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Professional Employment

Queen Mary University of London (UK) 2012–present
Senior Research Scientist, Laboratory of Prof. David F Clayton

University of Illinois (Urbana, IL, USA)
Assistant Professor, Dept of Molecular & Integrative Physiology, 2002-2011
Member, Neuroscience Program, 2002-2011
Member, Institute for Genomic Biology, 2004-2011
Research Assistant Professor, Dept of Cell & Structural Biology, 1997-2002
Postdoctoral Associate, Dept of Cell & Structural Biology, 1993-1997

Education

The Rockefeller University (New York, NY), 1988-1993.
Ph.D., Molecular Neurobiology
Thesis: "Analysis of Novel Genes Whose RNAs are Enriched in the HVC-Associated Telencephalon of Songbirds"
Texas A&M University (College Station, TX), 1984-1987.
B.S., *summa cum laude*, Biochemistry

Awards and Honors

- Scientific Advisory Board, National Parkinson Foundation, 2005-2009
- UIUC Incomplete List of Teachers Ranked as Excellent by their Students, 2004, 2005, 2007, 2008, 2009
- James E. Heath Award for Teaching in Physiology, 2008
- Developmental Neurobiology & Psychobiology Training Grant, 1993-6
- Welch Foundation Predoctoral Research Fellowship, 1987
- Texas A&M President's Endowed Scholarship, 1984-1987
- Phi Eta Sigma, 1985
- Mary Moody Northen Scholarship, 1984
- National Merit Finalist, 1984

Community Outreach

- Speaker, Unity Parkinson's Awareness Foundation (2/2010)
- Speaker, Osher Lifelong Learning Institute (9/2009, 11/2009)
- Chair, Brain Awareness Day at Lincoln Square Village (2007), Participant (2009)
- Board of Directors, Campus Middle School for Girls (2004-2007)
- Coach, Science Olympiad, Home Hi Middle School for Girls (2005-2006)

Research Grants

- **Researcher Co-I** (with David Clayton), BBSRC [UK] BB/S003223/1, “Developmental reprogramming following prenatal acoustic signals”, (£637,354) 12/18-11/21
- **PI**, Branfman Family Foundation, “Acrolein-modified alpha-synuclein as a therapeutic target in Parkinson’s disease”, (\$83,282 direct) 12/11-11/12
- **Co-PI** (with Chad Rienstra), NIH R01 GM073770, “Structure of protein aggregates by solid-state NMR” (direct \$263,000) 7/11-6/15 (renewal)
- **PI**, Branfman Family Foundation, “Alpha-synuclein and neuronal energy metabolism as therapeutic targets in Parkinson’s disease”, (\$83,333 direct) 5/10-5/11
- **Co-PI** (with Chad Rienstra), NIH R01 GM073770, “Structure of protein aggregates by solid-state NMR” (direct \$230,000) 1/07-12/11
- **PI**, Branfman Family Foundation, “Alpha-synuclein and neuronal energy metabolism as therapeutic targets in Parkinson’s disease”, (\$99,951 annual direct) 3/07-8/09
- **PI**, Branfman Family Foundation, “Synthetic nanoparticles for delivery of chemotherapeutic agents to the brain” \$119,997 total (\$99,997 direct) 10/05-9/06
- **PI**, NIH 2 RO1 AG13762 (years 4-8), “Molecular function of Synuclein” \$1,490,210 total (\$1,000,000 direct) 8/00-7/05.
- **PI**, Parkinson’s Disease Foundation, “Nanoparticulate delivery of functional protein into neurons” \$40,000 total costs 7/04-6/05
- **PI**, Branfman Family Foundation, “Development of chemotherapeutic strategies for PD: delivery and interactions with alpha-synuclein” (co-investigator Chad Rienstra, UIUC Dept of Chemistry) \$100,871 total (\$84,130 direct) 9/04-8/05
- **PI**, Branfman Family Foundation, “Phage display to identify chemotherapeutic agents for the treatment of Parkinson’s disease” \$360,000 total costs (\$300,000 direct) 9/02-8/05.
- **Co-Investigator** (David Clayton, PI) NIH (NINDS) 1 R01 NS045264, “Songbird Neurogenomics Initiative”, \$1,136,160 total costs (\$237,500 annual direct costs) 1/03-3/06.
- **Co-PI** (with D. Clayton), NIH 1 RO1 AG13762 (years 1-3), “Function of an Alzheimer’s Disease-related protein” \$664,854 total costs 1/97-07/00.

