413-03S2 (Ellerby) **01/15/10 – 06/30/11**
NIH Research Supplement to Promote Diversity $39,064
Supplement to: *HDACs in Neurodegeneration and Aging*

A-3507 N/A (Ellerby) **06/15/09 – 12/31/10**
CHDI, Inc. $266,760
Huntington's Disease target discovery and validation
We have completed three orthogonal large-scale screens for modifiers of huntingtin (Htt) pathogenesis, an RNAi-based screen to detect suppressors of mutant Htt potentiated apoptosis and a large-scale screen for Htt interacting proteins. We are in the process of validating hits from these screens and understanding their mechanisms of action.

P30 AG025708 (Campisi) **09/1/09 – 06/30/10**
NIH/NIA Pilot Supplement Award (Ellerby) $35,000
Basic Mechanisms in Aging and Age Related Disease; Pilot: Effect of Klotho on Huntington's Disease
To develop a Nathan Shock Center of Excellence at the Buck Institute for basic mechanisms in aging and age related disease.

R01 NS040251 (Ellerby) **09/28/99 – 06/30/10**
NIH $219,267
Triplet Repeat Disease: Requirement for Caspase Cleavage
The purpose of the R01 is to investigate the underlying mechanism(s) that contribute to cell dysfunction and death in polyglutamine expansion diseases. The major goals of this project are: 1. Does the generation of polyglutamine disease transgenic mice with the caspase-cleavage sites abolished slow the progression *in vivo*? 2. What domains or amino acids are required for the caspase interactions with polyglutamine expansion disease proteins? 3. Can we identify and clone the proteins interacting with polyglutamine and caspases in the apoptosome-like complex? 4. Can we define the caspases that are required for cell-death initiation utilizing dominant-negative caspase transgenic mice? 5. Is generation of a toxic fragment required for the mediation of transcriptional dysregulation in polyglutamine diseases?

R01 NS44921 (Greenberg) **12/15/02 – 11/30/07**
NIH $237,500
VEGF in Neuroprotection and Neurogenesis
The goal of this project is to determine the mechanisms through which vascular endothelial growth factor protects neurons from hypoxic-ischemic insults and promotes neurogenesis in the adult brain.

R01 NS40251 (Ellerby) **02/15/05 – 06/30/07**
NIH Supplement $21,000
Triplet Repeat Disease: Requirement for Caspase Cleavage
Research supplement for individuals with disabilities.

N/A (Ross) **12/01/05 – 01/30/09**
NIH PPG Subcontract (Ellerby) $120,000
Research Center Without Walls for Huntington's Disease
This proposal evaluates proteolysis of huntingtin (Htt) in PC12 cell lines and post-translational modifications.

N/A (Ellerby) **07/01/01 – 06/30/03**
HDSA $37,500
Cell Death Proteases in Huntington's Disease
The principle hypothesis of this proposal is that the physical interaction of specific caspases with huntingtin (Htt) as well as the regional and cellular distribution of caspases in the striatum contributes to the selective neuronal loss observed in Huntington's disease. We found that caspase-2, caspase-6, and caspase-7 recruit Htt in an apoptosome-like complex. Caspase-2 and caspase-7 bound the full-length huntingtin protein while caspase-6 bound the N-terminal caspase cleavage product. We propose the following Specific Aims in order to further elucidate the mechanism of mutant Htt-mediated cell death: (1) What domains or amino acids are required for the huntingtin/caspase interaction? (2) Can we identify and clone the proteins interacting with huntingtin and caspase-2 in the apoptosome-like complex?

T32 AG020495 (Bredesen, Ellerby) **05/01/02 – 04/30/07**
Ellerby, Co-Investigator, oversee T32 training grant for Institute $250,000
NIH
Training in Age-Related Disease and Aging Research
This proposal provides training for five postdoctoral scholars each year in aging and age-related diseases.

N/A (Ellerby) **01/01/01 – 12/31/03**
MDA $122,388
Characterization of Cell-Death Proteases in Spinal Muscular Atrophy
The long-term objective of these studies is to develop an effective therapy for dominantly inherited, late onset, neurodegenerative diseases caused by expansions in CAG repeats. In recent work, we have found specific caspase family members interact with androgen receptor, and this finding of the interaction between caspases and polyglutamine-containing neurodegeneration associated proteins also offers a new target for therapeutic consideration.

R01 NS38144 (Ross) **07/01/04 – 06/30/05**
NIH Subcontract (Ellerby) $40,619
Transgenic Models of Huntington's Disease
This proposal evaluates proteolysis of huntingtin in Huntington's disease transgenics.

N/A (Bredesen, Ellerby) **01/01/97 – 12/31/99**
Muscular Dystropy Association $62,856
Familial ALS: Mechanism of Initiation
The long term objective of these studies is to develop effective therapy for sporadic and familial amyotrophic lateral sclerosis (ALS): by determining the chemical mechanism by which the mutations in *sod1* lead to familial ALS (FALS), then determining which resultant cellular abnormalities of FALS are shared by sporadic ALS.

