CHRISTINA COUGHLAN

BSc (Hons), PHD, FCP, SI, NRAEMT

Dept. of Neurology, School of Medicine, UCD, Anschutz Campus

720.232.4478 ccoughla@me.com

QUALIFICATIONS

Nationally registered AEMT and a motivated, highly productive Research Scientist with a PhD in Pharmacology and a career dedicated to volunteering and performing cutting-edge research focused on neurodegenerative diseases. Also a popular and dedicated teaching Professor, with additional proven ability to mentor, advise and coach undergraduate and graduate students to achieve academic excellence. Named Outstanding Professor of 2007 by students at the University of Denver. Has taught as an Adjunct on many campuses and performed research work with internationally recognized experts, including being the scientific granddaughter of Nobel Laureate Randy Schekman. Expert in a wide range of laboratory techniques, has won multiple research grants, published dozens of papers in leading journals and presented significant research results at international conferences. Trained and experienced in Lab Management, and Strategic Intervention. Certified in Basic EKG and IV.

**EDUCATION**

SAINT ANTHONY’S HOSPITAL

***AEMT, EKG and IV Certified,*** 2018

***Nationally Registered Advanced EMT certification pending completion***

ROBBINS-MADANES CENTER

***Strategic Intervention (Certified),*** 2012

***Divorce Prevention (Certified),*** 2012

FERTILITY CARE ALLIED HEALTH EDUCATION. AAFCP approved.

***Fertility Care Practitioner FCP,*** 2008

UNIVERSITY COLLEGE, DUBLIN

***PhD in Pharmacology,*** 1995

***B.Sc. (Honors) in Pharmacology and Toxicology,*** ***Minor: Biochemistry,*** 1990

UNIVERSITY OF DENVER

***HERS Institute Leadership Training for Women in Higher Administration,*** 2008

##### PROFESSIONAL EXPERIENCE

UNIVERSITY OF COLORADO AT DENVER Dec 2017-Present

***Senior Faculty Research Instructor.*** Department of Neurology

Dr. Huntington Potter, Department of Neurology, School of Medicine, UC Denver Anschutz***.***

* Drug screening; therapeutics for Alzheimer’s disease
* Biomarker identification for progression of patients into Alzheimer’s disease
* Research Lab Manager and Project closer

UNIVERSITY OF COLORADO AT DENVER Dec 2015-Dec 2017

***Faculty Research Instructor.*** Department of Neurology

Dr. Huntington Potter, Department of Neurology, School of Medicine, UC Denver Anschutz***.***

* Drug screening; therapeutics for Alzheimer’s disease
* The role of aneuploidy in Neurodegeneration
* Research Lab Manager and Project closer

UNIVERSITY OF COLORADO AT DENVER 2013-2015

***Research Associate.*** Pharmacy and Pharmaceutical Sciences***.***

* The role of environmental toxins and oxidative stress in development of Parkinson’s.
* Leading the development of a project looking at the same factors in Alzheimer’s.
* Trained in new lab members, helped start-up lab for Dr. Roede

UNIVERSITY OF COLORADO AT DENVER 2012-2013

***Faculty Research Instructor*** Cell and Developmental Biology

* Alzheimer’s disease research on amyloid and the role of septins
* Selected for a Cross divisional supergroup (Linda Crnic Institute) focused on

Down’s and Alzheimer’s research

UNIVERSITY OF COLORADO AT DENVER 2011-2012

***Research Associate*** Cell and Developmental Biology

* Trained in new lab members, helped start-up lab for Dr. McMurray
* Performed research pertaining to the role of septins in the development of Alzheimer’s disease

UNIVERSITY OF COLORADO AT DENVER 2009-2014

***Consultant Pharmacologist*** for Dr. Gardiner, Pediatrics, 2010 – 2014

* Assists with research into drugs that could improve cognition in those with Downs Syndrome and possibly affect the Alzheimer’s Disease that many develop later in life.
* Defining mechanism of action for a panel of 1200 related drugs.

***Assistant Clinical Professor*** (20% appointment), Psychiatry Department, 2009-2011

* Co-investigator on an NIH funded Research project investigating the role of alpha 7 in the development of Schizophrenia.

UNIVERSITY OF DENVER, Biological Sciences Department, Colorado 2003-2011

***Assistant Professor, Biology Department***

* Taught undergraduate and graduate courses in cell biology, pharmacological approach to disease, neuropharmacology, laboratory work on molecular biology and ethics in science.
* Led graduate seminars on advanced topics (e.g., protein folding upsets).
* Mentored undergraduate and masters students in development of theses, scientific papers and presentations.

***Affiliate of Eleanor Roosevelt Institute (ERI),*** 2003-2011

* Conducts biomedical and genetic research into neurodegeneration.

***Postdoctoral Research Associate***, 2000-2003

* Studied under Dr. Jeffrey Brodsky.

UNIVERSITY OF PENNSYLVANIA, Dept. of Path. and Lab. Medicine, PA 1997-2000

***Postdoctoral Research Fellow***

* Worked with Dr. Robert Doms in collaboration with Drs. Virginia Lee, Dennis Kolson and Jonathan Raper.
* Among other things I initiated collaborations with Drs. Raper and Kolson. For Dr. Raper the research project I designed became one focus of his lab for a few years

UNIVERSITY OF ZURICH, Switzerland May 1996

***Visiting Research Fellow***

* Studied under Prof. Eric Berger.

UNIVERSITY OF DUNDEE, Dept. of Pharmacology and Clinical Pharm Scotland 1993-1997

***Research Fellow,*** 1995 – 1997; ***Research Assistant,*** 1993 – 1995

* Worked with Dr. Kieran Breen who is now the Director of the Parkinson’s Society in Great Britain

INSTITUTO DE INVESTIGACIONES BIOMEDICAS, Madrid, Spain Sept.-Nov.1993

***Visiting Research Fellow***

* Studied the effects of Nerve Growth Factor on cell lines with Dr. Isabella Varela-Nieto.