Speaking Invitations

- Nanosymposium: Neuroethology of Auditory Communication, “A distributed neurogenomic response in a songbird to the experience of sound chamber isolation”, Society for Neuroscience Annual Meeting, San Diego CA, November 2016.
- Avian Model Systems, “Social environment alters gene expression networks in auditory forebrain—an analysis using RNAseq”, Cold Spring Harbor Laboratory, New York, February 2014.
- Synuclein in Health and Disease, “Synuclein lipid interactions and pathogenesis” November 11, 2010, San Diego, CA
- Parkinson’s Disease Research Opportunities Meeting, “Cell biology of synucleins”, Institute for Systems Biology, September 7, 2010, Seattle, WA.
- XIV School of Pure and Applied Biophysics (Molecular Mechanisms of Neurodegeneration), “Rogue or Chaperone: Alpha-synuclein toxicity in Parkinson’s

disease”, Venetian Institute of Sciences, Letters and Arts, January 26, 2010, Venice, Italy

- UIUC Translational Biomedical Research Seminar, “Alpha-synuclein as a therapeutic target in Parkinson’s disease”, November 9, 2009
- 6th Leonard Berg Symposium: “Novel Therapies for Protein Misfolding Disorders”, Washington University School of Medicine, September 2007.
- University of North Dakota, Department of Pharmacology, Physiology, and Therapeutics, January 2007.
- University of Illinois at Chicago, Department of Chemistry, April 2006.
- American Society for Neurochemistry Annual Meeting: “Symposium: Alpha-Synuclein’s Function in Brain Physiology” March 11-15, 2006.
- 7th International Conference on Plasma Membrane Redox Systems and their Role in Biological Stress and Disease, Asilomar, CA, April 14-18, 2004.
- American Society for Neurochemistry Annual Meeting: “Symposium: Function and Pathogenesis in Parkinson’s Disease” June 22-26, 2002.
- The Parkinson’s Institute, Sunnyvale, CA, October 7-8, 2002.
- NIA/NINDS workshop (Bethesda): “Biology of Synuclein and Cortical Lewy Bodies Associated with Dementia in AD, LBD and PD” July 16-17, 2001.
- 7th International Conference on Alzheimer’s Disease and Related Disorders, Washington, DC; July 9-13, 2000.
- Banbury Center (Cold Spring Harbor), “Genetics of Parkinson’s Disease”, December, 1997.

Teaching Experience

- University of Illinois Dept of Molecular and Integrative Physiology (Urbana), **Instructor**, MCB 412 “Cellular and Molecular Neurobiology” (2004-2009)
- University of Illinois Dept of Molecular and Integrative Physiology (Urbana), **Instructor**, MCB 493 “Special Topics in Molecular and Cellular Biology” (2004, 2005, 2007, 2008, 2009)
- University of Illinois Dept of Molecular and Integrative Physiology (Urbana), **Instructor**, MCB 509A “Current Topics in Parkinson’s Disease” (2009)
- University of Illinois (Urbana). **Instructor**, Physl 410 “Neurodegenerative Disease” (2004, 2006)
- University of Illinois Dept of Molecular and Integrative Physiology (Urbana), **Instructor**, Physl 301 “Cell & Membrane Physiology” (2002, 2003)
- University of Illinois College of Medicine (Urbana). **Instructor**, “Histology II (M1 curriculum)” (2001)
- University of Illinois (Urbana). **Instructor**, CSB 213 “Cells and Tissues.” (2000)

Editorial and Reviewing Experience

Grant Applications

- Member, Scientific Advisory Board, National Parkinson Foundation (2005-2009)
- Michael J Fox Foundation, Panel on Target Validation (2005-2007)
- Michael J Fox Foundation, Alpha-Synuclein Therapeutics (2010)
- External Referee, Fondazione Cariparo and Fondazione Carimodena (2010)
- Michael J Fox Foundation, Rapid Response Innovation Program (2009, 2011)

- American Institute for Biological Sciences/Dept of Defense (2009)
- Wellcome Trust (2005, 2007, 2009, 2011)
- Earth and Life Sciences Council, Netherlands (2005)
- Ad hoc member, NIH Molecular Cellular and Development Neuroscience, Study Section ZRG1F03B (2005)
- Michael J Fox Foundation, RFA on Protein Aggregation, 2004-2005
- Ad hoc member, NINDS Special Emphasis Panel: "Neurodegenerative Disease Assays for High Throughput Drug Screening and Chemical Genetics", August 6, 2002
- Ad hoc member, NINDS Study Section "NDS-B", October 2002
- Ad hoc member, NIA program project site visit, November 2002
- Israel Science Foundation (2004, 2011, 2012)
- Alzheimer's Association (1999, 2002, 2004, 2007, 2011)
- Department of Veterans Affairs (2002)
- Internationale Stichting Alzheimer Onderzoek (2000)
- National Science Foundation (1997, 1998)
- Motor Neurone Disease Association (1998)
- Fondazione Bubacco (2010)

Journals

- Acta Neuropathologica (2011)
- Biochemistry (2002, 2003, 2005, 2006, 2007, 2008)
- Biomaterials (2011)
- Brain Research (2002)
- Cell Biochemistry and Biophysics (2006)
- European Journal of Biochemistry (1999)
- FASEB (2005)
- Journal of Cell Science (2001)
- Journal of Neuroscience Research (2000, 2006, 2010)
- Journal of Alzheimer's Disease (2010)
- Journal of Biological Chemistry (2001, 2002, 2005, 2006)
- Journal of Molecular Biology (2006)
- Journal of Neurochemistry (1999, 2000, 2002, 2003, 2004, 2005, 2006, 2007, 2008)
- Journal of Neuroscience (1999, 2002, 2003, 2012)
- Journal of Parkinson's Disease (2011)
- Molecular Therapy (2010)
- Nature Neuroscience Reviews (2001)
- Nature Genetics (2001)
- Neurobiology of Disease (2004)
- Neurochemical Research (2006)
- Neuroscience Letters (2005)
- Nonlinearity in Biology and Medicine (2003)
- Oncogene (2004, 2005)
- Pharmacology and Therapeutics (2005)
- Proceedings of the National Academy of Sciences (2004, 2008)
- Trends in Neuroscience (2003)

Supervision of Postdoctoral Research (1)

Perrin, Richard, MD/PhD 2002-2006

currently: Assistant Professor, Pathology and Immunology
Washington University at St. Louis

Supervision of Doctoral Research (3)

Payton, Jacqueline, PhD 2002, MD 2004

Dissertation: "Protein-protein interactions of synuclein: implications for normal function and neurodegenerative disease",
currently: Assistant Professor, Washington University at St. Louis and Medical Director, Molecular Diagnostics Laboratory at Barnes-Jewish Hospital

Hasadsri, Linda, PhD 2008, MD 2012

Dissertation: "Functional Protein Delivery Using Polymeric Nanoparticles: a Novel Therapeutic Approach to Alpha-Synuclein Aggregation and Parkinson's Disease",
currently: Assistant Professor of Laboratory Medicine and Pathology, Mayo Clinic (Rochester)

Yang, Mong-Lin, PhD 2009

Dissertation: "Targeting and Localization of Alpha-Synuclein to the Presynaptic Terminal"
currently: Associate Professor of Biology, Concordia University (St Paul MN)

Supervision of Masters Research (2)

Dwiggins, Maggie, MS 2009

"Localization of endosulfine alpha in the brain and interaction with alpha-synuclein in BE-M17 cells"

Ye, Lu, MD, MS 2006

"Inhibiting Alpha-synuclein Aggregation by Novel Peptides Selected from a Phage Display Library"

Bibliography (H index ~31)

Peer-reviewed Research Articles (40)

George JM, Bell ZW, Condliffe D, Dohrer K, Abaurrea T, Spencer K, Leitao A, Gahr M, Hurd PJ, Clayton DF (2019) Acute social isolation alters neurogenomic state in songbird forebrain. Proceedings of the National Academy of Sciences (USA)
<https://doi.org/10.1073/pnas.1820841116>

- Bell ZW, Lovell P, Mello CV, Yip P, **George JM**, Clayton DF (2019) Urotensin-related gene transcripts mark developmental emergence of the male forebrain vocal control system in songbirds. Scientific Reports 9:816.
- Ysselstein, D., Dehay, B., Costantino, I.M., McCabe, G.P., Frosch, M.P., **George, J.M.**, Bezard, E., and Rochet, J.C. (2017) Endosulfine- α inhibits membrane-induced α -synuclein aggregation and protects against α -synuclein neurotoxicity, Acta Neuropathologica Communications 5:3.
- Chandran, A., Ysselstein, D., Dehay, B., Costantino, I., McCabe, G.P., Frosch, M., **George, J.M.**, Bezard, E., and Rochet, J.-P. (2017) Inhibition of membrane-induced alpha-Synuclein (aSyn) aggregation: A strategy to Interfere with aSyn neurotoxicity in Parkinson's Disease (PD). The FASEB Journal 31:1_supplement, 814.10-814.10
- Tuttle, M.D., Comellas, G., Nieuwkoop, A.J., Covell, D.J., Berthold, D.A., Kloepper, K.D., Courtney, J.M., Kim, J.K., Barclay, A.M., Kendall, A., Wan, W., Stubbs, G., Schwieters, C.D., Lee, V.M.Y., **George, J.M.**, and Rienstra, C.M. (2016) Solid-state NMR structure of a pathogenic fibril of full-length human alpha-synuclein, Nature Structural and Molecular Biology 23:409-415.
- Busch, D.J., Oliphint, P.A., Walsh, R.B., Banks, S.M.L., Woods, W.S., **George, J.M.**, and Morgan, J.R. (2014) Acute increase of a-synuclein inhibits synaptic vesicle recycling evoked during intense stimulation, Molecular Biology of the Cell 25(24), 3926-3941.
- Yang, J.A., Lin, W., Woods, W.S., **George, J.M.**, and Murphy, C.J. (2014) The Journal of Physical Chemistry B 118(13), 3559-3571.
- Yang, J.A., Johnson, B., Wu, S., Woods, W.S., **George, J.M.**, and Murphy, C.J. (2013) Study of wild-type a-synuclein binding and orientation on gold nanoparticles, Langmuir 29(14), 4603-4615.
- Lemkau, L.R., Comellas, G., Lee, S.W., Rikardson, L.K., Woods, W.S., **George, J.M.**, and Rienstra, C.M. (2013) Site-specific perturbations of alpha-synuclein fibril structure by the Parkinson's disease associated mutations A53T and E46K, PLoS One 8 (3), e49750.
- Boassa, D., Berlanga, M., Yang, M.Y., Terada, M., Hu, J., Bushong, E.A., Hwang, M., Masliah, E., **George, J.M.**, and Ellisman, M.H. (2013) Mapping the subcellular distribution of a-synuclein in neurons using genetically encoded probes for correlated light and electron microscopy: implications for Parkinson's disease pathogenesis, Journal of Neuroscience 33(6), 2605-2615.
- Lemkau, L.R., Comellas, G., Kloepper, K.D., Woods, W.S., **George, J.M.**, and Rienstra, C.M. (2012) Mutant protein A30P α -synuclein adopts wild-type fibril structure, despite slower fibrillation kinetics, Journal of Biological Chemistry 287(14), 11526-32.
- Comellas, G., Lemkau, L.R., Zhou, D.H., **George, J.M.**, and Rienstra, C.M. (2012) Structural intermediates during alpha-synuclein fibrillogenesis on phospholipid vesicles, Journal of the American Chemical Society 134, 5090-5099 .
- Comellas, G., Lemkau, L.R., Nieuwkoop, A.J., Kloepper, K.D., Lador, D.T., Ebisu, R., Woods, W.S., Lipton, A.S., **George, J.M.**, and Rienstra, C.M. (2011) Structured regions of α -synuclein fibrils include the early-onset Parkinson's disease mutation sites, Journal of Molecular Biology 411(4), 881-895.

- Yang, M.-L., Hasadsri, L, and **George, J.M.** (2010) Dynamic transport and localization of alpha-synuclein in primary hippocampal neurons, Molecular Neurodegeneration, 5(9).
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- Hasadsri, L, Kreuter, J, Hattori, H, Iwasaki, T, and **George, JM.** (2009) Functional protein delivery into neurons using polymeric nanoparticles Journal of Biological Chemistry, 284(11):6972-6981.
- Clayton, D.F., **George, J.M.**, Mello, C.V. and Siepk, S.M. (2009) Conservation and expression of IQ-domain-containing calpacitin gene products (neuromodulin/ GAP-43, Neurogranin/RC3) in the adult and developing oscine song control system, Developmental Neurobiology, 69(2-3):124-149.
- Boettcher, J.M., Hartman, K.L., Ladrer, D.T., Qi, Z., Woods, W.S., **George, J.M.**, and Rienstra, C.M. (2008) Membrane-induced folding of the cAMP-regulated phosphoprotein endosulfine- α , Biochemistry 47(47), 12357-12364.
- Replogle, K. L., Arnold, A. P., Ball, G. F., Band, M., Bensch, S., Brenowitz, E. A., Dong, S., Drnevich, J., Ferris, M., **George, J. M.**, Gong, G., Hasselquist, D., Hernandez, A. G., Kim, R., Lewin, H. A., Liu, L., Lovell, P. V., Mello, C. V., Naurin, S., Rodriguez-Zas, S., Thimmapuram, J., Wade, J. and Clayton, D. F. (2008) The Songbird Neurogenomics (SoNG) Initiative: community-based tools and strategies for study of brain gene function and evolution. BMC Genomics 9, 131.
- Boettcher J. M., Hartman K. L., Ladrer D. T., Qi Z., Woods W. S., **George J. M.**, Rienstra C. M. (2007) ^1H , ^{13}C and ^{15}N resonance assignment of the cAMP-regulated phosphoprotein endosulfine- α in free and micelle-bound states, Biomolecular NMR Assignments, 1(2), 167-169.
- Woods, W.S., Boettcher, J.M., Zhou, D.H., Kloepper, K.D., Hartman, K.L., Ladrer, D.T., Rienstra, C.M., and **George, J.M.** (2007) Conformation-specific binding of alpha-synuclein to novel protein partners detected by phage display and NMR spectroscopy, Journal of Biological Chemistry 282(47), 34555-34567.
- Kloepper, K.D., Zhou, D.H., Li, Y, Winter, K.A., **George, J.M.**, and Rienstra, C.M. (2007) Temperature-dependent sensitivity enhancement of solid-state NMR spectra of α -synuclein fibrils, Journal of Biomolecular NMR, 39(3), 197-211.
- Kloepper, K.D., Woods, W.S., Winter, K.A., **George, J.M.** and Rienstra, C.M. (2006) Preparation of α -synuclein fibrils for solid-state NMR: Expression, purification, and incubation of wild-type and mutant forms, Protein Expression and Purification 48(1):112-117.
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- Perrin, R.J., Payton, J.E., Barnett, D.H., Wraight, C.L., Woods, W.S., Ye, L., and **George, J.M.** (2003) Epitope mapping and specificity of the anti- α -synuclein monoclonal antibody Syn-1 in mouse brain and cultured cell lines, Neuroscience Letters 349(2):133-135.
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Book Chapters

- George, J.M. (2009) "Synuclein", in Encyclopedia of Cancer, 2nd Edition, Ed. Manfred Schwab, Springer:Heidelberg, p. 2891-2892.
- George, J.M. and Yang, M.L. (2005) Alpha-synuclein physiology and membrane binding, in Molecular Mechanisms in Parkinson's Disease, Eds. Kahle, P. and Haas C., Landes Bioscience.
- George, J.M. and Clayton, D.F. (1996) "The non-amyloid- β component of Alzheimer's Disease plaque amyloid: comparative analysis suggests a normal function as a synaptic plasticizer", in Neurodegenerative Diseases, G. Fiskum, Ed., Plenum Press, New York, pp. 109-112.

Meeting Abstracts

- Smulders, T.V., Gualtieri, F., Armstrong, E.A., Robertson, B.-A., George, J., Cirillo, G., Rathbone, L., Dunn, I.C., Wilson, P.W., D-Eath, R.B., Sandilands, V., Clayton, D.F., and Boswell, T., "Does avian adult hippocampal neurogenesis respond to chronic stress?" JB Johnson Club, November 2016, San Diego CA (poster)
- Bell, Z., George, J., Clayton, D., "Robust male-specific expression of the UTS2B gene emerges early in the development of a zebra finch forebrain vocal control nucleus, Society for Neuroscience Annual Meeting, November 2016, San Diego CA (poster)
- Boassa, D., Berlanga, M., Yang, M.-L., Gaietta, G., Hu, J., Bushong, E., Deerinck, T., Woods, W., Ellisman, M., and George, J.M., Detecting the subcellular distribution of alpha-synuclein in neurons using genetically encoded probes: implications for Parkinson's disease pathogenesis. Society for Neuroscience, 2011.
- Comellas, G., Kloepper, K.D., Nieuwkoop, A.J., Lemkau, L.R., Woods, W.S., George, J.M., and Rienstra, C.M. (2010) Structural studies of alpha-synuclein fibrils by MAS SSNMR. Experimental Nuclear Magnetic Resonance Conference, Daytona Beach, FL.
- Miles, M.S. and George, J.M. (2009) A potential role for synuclein as a cytosolic apolipoprotein. Program No. 238.21. 2009 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2009. Online.
- Blattner, M.S., Hasadsri, L., and George, J.M. (2008) Localization and metabolic effects of BDH2 (type II R-3-hydroxybutyrate dehydrogenase), a novel cytosolic enzyme, in neuroblastoma cells. Program No. 555.7. 2008 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2008. Online.
- Ferris, M.S., George, J.M., Beshers, S. (2007) University of Illinois Brain Awareness Day: sharing brain research with the local community. Program No. 29.15. 2007 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2007. Online.
- George, J.M., Rienstra, C.M., Boettcher, J.M., Zhou, D.H., Kloepper, K.D., Hartman, K.L. Lador, D.P., and Woods, W.S.(2006) Protein interacting partners of helical alpha-synuclein. Program No. 471.8. 2006 Neuroscience Meeting Planner. Atlanta, GA: Society for Neuroscience, 2006. Online.

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- Woods, W.S., George, J.M. (2006) Protein binding interactions of helical alpha-synuclein. Annual Meeting of the American Society for Neurochemistry 96:128-128.
- Hasadsri, L., George, J.M. (2004) Nanoparticulate protein delivery into neuronal cells: a novel therapeutic approach to Parkinson's and other neurodegenerative disease. Program No. 216.14. 2004 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2004. Online.
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- Yang, M., George, J.M. (2004) Role of alpha-synuclein in the modulation of phospholipase D1-dependent exocytosis in PC12 cells. Program No. 559.8. 2004 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2004. Online.
- Ye, L., George, J.M. (2004) Identification of novel peptides that bind selectively to phosphorylated alpha-synuclein. Program No. 559.7. 2004 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2004. Online.
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- Ye, L., Woods, W.S., and George, J.M. (2003) Phage display to identify peptides that interact with C-terminus of alpha-synuclein. Program No. 297.15. 2003 Neuroscience Meeting Planner. New Orleans, LA: Society for Neuroscience, 2003. Online.
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