RO1NS35155 (Bredesen, Ellerby) **06/01/97 – 03/31/00**
NIH $155,940
Familial ALS: Mechanism of Initiation
The major goals of this project are: 1) To determine the profile of oxidants for which CuZnSOD mutants catalyze oxidation-reduction reactions at higher rates that wild type CuZnSODs; 2) To determine the potential targets of the redox reactions catalyzed by mutant CuZnSODs; 3) To determine whether the altered redox chemistry displayed by the mutants is attributed to an underlying abnormality in metal binding or migration.

N/A (Bredesen/M. Ellerby) **06/15/01 – 06/14/05**
American BioSciences Inc. $650,000
Novel and Killer Peptides
Sponsored agreement for research in the field of novel and killer peptides.

H) Mentored Postdoctoral Scholars

NIH F32 NS043937 (Juliette Gafni, Ph.D.) **01/01/03 – 12/31/05**
NINDS $46,420
The Role of Calpain in Huntington's Disease
This proposal investigates the role of calpains in proeolytic cleavage of huntingtin and the activation of calpains in Huntington's disease.

NIH F32 NS043823 (Michelle LaFavre-Bernt, Ph.D.) **08/01/03 – 07/31/05**
NINDS $46,420
Mechanism of Androgen Receptor
Cytotoxicity

This proposal describes mechanistic studies directed at understanding the role of caspase activation and proteolysis in polyQ repeat mediated cell death.

NIH T32 AG020495 (Bredesen, Ellerby) **09/01/04 – 08/28/07**
NIA $196,236
Trainee: Vanitha Sampath, Ph.D.
The Role of Sirtuins in SCA7
This proposal investigates the role of FOXO and Sirtuins in the pathogenesis of SCA7.

HighQ (Ellerby, Hughes, Gibson) **05/01/05 – 04/30/12**
Trainee: Xin Cong, Ph.D. $219,349
Mass Spectrometry of Huntingtin
This proposal evaluates the impact of posttranslational modifications of huntingtin on Huntington's disease.

NIH T32 AG000266-10 (Campisi, Ellerby) **05/01/07 – 04/30/08**
NIA $538,649
Trainee: Shona Monkerjee, Ph.D.

Mitochondrial Deletions in Huntington's Disease
This proposal investigates the role of mitochondrial deletions in Huntington's disease.

NIH T32 AG000266-10 (Campisi, Ellerby) **09/16/08 – 09/15/10**
NIA $498,296
Trainee: Mahru An, Ph.D.
Characterization of iPS cells for Huntington's disease
This proposal seeks to characterize genetically modified induced pluriptotent stem cells derived from Huntington's Disease patient somatic cells.

NIH F32 NS070491 (Carlotta Duncan, Ph.D.) **04/30/10 – 04/29/12**
NINDS $98,932
Chaperone-mediated Autophagy in Spinocerebellar Ataxia Type 7 (SCA7)
The objective of this project is to understand how ataxin-7 is normally broken down in neurons, and how this process is deficient in polyQ-expanded ataxin-7.

NIH F32 NS080551 (Robert O'Brien, Ph.D.) **07/01/12 – 06/30/14**
NINDS
Huntington's Disease: Analysis of Proteolysis $99,942
The proposal focuses on analysis of ROSA stop mice generated that express proteolytic cleavage products of Htt.

Previous Postdoctoral Scholars/Staff Scientists/Postdoctoral Collaborators

2000-2012, Juliette Gafni, Ph.D., Senior Scientist, Discovery and Engineering 4D Molecular Therapeutics
2006-2011, Xin Cong, Vice President, Clinical R&D at InterVenn Biosciences
2008-2017, Ningzhe Zhang, Ph.D., Principal Scientist, Verge Genomics
2008-2013, Theodora Papanikolaou. Ph.D., Regional Medical Scientific Director at Merck
2010-2015, Mahru An, Ph.D., Senior Scientist at Pliant Therapeutics
2006-2009, Shona Mookerjee, Ph.D. Associate Professor Biological and Pharmaceutical Sciences, Touro University
2006-2010, Carlotta Duncan, Ph.D., Business Executive
2011-2015, Robert O'Brien, Ph.D., Senior Scientist at Unity Biotechnology
2010-2015, Mahru An, Ph.D., Senior Scientist at Pliant Therapeutics
2010-2015, Katherine Hughes, Ph.D., Lecturer in the Department of Biomedical Engineering Washington University in St. Louis
2013-2015, Karen Ring, Ph.D., Senior Manager, Science Communications at Genentech
2016-2019, Swati Naphade, Ph.D., Senior Scientist, Verge Genomics
2015-2020, Barbara Bailus, Ph.D., Assistant Professor of Genetics, Keck Graduate Institute

I) Mentored Graduate Students

Dominican University **08/26/08 – 05/31/10**
Trainee: Jan Marie Cheng, M.S.