**TECHNICALSKILLS**

* Mammalian cell culturing
* Growth and maintenance of yeast and bacterial cultures
* Transfection of mammalian cells
* Establishing stable mammalian cell lines
* Sialyltransferase assays
* Polyacrylamide gel electrophoresis
* Western blotting
* Lectin analysis of glycosylation
* Overexpression of proteins using viral technology
* Elisa assays
* Flow assisted cell sorting (FACS) (with aid of technical staff)
* Site directed mutagenesis
* Peptide generation and purification with Histidine columns
* Thin Layer Chromatography
* PCR
* Seahorse; glycolysis vs respiration measurements
* Confocal
* Tetrad Dissection
* Confocal Microscopy
* Immunofluorescent Imaging
* Mini, midi and maxi preps for DNA (kit and non-kit)
* Histochemistry of human brain slices
* Immunocytochemistry of yeast and mammalian cells
* Transformation of bacteria and

yeast cells

* Sucrose density gradients
* Microsomal preparations
* Mass spectrometry
* Generation of proteins from plasmid DNA templates using transcription-translation kits
* Cloning
* RNA Isolation from tissue and cells
* qRTPCR
* Bioinformatics
* Exosome/Microvesicle Purification and analysis
* *In Vitro* assays for Eg5/kinesin and APOE4

**VOLUNTEER AND OTHER WORK ACTIVITIES**

* Founder of Yes We Can Help, LLC
* Co-Founder and Professional Adviser. Pioneering Friendships. Student Organization on DU’s campus. June 2014-Present
* Trained with Tony Robbins and Cloe Madanes as a Strategic Intervention and Divorce Prevention coach.
* Creighton Model FertilityCare™ System, 2008 – Present
* Completed 13-month training process recognized by the AAFCP.
* Consultant Pharmacologist, Member of Advisory Board of Directors, Grant Writer and Fundraiser, Home Health Care Inc., 2006 – 2011
* Trained as a Sexual Assault Survivor Advocate for on call at DU, 2007 – 2011
* Miracle on 19th Street, Denver, Christmas 2010, 2003
* Program Leader and Advisory Board Member, Christ in the City Program, Denver, 2010
* Volunteer Speaker, ALZHEIMER’S DISEASE SOCIETY (Education of Care Professionals), 2004 – 2009
* Volunteer, Project Homeless Connect at University of Denver, 2007
* Faculty Representative, Oxfam America Hunger Banquet, 2007)
* Tutor, Greater Pittsburgh Literacy Council, 2000-2002
* Member of Self Advocacy Support Team BARNARDO’S, Dundee, Scotland, 1993 – 1997
* Christmas In April, Philadelphia, 2002
* Baby Holder, Transitional Infant Care Home, Pittsburgh, 2001 – 2003, and University of Pennsylvania’s Children’s Hospital, Philadelphia, 1999 – 2000.
* Bi-annual speaker on reproductive pharmacology, 2008 – Present
* Poster Judge for Rocky Mountain Neuroscience Conference, UCHSC, 2007

**PROVISIONAL PATENTS**

\*Modifiers of the amyloid Eg5 inhibition

\*Drugs that inhibit or reverse the amyloid catalysis by ApoE4

\*Others pending filing so currently unable to disclose

**SELECTED AWARDS AND GRANTS**

**GRANTS PENDING:**

**NIH P01**, Immune Dysregulation in Alzheimer’s Disease and Down Syndrome (Role: Instructor)

Total Direct Cost: $7,500,000

**NIH UG3/UH3**, Vascularized cerebral organoid model for efficacy testing in Alzheimer’s disease (Co-Investigator). Total Direct Costs: $3,750,000

**NIH R21AG055878** Preclinical Studies of Small Molecule Inhibitors of ApoE in TgF344-AD Rats (Potter, PI) Role: Co-Investigator. Total Cost: $427,625; To be revised

**Awards:**

OUTSTANDING PROFESSOR OF THE YEARAWARD, ***2007***.

Awarded by the Pioneer Ambassadors, a student organization at DU.

**GRANTS RECEIVED AS PI, Co-PI, Co-Investigator or Consultant**

**Current:**

* **Department of Defense, Invited Application AZ160059** **(Research Instructor)** Neuropathology and Immune Biomarker Discovery in a Rat Model of Alzheimer’s Disease, TgF344-AD, with Single or Repetitive Traumatic Brain Injury(Potter, PI). 2017-2020. Total Direct Cost: $500,000
* **NIEHS RO1 ES027593. January 2017 (Consultant)**. Altered hippocampal neurogenesis and cognition via maneb-mediated changes in the thiol redox proteome. Total costs (direct+indirect): $2,130,754.00

**Past:**

* **R01 Supplement Grant,** **October 2009.** (**Co-Investigator*)*** *******7 Expression in Schizophrenia*($125,000 per year for two years).
* **Nanoscience Award, DU’s Nanocenter. (PI*).*** *Using Dendrimers as a Therapeutic Approach for Alzheimer’s Disease* ($2,800).
* **Professional Research Opportunities for Faculty** **(PROF) Grant,** **2008**. **(PI*)*** Awarded by University of Denver for project entitled *Using Nanoparticles to Prevent and/or Disrupt the Aggregation of Alzheimer’s Causing Proteins* ($15,000).
* **PROF Proposal**, **2007. (PI*).*** *Molecular Studies of Alzheimer’s Disease in Down Syndrome.* Fundedbut withdrawn due to co-PI’s termination ($15,000).
* **PROF Grant** **(PI*)*** for project entitled *Using Yeast as a Model System to Understand Plaque Formation in Alzheimer’s Disease* ($15,000).
* ***Center for Teaching and Learning (CTL) Course Development Award*** **(PI*)*** for description of course that would incorporate co-operative learning as majority of its teaching methods, 2003 ($2,000).
* ***National Science Foundation Grant. Generated preliminary data*** ***and was Co-PI*** on grant for *Acquisition of a ProteomeLab PF2D System for Research and Education*. (Budget Amount $147,080 (NSF Request + DU Cost Share), 2004 – 2007.
* ***Faculty Research Award*** (FRF) **(PI*)*** for project entitled *Amyloid Precursor Protein Processing, a Molecular Dissection in Yeast* ($2,500)
* ***Marsico Grant* (PI)**to enhance Upper Division Experience in Molecular Biology Major ($38,000)
* ***Grant from the Carl M. Williams Institute for Ethics and Values*** **(Co-PI*)*** to teach course entitled *Promoting Ethics in Science Graduate Seminar Series* ($5,000).

**GRANTS AWARDED AS FACULTY PARTNER**

* ***Dennis Barrett distinguished thesis award (2008).*** Elizabeth Curran, for Honors work in lab for thesis entitled*The Stress of Alzheimer’s Disease.*
* ***Preisidanz-Schmid Honors Thesis Scholarship* (**$500) for project entitled *The Effects of Diabetes on Alzheimer’s Disease*
* ***Partnership in Scholarship Award (PINS)*** awarded by University of Denver for projects entitled:
* *The Effects of Diabetes on Alzheimer’s Disease* ($1,500)*.*
* *Collaborative Experiments Studying Alzheimer’s Disease* ($1,500).
* *The Role of the Vacuole in the Processing of Alzheimer’s Proteins* ($3,000).
* *Creating a Down Syndrome Mouse Model Sumo3 and Nrip1* ($1,500).
* *Chaperones and Protein Modifiers in Alzheimer’s Onset* ($2,500).
* *Chaperones and Protein Modifiers in Alzheimer’s Onset* *(*Student fellowship $5,500).
* *Changes in the Shape and Amount of Alzheimer’s Causing Protein Fragments* ($2,500).
* *The effect of Calorie Intake on the Development of Alzheimer’s Disease (AD)* ($2,500).
* *The Role of Amyloid Precursor Protein (APP) Isoforms in the Development of Alzheimer’s Disease* ($1,000).
* *The Degradation of Protein Involved in Alzheimer’s Disease (AD)* ($1,000).
* ***PustMueller Summer Awards*** for project entitled: *Alzheimer’s Proteins – the Shape of Things to Come* ($2,000)*.*
* ***PustMueller Scholarship Award*** awarded by University of Denver for project entitled *Protein Degradation Related to Alzheimer’s Disease-the Complete Story* ($2,000)
* ***Instruction in Data Exploration and Analysis* (IDEA)** Project Grant from Marsico. (~$2,000). Used databases in UDCC-1010 Class.

GRANTS FOR HOME HEALTH

* ***Weckbaugh Foundation.*** Using Telemonitors: the Way Forward to Better In-Home Health Care of the Elderly ($2,000).
* ***Mullin Foundation.*** Better In-Home Health Care of the Elderly ($2,000).

**PUBLICATIONS AND PRESENTATIONS**

*Submitted or in preparation:*

Wang, A., C-Y., **Coughlan, C.M.**, Lucero, E.M., Chial, H.J., Potter, H. (2017) Ab-dependent mechanism of type 3 diabetes in Alzheimer’s disease. *In Preparation for Nature.*

John Galvin, Elizabeth Curran,Francisco Arteaga,Alicia Goossens,Nicki Aubuchon-Endsley, Jeffrey Moore, Kirk Hansen, Michael A. McMurray, Jeffrey L. Brodsky and **Christina M. Coughlan**. (2017). Amyloid production without a proteasome; is it directly involved in pathology? In Revision.

**Ongoing projects nearing completion/submission for publication**

* *Silencing the extra chromosome in Down’s (****with Dr. Potter****)*
* *ASCT1 as a modulator of pesticide toxicity (****with Dr. Roede****)*
* *Regulation of pesticide toxicity through HDAC’s and HAT’s; methylation as a sensor (****with Dr. Roede****)*
* Statins; protective against pesticide toxicity? (***with Dr. Roede***)
* Genes and their role in intellectual disabilities (***Bioinformatics study*** ***with Dr. Gardiner***)

***Accepted for Publication:***

* Caneus. J.,Granic, A., Rademakers, R., Dickson, D.W, **Coughlan, C.M.**, Chial, H.J., Potter, H. **(2017)** Mitotic defects lead to neuronal aneuploidy and apoptosis in frontotemporal lobar degeneration caused by MAPT mutations. [Mol Biol Cell.](https://www.ncbi.nlm.nih.gov/pubmed/?term=coughlan+caneus) 2017 Dec 27. pii: mbc.E17-01-0031. doi: 10.1091/mbc.E17-01-0031.
* Isabel Boersma, M.S; +Jacqueline Jones, Ph.D., R.N., F.A.A.N.; **Christina Coughlan, Ph.D.,** Julie Carter, R.N., M.N., A.N.P., David Bekelman, M.D., M.P.H., Janis Miyasaki, M.Ed., F.R.C.P.C., M.D., Jean Kutner, M.D., M.P.H., Benzi Kluger, M.D., M.S.1\* J. Palliative Medicine. **2017** Sep;20(9):930-938. doi: 10.1089/jpm.2016.0325. Epub 2017 May 18.
* [The burden of trisomy 21 disrupts the proteostasis network in Down syndrome.](https://www.ncbi.nlm.nih.gov/pubmed/28430800) **(2017).** Aivazidis S\*, **Coughlan** **CM**, Rauniyar AK, Jiang H, Liggett LA, Maclean KN, Roede JR. PLoS One. Apr 21;12(4):e0176307. doi: 10.1371/journal.pone.0176307. eCollection 2017.
* [Comparative Proteomic Analysis of Carbonylated Proteins from the Striatum and Cortex of Pesticide-Treated Mice.](https://www.ncbi.nlm.nih.gov/pubmed/26345149)**Coughlan** C, Walker DI, Lohr KM, Richardson JR, Saba LM, Caudle WM, Fritz KS, **Roede** JR. Parkinsons Dis. 2015;2015:812532. doi: 10.1155/2015/812532. Epub 2015 Aug 9.

* [Chronic ethanol consumption induces mitochondrial protein acetylation and oxidative stress in the kidney.](https://www.ncbi.nlm.nih.gov/pubmed/26177469)Harris PS, Roy SR, **Coughlan** C, Orlicky DJ, Liang Y, Shearn CT, Roede JR, Fritz KS. Redox Biol. 2015 Dec;6:33-40. doi:10.1016/j.redox.2015.06.021. Epub 2015 Jul 6.
* Harris, P.S., Roy, S.R., **Coughlan, C.M.,** Roede, J.R., Shearn, C.T. and Fritz, K.S. (2015). Chronic Ethanol consumption induces mitochondrial protein acetylation in the kidney. *Recently accepted for publication in Redox Biology.*
* **Christina Coughlan,** Douglas I. Walker, Kelly Lohr, Jason R. Richardson, W. Michael Caudle, Kristofer Fritz, and James R. Roede. (2015). Comparative proteomic analysis of carbonylated proteins from the striatum and cortex of pesticide treated mice. Recently accepted for *Parkinson’s Disease Special Issue “Oxidative Stress, Inflammation and Neuroprotective Agents”*
* R. Fulstone., **C.M. Coughlan**, J.E. Wiktorowicz, C.S. Lengsfeld. (2012). A micro liter incubator array for understanding culture condition selectivity. *Advances in Bioscience and Biotechnology. 3, 87-91.*
* [Finlay-Schultz J](http://www.ncbi.nlm.nih.gov/pubmed?term=Finlay-Schultz%20J%5BAuthor%5D&cauthor=true&cauthor_uid=21979958), [Canastar A](http://www.ncbi.nlm.nih.gov/pubmed?term=Canastar%20A%5BAuthor%5D&cauthor=true&cauthor_uid=21979958), [Short M](http://www.ncbi.nlm.nih.gov/pubmed?term=Short%20M%5BAuthor%5D&cauthor=true&cauthor_uid=21979958), [El Gazzar M](http://www.ncbi.nlm.nih.gov/pubmed?term=El%20Gazzar%20M%5BAuthor%5D&cauthor=true&cauthor_uid=21979958), [**Coughlan C**](http://www.ncbi.nlm.nih.gov/pubmed?term=Coughlan%20C%5BAuthor%5D&cauthor=true&cauthor_uid=21979958)**,** [Leonard S](http://www.ncbi.nlm.nih.gov/pubmed?term=Leonard%20S%5BAuthor%5D&cauthor=true&cauthor_uid=21979958) (2011). Transcriptional repression of the α7 nicotinic acetylcholine receptor subunit gene (CHRNA7) by activating protein-2α (AP-2α). [*J Biol Chem.*](http://www.ncbi.nlm.nih.gov/pubmed/?term=leonard+coughlan+short) *2011 Dec 9, 286(49):42123-32*
* Domina Falcone, Matthew P. Henderson, Henk Nieuland, **Christina M. Coughlan**, Jeffrey L. Brodsky, David W. Andrews. (2011) The Maintenance and Function of the Sec61 Translocation Complex Depends Upon the Integrity of the Sss1p Tail-Anchor Sequence. *Biochemical Journal. 436(2):291-303.*
* **Coughlan, C.M.** (2008)Book section entitled: “The Incredible Machinery of the Cell.” Book Title: *Scientifica.* Publisher: Millennium House. P. 274-275.
* **Coughlan, C.M.** (2008)Book section entitled: “Proteins,” Book Title: *Scientifica.* Publisher: Millennium House. P. 278-279
* Sparvero, L.J., Patz, S., Brodsky, J.L., and **Coughlan, C.M.** (2007). *Proteomic analysis of the Amyloid Precursor Protein fragment C99: Expression in Yeast.* *Analytical Biochemistry.* Aug; 370:162-170.
* **Coughlan, C.M.** Brodsky JL. (2005). *Use of yeast as a model system to investigate protein conformational diseases.* *Mol Biotechnol.* Jun;30 (2):171-80. (Invited publication).
* **Coughlan, C.M.,** Walker, J., Cochran, J., Wittrup, D. and Brodsky, J.L. (2004). *Degradation of mutated bovine pancreatic trypsin inhibitor (BPTI) in the yeast vacuole suggests post endoplasmic reticulum protein quality control. J.Biol.Chem*. 279(15):15289-15297.
* **Coughlan, C.M.** and Brodsky, J.L. (2003). *The use of yeast as a model system to investigate protein conformational diseases* (2003). *Methods Mol. Biol.* 232:77-90.
* Chalasani. S.H., Baribaud. F., **Coughlan. C.M.,** Lee. V.M.Y., Doms, R.W. and Raper. J.A. (2003). *The chemokine SDF promotes the survival of embryonic retinal ganglion cells*. *J Neurosci.* 23(11):4601-12
* Puffer, B.A., Sharron, M.P., **Coughlan, C.M.,** Baribaud, F., McManus, C.M., Lee. B., David. J., Price. K., Horuk, R., Tsang, M., and Doms, R.W. (2000). *Expression and coreceptor function of APJ for primate immunodeficiency viruses.* *Virology* 276(2):435-444

# Coughlan, C.M., McManus, C.M., Sharron. M., Gao, Z.-Y., Murphy, D., Jaffer, S., Choe, W., Chen, W., Hesselgesser, J., Gaylord, H., Kalyushny, A., Lee, V.M.-Y, Wolf, B., Doms, R., and Kolson, D.L. (2000) *Expression of multiple functional chemokine receptors and MCP-1 chemokine in human neurons. Neuroscience* 97(3): 591-600.

* **Coughlan, C.M**. & Breen, K.C. (2000). *The role of neurotransmitter receptors in the processing and function of the amyloid ß precursor protein - a potential therapeutic target in Alzheimer’s disease? Pharmacology & Therapeutics.* 86(2):111-145.

# Budas, G., Coughlan, C.M., Seckl, J.R. & Breen, K.C. (1999). *The effect of corticosteroids on APP/APLP processing in vivo.* *Neuroscience* *Lett*. 276:61-64.

* McFarlane, I., Georgopoulou, N., **Coughlan, C.M**., Gillian, A.M. & Breen, K.C. (1999). *The subcellular distribution and subsequent processing of the amyloid ß precursor protein is influenced by its glycosylation state*. *Neuroscience*  90, 15-25.
* Breen, K.C**.**, **Coughlan, C.M** &. Hayes, F.D. (1998). *The role of glycoproteins in neural development, function and disease. Molecular Neurobiology*. *Review.* 16: 163-220.
* Maguire,T.M., **Coughlan, C.M**., Seckl, J.R. & Breen, K.C**.**(1998).*The activities of serum sialyltransferase enzymes are differentially regulated by corticosteroids*. *Biochim. Biophys. Acta* 1379, 23-28.
* **Coughlan, C.M**. & Breen, K.C. (1998). *Glucocorticoid induction of a2,6 sialyltransferase activity in a mouse neural cell line.* *J. Neurosci. Res.* 51, 619-626.
* **Coughlan, C.M**., Burger, P.G., Berger, E.G. & Breen, K.C. (1997). *The biochemical consequences of a2,6(N) sialyltransferase induction by dexamethasone in the rat H411e hepatoma cell line*.*FEBS Lett.* 413, 389-393.
* **Coughlan, C.M**., Seckl, J.R. & Breen, K.C. (1996). *The expression of neural cell sialoglycoproteins following glucocorticoid regulation of sialyltransferase activity* *in vivo*. *Cell Mol. Neurobiol.* 16, 433-438.
* **Coughlan, C.M.**, Seckl, J.R., Fox, D.J., Unsworth, R. & Breen, K.C. (1996) *Tissue specific regulation of sialyltransferase activities in the rat by corticosteroids* *in vivo*. *Glycobiology.* 6, 15-22.
* **Coughlan, C.M**. & Breen, K.C. (1995). *The control of sialyltransferase activity in tumor cell lines derived from different tissues is multifactorial.* *FEBS Lett.* 369, 260-262.
* Maguire, T.M., Gillian, A.M., O'Mahony, D., **Coughlan, C.M.,** Dennihan, A. & Breen, K.C. (1994) *A decrease in serum sialyltransferase levels in Alzheimer's disease. Neurobiology of Aging* 15, 99-102.

**Cover Art**

* **Coughlan, C.M.** (2000). *Indirect immunofluoresence of the human neuronal cell line, NT2N, co- stained for the chemokine receptor (CXCR2) and neuronal axons (HO14).* Cover page for Neuroscience. 99(1), Cover Art.
* **Coughlan, C.M.** (1995/1996). *Axonal (GAP43) staining of SKNSH neuronal cells cultured in APP conditioned medium.*  Included in the annual report of the AD Society of Great Britain Annual Report, Cover Art.

**ABSTRACTS AND PRESENTATIONS**

* Aivazidis S.D., Rauniyar, A.K., **Coughlan C.,** Jiang, H., Maclean K.N., and Roede J.R.. The burden of trisomy 21 disrupts the proteostasis network in Down syndrome. “Stress proteins and proteostasis” Gordon Research Conference, Newry, ME. 7/10 – 7/14/17.
* **Coughlan, C.M.**, Chin-Jung Wang, A., Viltz, L.M., Chial, H.J., and Huntington Potter. Screening for Inhibitors of ApoE4-Catalyzed Aβ Oligomer/Filament Formation: A Novel Approach to Alzheimer’s Disease Drug Discovery. Alzheimer's Association International Conference | July 16-20, 2017, London, England.

* Julbert Caneus, J., Granic, A., Rademakers, R., Dickson, D.W., **Coughlan, C.M.**, Chial, H.J., and Potter, H. Abnormal Chromosome Copy Number and Associated Neuronal Cell Death in Frontotemporal Lobar Degeneration. Alzheimer's Association International Conference | July 16-20, 2017, London, England.
* Folate Prevents the Detrimental Effects of Oligomeric Aβ on Insulin Receptor Localization and Function and Long-Term Potentiation. Alzheimer's Association International Conference | July 16-20, 2017, London, England.
* Stefanos Aivazidis, **Christina Coughlan**, Abhishek Rauniyar, Hua Jian, Kenneth Maclean, and James R Roede. Impaired protein quality control as a possible mechanism for early onset Alzheimer’s disease pathology in Down syndrome. Mechanisms of Neurodegeneration, Keystone Symposium. Keystone, CO. June 2016.
* **Christina Coughlan**, Stefanos Aivazidis, and James R Roede. ER stress and toxicant sensitivity in Down syndrome. Mechanisms of Toxicity, Gordon Research Conference. Proctor Academy, NH. August 2015.
* Harris, P.S., Roy, S.R., **Coughlan, C.M.,** Roede, J.R., Shearn, C.T. and Fritz, K.S. Chronic Ethanol consumption induces mitochondrial protein acetylation in the kidney. Society of Free Radical Biology and Medicine. 2014.
* **Coughlan, C.M.,** Pearson, J., Walker, D., Lohr, K., Richardson, J., Caudle, W. M., Fritz, K. and Roede, J. R. Comparative Proteomic Analysis for carbonylated proteins from the striatum and cortex of pesticide treated mice. Society of Toxicology National Meeting. 2014.
* **Coughlan, C.M.** Presentation at Alumni Symposium. Oct. 1, 2011, *Alzheimer’s Disease, The Facts and the Cures.*
* **Coughlan, C.M.** Fundraiser talk to ERI donors on Alzheimer’s disease, February 10, 2010.
* **Coughlan, C.M.** Alum talk on Alzheimer’s disease, October 10, 2009.
* **Coughlan, C.M.** *The use of Dendrimers as a therapeutic approach for Alzheimer’s disease.*Guest lecturer, Dr. Lengsfeld’s Bionanotechnology (ENBI-4800) class. May 7, 2009.
* **Coughlan, C.M.** (2009)*The role of Amyloid in Alzheimer’s.*Invited speaker. University of Northern Colorado, Fort Collins.
* **Christina Coughlan***. Medicare Management and the Elderly*. (2008). An In Service Training Talk for Home Health Care Professionals Inc. (serve as Consultant Pharmacologist.
* L.J. Sparvero., Patz, S., Curran, E., Arteaga, F., Goosens, A., Brodsky, J., and **Coughlan, C.M**. *Processing of Amyloid Precursor Protein (APP): a molecular dissection in yeast.* Presented by Dr. Coughlan at the Protein Folding Conference, Breckenridge, July 2007
* Yng Sun., Parkin, M., Goosens, A., Brockman, B., Kinnamon, J., & **Coughlan, C.M.** *The role of synuclein, tau and APP in the dementia associated with diabetes.* Poster for conference held in Washington, DC at NIH headquarters. Conference addressed funding available for Type II diabetes research. Presented by Dr. Coughlan.
* **Coughlan, C.M.** *Alzheimer’s Disease: The science, therapeutics and my research***.** Presented for School of Pharmacy, Department of Colorado Health Sciences.
* Coughlan, C.M. *Alzheimer’s Disease: What we know and what I am researching.* Presented for Developmental Psychobiology Research group (DPRG) meeting at the University of Colorado Health Sciences Department.
* **Coughlan, C.M.** One of eight invited University Lectures for incoming Freshman in 2004. Presented *Alzheimer’s Disease: The science and the therapeutics*.
* Spavero, L.J., Patz, S., and **Coughlan, C.M.** *The processing and degradation of APP: Amolecular Dissection in Yeast.*Poster presentation by **Dr. Coughlan** at 9th International Conference on Alzheimer’s Disease and Related Disorders, Alzheimers Association, July 17-22, 2004, Philadelphia.
* Sparvero, L.J., Patz, S., and **Coughlan, C.M.** Expert workshop on the Biology of Chromosome 21 genes: Towards the Gene Phenotype Correlation in Downs Syndrome. June 11-14, 2004, Washington, DC.
* **Coughlan, C.M.,** Walker, J.L., Smith, C.M., Cochran, J.C., Wittrup, D., and Brodsky, J.L. *Evidence for post-ER protein quality control: Analysis of BPTI mutants in the yeast secretory pathway.* Poster Presentation at: Science 2002: *Synergy in Science Symposium.* Univ. of Pittsburgh, Sept 18-20,2002.
* **Coughlan, C.M.,** Walker J.L., Smith, C.M., Wittrup, D., and Brodsky, J.L. *Evidence for post-ER protein quality control: Analysis of BPTI mutants in the yeast secretory pathway in* Abstracts of the Molecular Biology of the Cell for 42nd annual meeting, American Society for Cell Biology, San Francisco, CA., Dec 14-18, 2002.
* **Coughlan, C.M.** *Alzheimers Disease: The science and its manifestation*. Invited speaker for professionals at Schenley Gardens Nursing Home, Pittsburgh, PA.
* **Coughlan, C.M.,** Walker J.L., Cochran, J.C., Smith, C.M., Wittrup, D., and Brodsky, J.L. *The vacuole: a second level of quality control in the cell?* Oral presentation at the “Local Traffic Symposium”, Pittsburgh. May 23, 2002.
* **Coughlan, C.M.,** Walker J.L., Cochran, J.C., Smith, C.M., Wittrup, D., and Brodsky, J.L. *Misfolded Forms of the bovine pancreatic trypsin inhibitor (BPTI) escape ERAD but are degraded by the vacuole in yeast Molecular Chaperones and the Heat Shock Response,* Cold Spring Harbor Meeting, May 1-5, 2002.
* **Coughlan, C.M.,** Walker J.L., Cochran, J.C., Smith, C.M., Wittrup, D., and Brodsky, J.L. *Misfolded Forms of the bovine pancreatic trypsin inhibitor (BPTI) escape ERAD but are degraded by the vacuole in yeast* in Late Abstracts of the 41st American Society for Cell Biology Meeting, Washington, DC, Dec. 8-12, 2001.
* **Coughlan CM**, McManus CM , Sharron M, Gao Z-Y, Murphy D, Jaffer S, Choe W, Chen W, Hesselgesser J, Gaylord H, Kalyuzhny A, Lee V M-Y, Wolf B, Doms RW and Kolson DL. *Patterns of Chemokine Receptor Expression in Neurons, HIV and the Nervous System: Emerging Issues,* NIMH/NINDS symposium, Washington, D.C. April, 1999.
* **Coughlan, C.M.,** Seckl, J.R., Unsworth, R., and Breen, K.C. *In vivo regulation of neuralsialyltransferases by corticosteroids in: Abstracts of Glycoconjugates and cellular interactions: roles in neurobiology, inflammation and innate immunity*, GlaxoWellcome, Stevenage, February 5-6, 1996.
* Breen, K.C. and **Coughlan, C.M.** *The control of expression of sialyltransferase activity in tumor cell lines is a multifactorial process* in Abstracts of 15th meeting of the International Society for Neurochemistry, Kyoto, Japan, July 2-7, 1995.
* **Coughlan, C.M.,** Maguire, T.M., Seckl, J.R. and Breen, K.C. *Effect of corticosteroids on sialyltransferase expression* in: Abstracts of International Workshop on *What Steroid Hormones Tell the Brain,* Tenerife, December, 1994.
* **Coughlan, C.M.,** Hayes. F.D., and Breen, K.C. *The effects of neurotoxins on the control of neural cell sialylation state* in Abstracts of the British Toxicology Society Meeting, Edinburgh, September 21-23, 1994.
* **Coughlan, C.M.** and Breen, K.C. *Glucocorticoid inducstion of neural sialytransferase activity* in Abstracts of the 23rd Meeting of the American Society for Neuroscience, Washington, D.C., November 7-12. 1993.
* **Coughlan, C.M.** and Breen, K.C. *Glucocorticoid induction of sialyltransferase activity-a possible role in the modulation of Cell adhesion* in: Abstracts of the Biochemical Society/ Royal Society for Chemistry meeting on Glycoconjugates, Dundee, March 29-31, 1993.
* **Coughlan, C.M.** and Breen, K.C. *The effects of corticosteroids on the adhesivity of a hepatoma cell line* in: Abstracts of the International Symposium on Polysialic acid, Switzerland, August 27,1992.

**Presentations by Students Supervised by Dr. Coughlan**

* Abhinetri Ramaswami and Dr. Christina Coughlan. *Potential Implications of C99 on Apoptosis and Sacharomyces cerevisiae.* Undergraduate Research Symposium, University of Denver. 2010.
* Meara Christian and **Dr. Christina Coughlan***. Reduction of Toxic Protein Fragments in Alzheimer’s disease through the use of Amyloid Specific Dendrimers,* Undergraduate Research Symposium, University of Denver. 2010.
* Galvin, J,M., Gustafson, T. and **Coughlan, C.M.** Poster at theRocky Mountain Neuroscience conference, University of Colorado at Denver, May 2009. *Amyloid dendrimers; detectors and protectors for Alzheimer’s Disease,* May 28th, 2009. Presented by John Galvin.
* Galvin, J.M., Gustafson, T.and **Coughlan, C.M.** Nanoscale Science and Engineering Center First Graduate Symposium. University of Denver. May 26th, 2009. Presented by John Galvin.
* Laura Kaningher, Maria Parkin and **Dr. Christina Coughlan.** *The Increased Risk of Alzheimer’s Disease in Diabetes; the Role of Hyperglycemia.* Biology Summer Partnership in Scholarship (PINS) Symposium, University of Denver Advisor/Partner.
* Maria Parkin, Jonah Scott-McKean, J.C. Kinnamon and **Christina M. Coughlan**. Rocky Mountain Region Neuroscience Group Annual Meeting. May 29th, 2008*. Obesity and Neurodegeneration: The study of Alzheimer’s as a Complication of Type II diabetes.* University of Colorado Health Sciences Center, Denver, Colorado.
* Elizabeth Curran and Dr. Christina Coughlan. *The Stress of Alzheimer’s Disease.* Biology Summer Partnership in Scholarship (PINS) Symposium, University of Denver Advisor/Partner.
* Jenni Buck and **Dr. Christina Coughlan***. Examining the Role of the Vacuole in Synthesizing and Degrading APP Fragments,* Summer Partnership in Scholarship (PINS) Symposium, University of Denver.
* Maria V. Parkin and **Christina M. Coughlan.** *Obesity and Neurodegeneration: The study of Alzheimer’s Disease as a complication of Type II diabetes,* Presented by Maria Parkin at the Rocky Mountain Neurosciences Meeting, University of Colorado Health Sciences, May 2007.
* Abe D’Amato and **Dr. Coughlan, C.M.** *Chaperones and protein modifiers in Alzheimer’s onset.* Summer Partnership in Scholarship (PINS) Symposium, University of Denver.
* Connie Sun and **Dr. Coughlan, C.M*.*** *The effect of calorie intake on the development of Alzheimer’s Disease (AD),* Summer Partnership in Scholarship (PINS) Symposium, University of Denver. Advisor/Partner: **Dr. Coughlan.**
* L.J. Sparvero., Sarah Patz. and **Coughlan, C.M.** *The processing and degradation of Amyloid Precursor Protein (APP)-a molecular dissection in yeast*. A poster presentation by **Dr. Coughlan** at the Molecular mechanisms of Neurodegeneration; a joint Biochemical Society Neuroscience Ireland meeting. Published in Biochemical Society Transactions, Volume 33 (4), August 2005.
* Trinh Nguyen and **Dr. Coughlan**. *The role of Amyloid precursor protein (APP) isoforms in the development of Alzheimer’s Disease.* Summer Partnership in Scholarship (PINS) Symposium, University of Denver.
* Sarah Patz and **Dr. Coughlan**. *The degradation of protein involved in Alzheimer’s Disease (AD).* Summer Partnership in Scholarship (PINS) Symposium, University of Denver.

**COURSE AND CURRICULUM DEVELOPMENT**

ADJUNCT TEACHING

***Pharmacology***

Saint Anthony’s paramedic program **Professor** Spring 2016-Present

***Anatomy and Physiology* Professor** Spring 2013-Present

Saint Anthony’s paramedic program

Anatomy and Physiology**Professor** Spring 2015

***Online for Red Rocks***

***Life Sciences* Professor** Fall 2013-Present

***Anatomy and Physiology***

Red Rocks Community College

***Biochemistry* Professor** August-Dec 2012

Chinese School of Traditional Medicine

***Biochemistry* Professor**June 2011-Present

***Life Sciences***

Johnson and Wales University, Denver

**TEACHING AT UNIVERSITY OF DENVER**

* Concepts in Cell Biology
* Pharmacological Approach To Disease
* First Year Seminar
* Neuropharmacology
* Winter Molecular Lab
* Graduate Journal Club
* Ethics in Science
* Graduate Seminar
* Concepts in Cell Biology

**TEACHING PRIOR TO UNIVERSITY OF DENVER**

* Director. First and Second Cell Biology OutreachPrograms for High School Teachers*,* Howard Hughes Medical Institute, University of Pittsburgh, Summers 2002 and 2003.
* PostDoc Supervisor. Designed and taught rotation projects for two graduate students and one undergraduate, Dept. of Biological Sciences, University of Pittsburgh, Summers 2001 – 2003.
* Professor. Designed, taught and assessed first-year dental biochemistry module entitled*:* Molecular Genetics,Dental School of Medicine University of Pittsburgh, Fall 2001, 2002.
* Lecturer. Designed and taught non-credit course *"*Alzheimers Disease: An Introduction," University of Pittsburgh, Winter 2001.
* Professor. Designed, taught and assessed two team projects for 16 high school students, Governor's School of the Sciences, Carnegie Mellon University, Summer 2001.
* Professor. Designed, taught and assessed online class entitled Biochemistry and Cell Biology, an Introduction, University of Pennsylvania, Spring and Summer 2000.
* Professor. Designed, taught and assessed evening lecture course on Mammalian Molecular Biology, University of Pennsylvania, Autumn 1999.
* Supervised and taught one technical staff member, two PhD students, one MDPhD student and two undergraduates, University College Dublin and University of Pennsylvania, Oct 1990-July 2000
* Teaching Assistant, Department of Pharmacology and Clinical Pharmacology, University of Dundee, Nov 1993 – Mar 1997.
* Helped design, teach and assess second-year medical module in pharmacology entitled: Molecular Basis of Neurodegenerative Diseases, Department of Pharmacology and Clinical Pharmacology, University of Dundee Autumn 1994.

##### COMMITTEE SERVICE

**MASTERS and PhD COMMITTEES**

* Kevin Legg (2011) Protein markers for forensic science
* John Galvin (2011) Amyloid specific dendrimers as detectors and protectors against Alzheimer’s disease
* Christian Westring (2007). Characterization of the Molecular Mechanisms Regulating Hypercorticism in Spawning Pacific Salmon.
* Alana Montaya (2008). Purinergic Receptors in the CV of Rats.
* Jonah Scott McKean (2006). The Mouse Model of Down’s Syndrome, ts65dn, Presents Visual Deficits as Assessed by Pattern Visual Evoked Potentials.
* Stacey M. Thomas (2006). Synaptotagmin-1-LIR Rat Vallate Papillae.
* Laura Syznskie (2006). Understanding the Evolution of Opiod-Coding Genes in Jawless Fish.
* Jessica Costa (2005). In Vivo Analysis of a-MSH Mice.

**DEPARTMENTAL COMMITTEES**

* Honors Committee (Co-Chair)
* Lecturer Search
* BioPhysics Search
* Lab Coordinator Search
* Graduate Student
* Co-Seminar Coordinator
* Seminar Coordinator

**CROSS-DIVISIONAL COMMITTEES**

* Cherrington Scholar Program, University College Dublin (UCD), Ireland, March 2009 – Present

As liaison for this program, I met and communicated our needs with the University College Dublin (UCD) Study Abroad Manager. I also met with all of our Faculty in Natural Sciences and Mathematics before meeting with their Faculty in Math, Physics, Chemistry, Biology, Biochemistry, Geology, Geography and Pharmacology so that we could establish courses to meet the requirements for the DU students.

### OTHER COMMITTEES

* Nanocenter Financial Committee 2005-2011
* Nanocenter Graduate Committee 2005-2011
* Institutional Biosafety Committee (IBC). 2004-2009
* Teaching Task Force 2007
* Research Task Force, 2008

##### PROFESSIONAL ACTIVITIES AND AFFILIATIONS

* Reviewer for Free Radical Biology and Medicine Jan 2015-present
* Reviewer for Canadian Society for Innovation (CFI), 2009 – 2010
* Reviewer for Alzheimer’s Disease Society, 2004 – 2011
* Public Relations Officer, Pharmacology & Toxicology Society, University College Dublin

**CURRENT VOLUNTEER AND WORK ACTIVITIES OUTSIDE THE LAB:**

* NREMT/NRAEMT with Stadium Medical.2016-Ongoing
* Ambassador for Systemic Change from Poverty Cycles 2015-Ongoing
* Started an LLC called “Yes We Can Help”2015-Ongoing
* Life Coach with Robbins-Madanes. 2012-Ongoing
* Creighton Fertility Care Practitioner. 2008-Ongoing
* Adjunct Microbiology Professor. Community College Aurora 2016-Ongoing
* Adjunct Professor. Saint Anthony’s paramedic program. 2014-Ongoing