Post-Translational Modifications of Huntingtin and Caspases Attenuate Cellular Toxicity
Masters Thesis

Dominican University **08/26/11 – 05/31/13**
Trainee: Bachir Hadid, M.S.
Role of Neurogenesis in Huntington's Disease and Aging
Masters Thesis

San Francisco State University **08/26/16 – 05/31/17**
Trainee: Alexander Embusch, M.S.
Altered Expression of Matrix Metalloproteinases in Huntington's Disease Neural Stem Cells Derived from HD Patient Induced Pluripotent Stem Cells
Masters Thesis

Dominican University **08/26/16 – 05/31/18**
Trainee: Lakshika Madushani, M.S.
Preclinical Evaluation of Matrix Metalloproteinase Inhibitors and Protein Kinase C Activators in Cell and Mouse Models of Huntington's Disease
Masters Thesis

Dominican University **08/26/18 – 05/31/20**
Trainee: Alexandro Lopez Ramirez, M.S.
Preclinical Evaluation of MW150 in Mouse Models of Huntington's Disease
Master's Thesis

Dominican University **08/26/19 – 05/31/21**
Trainee: Melia Granath, MS.
Role of PKC in Huntington's disease and Development of a Striatal Organoid Model of HD
Master's Thesis

Dominican University **08/26/20 – 05/31/22**
Trainee: Fadzai Teramayi
Role of PRODH in Inducing Mitochondrial UPR and Treatment of HD
Master's Thesis

University of California, Los Angeles, Buck Institute **08/26/16 – 5/31/21**
Trainee: Stephen Scheeler, Ph.D.
Identifying Therapeutic Targets using Induced Pluripotent Stem Cell Models of Aging.

USC/Buck Institute Ph.D. Program Thesis Committee/Qualifying Exams
Kirsten Chui, Ph.D. candidate
Jon Levi, Ph.D. candidate
Wang Xiang, Ph.D. candidate
Doyle Lokitiyakul, Ph.D. candidate
Minna Schidt, Ph.D. candidate
Megumi Mori, Ph.D. graduated

Elissa Fultz, Ph.D. candidate
Edward Anderton, Ph.D. candidate
Jiahui Liu, Ph.D. candidate
Serban Ciotlos, Ph.D. candidate
Angelina Holcom, Ph.D. candidate

Currently mentoring two Ph.D. student in our joint Aging Ph.D. program with University of Southern California and one Dominican University graduate student. Five of my master or research associates are accepted to Ph.D. programs at UCB, UCLA, Harvard and University of Notre Dame and University of Texas, A&M.

Current Postdoctoral Scholars
Kenny Wilson, Ph.D.
Tanimul Alam, Ph.D.
Kizito-Tshitoko Tshilenge, Ph.D.
Maria Sanchez, Ph.D.
Long McFarlin, Ph.D.

Mentored Post Bachelor's Degree SENS program
Emily Parlan, B.S.
Daron Yim, B.S.

Research Associates

J) Mentored Summer Interns

Trainee: Pete Lee	06/16/03 – 07/25/03
Trainee: Cassandra Peirano	06/16/03 – 08/08/03
Trainee: Shana Matthews	06/14/04 – 07/30/04
Traineee: Mike Steinbaugh	06/20/04 – 08/27/04
Trainee: Michelle Lee	06/08/05 – 08/05/05
Trainee: Gabriel Ocker	06/22/05 – 07/29/05
Trainee: Leah Tsang	06/22/05 – 08/05/05
Trainee: Stephanie Lynch	06/26/06 – 08/11/06
Trainee: Sophie Ellerby	07/09/07 – 08/01/08
Trainee: Lina Saeed	06/23/08 – 08/31/08
Trainee: Brian Rus	06/22/09 – 07/31/09
Trainee: Ella Saeed	06/22/09 – 07/31/09
Trainee: Justin Zamoyski	06/01/10 – 07/30/10
Trainee: Katherine Pond	07/01/12 – 09/01/12
Trainee: Raymond Ching	07/01/12 – 09/01/12
Trainee: Jeffrey Gu	06/01/18 – 08/01/18
Trainee: Madhav Mathur	06/01/18 – 09/01/18
Trainee: Jennifer Suoja	09/21/17 – 06/01/19
Trainee: Stan Moroz	06/01/18 – 09/01/21
Trainee: Lily Rahnama	06/01/20 – 09/01/20

K) Research Associates who obtained Ph.D.
Amy Lin, Ph.D., Boston University, Scientist Ultragenyx
Jessica Young, Ph.D., University of Washington, now Assistant Professor at UW

L) Pharmaceutical Consultant
BioMarin Pharmaceuticals, 2014-present
Theravance Pharmaceutical, 2014
Asubo Pharmaceuticals, Inc, 2011

K) References

Professor Juan Botas, Baylor College of Medicine
Professor Harry Orr, University of Minnesota
Professor Marie-Francoise Chesselet, UCLA
Professor Leslie Thompson, UCI
Professor Judith Campisi, Buck Institute
Professor Simon Melov, Buck Institute
Professor Christian Neri, INSERN
Professor William Yang, UCLA

Current Laboratory Members: