CURRICULUM VITAE

The Johns Hopkins University School of Medicine

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David Raymond Graham, PhD

DEMOGRAPHIC AND PERSONAL INFORMATION

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Year	Degree	Institution	Discipline
9/90-04/95	B.Sc. (honors) Conferred 06/95	University of Guelph, Guelph, Ontario, Canada	Biomedical and Health Sciences (Biology)
01/96-12/97	M.Sc. (honors) Conferred 06/97	McMaster University, Hamilton, Ontario, Canada	Biology
09/00-5/03	Ph.D. (honors) Conferred 5/04	Johns Hopkins University School of Medicine, Baltimore, MD, USA,	Biochemistry, Cellular and Molecular Biology
03/04-12/06	Sr. Postdoctoral Fellow	Johns Hopkins School of Medicine (Bayview Campus), Baltimore, MD, USA	Cardiology / Proteomics

PROFESSIONAL EXPERIENCE

Dates	Position	Institution
2024–present	President and CEO	Graham Scientific, Germantown, Maryland
2024–present	Unpaid Adjunct Faculty	Johns Hopkins School of Medicine, Baltimore, Maryland
2019–2024	Associate Professor	Johns Hopkins School of Medicine, Department of Anesthesia and Critical Care Medicine
2014–2024	Director, Molecular Determinants Center and Core	All Children’s Hospital, The Johns Hopkins School of Medicine
09/14 - 19	Associate Professor	The Johns Hopkins University School of Medicine, Department of Molecular and Comparative Pathobiology
09/14 - 19	Associate Professor	Department of Medicine, Division of Cardiology (joint appointment)
2012–2014	Executive Director, Center for Resources in Integrative Biology	The Johns Hopkins School of Medicine, The Johns Hopkins Bloomberg School of Public Health
2010–2018	Assistant Professor (Adjunct)	University of Maryland School of Medicine, Department of Psychiatry

Dates	Position	Institution
2007–2017	Assistant Professor	Johns Hopkins University School of Medicine, Department of Molecular and Comparative Pathobiology
2007–2017	Assistant Professor	Department of Medicine, Division of Cardiology (joint appointment)
03/04 - 01/07	Research Associate	The Johns Hopkins University School of Medicine, Department of Medicine, Division of Cardiology
11/04 - 11/05	Research Associate	The Johns Hopkins University School of Medicine, Department of Pharmacology and Molecular Sciences
01/00 – 08/00	Research Associate	SAIC-Frederick, National Cancer Institute at Frederick, AIDS Vaccine Program (see other professional accomplishments)
1998–1999	Sr. Research Technician	SAIC-Frederick, National Cancer Institute at Frederick, AIDS Vaccine Program (see other professional accomplishments)

PERSONAL STATEMENT:

I am a translational scientist with more than 20 years of experience in mass spectrometry, proteomics, metabolomics, lipidomics, bioinformatics and biomarker development. I served for more than 15 years as a principal investigator at the Johns Hopkins School of Medicine and directed the Molecular Determinants Center and Core at Johns Hopkins All Children's Hospital. My work connects analytical method development and complex molecular datasets with clinically meaningful questions in cardiovascular, neurologic, infectious, neonatal and metabolic research.

At Graham Scientific, I combine this research background with privately developed scientific intelligence systems. I have developed SourceTracer for evidence retrieval and traceable synthesis, and JARVIS for governed AI-assisted research workflows. My work integrates custom analysis pipelines, statistical modeling, scientific figures, and manuscript and grant preparation under my scientific oversight. The aim is to preserve the connection between the biological question, source data, analytical decisions and the conclusions reported.

SourceTracer scientific evidence systems
I have developed SourceTracer to support biomedical literature retrieval, targeted open-access full-text retrieval, and scientific synthesis with retained source identifiers and claim-to-source provenance. The workflow distinguishes abstract-level evidence from full-text passages and separates published findings from interpretation.

Custom AI assisted analysis and statistical workflows
I develop and supervise computational workflows that connect assay quality control, molecular feature annotation, metabolomic and proteomic analysis, and clinical metadata. Statistical work includes prespecified comparisons, covariate adjustment, multiple-testing control and sensitivity analysis, with code and analytical outputs retained for review.

Governed research operations and scientific writing
I have developed JARVIS as a private AI-assisted research operations platform supporting literature review, analysis coordination, manuscript and grant development, and evidence-linked revision. Its workflows use explicit task scope, artifact records, review checkpoints and human scientific oversight.

Scientific figures and reproducible reporting
I use FigureSmith and custom analysis pipelines to connect figures and tables to their underlying analytical outputs. Conceptual illustrations are handled separately from data-derived figures and checked against the cited evidence. These capabilities support manuscript preparation, grant applications and research progress reporting.

Human subjects research

My experience includes clinical biospecimen studies, human-subjects investigations and molecular analyses linked to clinical outcomes. At Graham Scientific, I serve as human-protections administrator and signatory official for the company's Federalwide Assurance, FWA00035598.

RESEARCH ACTIVITIES

PUBLICATIONS (*- Equal Contribution; **- Corresponding Author not in Last Position):

Google Scholar metrics (October 7, 2026): h-index 35; i10-index 62; 4,033 citations.

1. Esser MT, **Graham DR**, Coren LV, Trubey CM, Bess JW, Arthur LO, Ott DE and Lifson JD. Differential Incorporation of CD45, CD80 (B7-1), CD86 (B7-2), MHC-I and MHC-II into HIV-1 Virions and Microvesicles: Implications for Viral Pathogenesis and Immune Regulation. J Virol. 2001 Jul;75(13):6173-82, PMID: 11390619.

   Contribution: Developed and performed assays to semi-quantitatively measure host-protein incorporation into virions. Presented the hypothesis that HIV was mimicking cellular signaling and inducing anergy and apoptosis in T-cells. Assisted in design of experiments, interpretation of data and writing the manuscript.

2. Liao Z, **Graham DR**, and Hildreth JE. Lipid rafts and HIV Pathogenesis: Cholesterol is required for Fusion and Infection of Susceptible Cells. AIDS Research and Human Retroviruses, 2003 Aug; 19(8): 675-87, PMID: 13678470.

   Contribution: Developed and performed assays for viral binding. Assisted in design of experiments, data interpretation and manuscript writing.

3. **Graham DR**, Chertova E, Hilburn J, Arthur LO and Hildreth JE, Cholesterol depletion of HIV-1 and SIV with Beta-cyclodextrin inactivates and permeabilizes the virions: Evidence for virion-associated lipid rafts. J Virol. 2003 Aug: 77(15): 8237-48, PMID: 12857892.

   Contribution: Developed hypothesis designed and executed entire study, interpreted data and wrote the manuscript.

4. Mansharamani M, Graham DR, Monie D, Lee KK, Hildreth JE, Siliciano RF and Wilson KL, Barrier-to-autointegration Factor Binds Gag and is a Stable Component of HIV-1 Virions. J Virol. 2003 Dec; 77(24): 13084-92, PMID: 14645565.

   Contribution: Designed and executed all experiments to demonstrate that BAF was incorporated into virions, prepared virus and subtilisin treated virus and interpreted results. Assisted in design of other experiments and writing the manuscript.

5. **Graham DR**, Elliott ST and Van Eyk JE, Broad-Based Proteomic Strategies: A Practical Guide to Proteomics and Disease Screening. J Physiol. 2004 Dec 20, PMID: 15611015.

   Contribution: Designed and wrote article.

6. **Graham DR**, Garnham CP, Fu Q, Robbins J and Van Eyk JE, Improvements in Two-Dimensional Gel Electrophoresis by Utilizing a Low Cost “In-House” Neutral pH SDS-PAGE Electrophoresis System. Proteomics, 2005 Jun;5(9):2309-14), PMID: 15887185.

   Contributions: Generated hypothesis, designed and executed all experiments in the study, interpreted results and wrote the manuscript.

7. Guo Y, Singleton PA, Rowshan A, Gucek M, Cole RN, **Graham DR**, Van Eyk JE and Garcia JG. Quantitative Proteomic Analysis of Endothelial Cell Membrane Rafts: Evidence of MARCKS and MRP Regulation in the Sphingosine 1-phosphate Induced Barrier Enhancement, Mol Cell Proteomics. 2007 Jan 8. PMID: 17210631.

   Contributions: Helped to design all of the experiments involving membrane rafts assisted in interpretation of data and assisted in writing the manuscript.

8. Hardy AW, **Graham DR**, Shearer GM, Herbeuval JP. HIV turns plasmacytoid dendritic cells (pDC) into TRAIL-expressing killer pDC and down-regulates HIV coreceptors by Toll-like receptor 7-induced IFN-alpha. Proc Natl Acad Sci U S A. 2007 Oct 30;104(44):17453-8. PMID: 17956986.

   Contributions: Contributed the hypothesis of virion-associated lipid rafts promoting Toll-Like receptor activation. Generated materials for the study, assisted in interpretation of results and assisted in writing portions of the manuscript.

9. Younes A*****, Lyashkov AE*****, **Graham DR***, Sheydina A, Volkova MV, Mitsak M, Vinogradova TM, Lukyanenko YO, Li Y, Ruknudin AM, Boheler KR, van Eyk J, Lakatta EG. Ca(2+) -stimulated basal adenylyl cyclase activity localization in membrane lipid microdomains of cardiac sinoatrial nodal pacemaker cells. J Biol Chem. 2008 May 23;283(21):14461-8. PMID: 18356168.

   Contributions: Designed and executed experiments for membrane microdomains. Contributed equally with YA and AEL in the design of experiments, interpretation of data and in the writing of the manuscript.

10. Tharakan R, Martens L, Van Eyk JE, **Graham DR**. OMSSAGUI: An open-source user interface component to configure and run the OMSSA search engine.Proteomics. 2008 Jun;8(12):2376-8. PMID: 18563730.

    Contributions: Developed the concepts and designed the framework for the software. Assisted in writing the manuscript and am corresponding author.

11. **Graham DR**, Mitsak MJ, Elliott ST, Chen D, Whelan SA, Hart GW, Van Eyk JE. Two-dimensional gel-based approaches for the assessment of N-Linked and O-GlcNAc glycosylation in human and simian immunodeficiency viruses. Proteomics. 2008 Dec;8(23-24):4919-30. PMID: 19072736

    Contributions: Designed all aspects of the manuscript, oversaw and/or executed data collection, interpreted all data, wrote the manuscript and am corresponding author.

12. Mankowski JL and **Graham DR.** Potential Proteomic-Based Strategies for Understanding Laminitis: Predictions and Pathogenesis. Journal of Equine Veterinary Science. 2008 Aug; 28(8):484-7.

    Contributions: Wrote sections of manuscript on proteomics strategies for laminitis.

13. Witwer KW, Gama L, Li M, Bartizal CM, Queen SE, Varrone JJ, Brice AK, **Graham DR**, Tarwater PM, Mankowski JL, Zink MC, Clements JE. Coordinated regulation of SIV replication and immune responses in the CNS. PLoS One. 2009 Dec 17;4(12):e8129.PMID: 20019816

    Contributions: Assisted in interpretation of data and in writing of the manuscript.

14. Tharakan R, Edwards N, **Graham DR**. Data maximization by multipass analysis of protein mass spectra. Proteomics. 2010 Jan 15. [Epub ahead of print], PMID: 20082346.

    Contributions: Designed concepts of multipass data search, assisted in data interpretation and writing of manuscript.

15. Zink MC, Brice AK, Kelly KM, Queen SE, Gama L, Li M, Adams RJ, Bartizal C, VarroneJ, Rabi SA, **Graham DR**, Tarwater PM, Mankowski JL, Clements JE. SIV-infected macaques treated with highly active antiretroviral therapy (HAART) have reduced CNS virus replication and inflammation but persistence of viral DNA. Journal of Infectious Disease, J Infect Dis. 2010 Jul 1;202(1):161-70.

    Contributions: Assisted in design of experiments, interpretation of data and in writing of manuscript.

16. **Graham DR**, Gama L, Queen SE, Li M, Brice AK, Kelly KM, Mankowski JL, Clements JE, Zink MC. Initiation of HAART during acute simian immunodeficiency virus infection rapidly controls virus replication in the CNS by enhancing immune activity and preserving protective immune responses. J Neurovirol. 2010 Dec 7. [Epub ahead of print]

    Contributions: Assisted in the design of experiments, interpretation of data and in manuscript writing.

17. Clements JE, Gama L, **Graham DR**, Mankowski JL, Zink MC. A simian immunodeficiency virus macaque model of highly active antiretroviral treatment: viral latency in the periphery and the central nervous system. Curr Opin HIV AIDS. 2011 Jan;6(1):37-42.

    Contributions: Assisted in writing of the manuscript.

18. Szeto GL, Pomerantz JL, **Graham DR**, Clements JE, Minocycline suppresses activation of nuclear factor of activated T cells 1 (NFAT1) in human CD4+ T cells. J Biol Chem. 2011 Jan 31. [Epub ahead of print]

    Contributions: Assisted in design of some experiments, interpretation of data and editing of manuscript.

19. Stanley BA*, **Graham DR*,****, James J, Mitsak M, Tarwater PM, Robbins J, Van Eyk JE. Altered myofilament stoichiometry in response to heart failure in a cardioprotective α-myosin heavy chain transgenic rabbit model. Proteomics Clin Appl. 2011 Feb 16. doi: 10.1002/prca.201000116. [Epub ahead of print]

    Contributions: Fully designed all aspects of the manuscript, executed experiments, interpreted data and wrote manuscript. I am the corresponding author for this manuscript.

20. Parish LA, Colquhoun DR, Ubaida Mohien C, Lyashkov AE, **Graham DR**, Dinglasan RR. Ookinete-Interacting Proteins on the Microvillar Surface are Partitioned into Detergent Resistant Membranes of Anopheles gambiae Midguts. J Proteome Res. 2011 Nov 4;10(11):5150-62. Epub 2011 Oct 17.

    Contributions: Contributed hypothesis of lipid rafts being involved in parasite invasion, oversaw data acquisition, participated in data interpretation and writing of the manuscript.

21. Boasso A, Royle CM, Doumazos S, Aquino VN, Biasin M, Piacentini L, Tavano B, Fuchs D, Mazzotta F, Lo Caputo S, Shearer GM, Clerici M, **Graham DR.** Overactivation of plasmacytoid dendritic cells inhibits antiviral T-cell responses: a model for HIV immunopathogenesis. Blood. 2011 Nov 10;118(19):5152-62. Epub 2011 Sep 19.

    Contributions: Contributed hypothesis of virion-associated lipid rafts being responsible for HIV-pathogenesis. Equally designed experiments, oversaw data collection, interpreted data and assisted in writing the manuscript. Note: This manuscript was cited as the top 99% percentile of all articles published in Blood in all time, and 97% percentile of tracked manuscripts (Altmetric).

22. Sébastien Simard C, Mercier S, Bancila A, Lambert A, Graham DR and Gilbert C. Dendritic Cells Pulsed with HIV-1 Release Exosomes that Promote Apoptosis in Cd4+ T Lymphocytes. J Clin Cell Immunol 2011, S7: 001 doi: 10.4172/2155-9899.S7-001

    Contributions: Contributed preliminary mass spectrometry data to the manuscript that identified a protein critical to the manuscript. Assisted in the interpretation of results and assisted in editing the manuscript.

23. Meulendyke KA, Pletnikov MV, Engle EL, Tarwater PM, Graham DR, Zink MC. Early minocycline treatment prevents a decrease in striatal dopamine in an SIV model of HIV-associated neurological disease. J Neuroimmune Pharmacol. 2012 Jun;7(2):454-64. doi: 10.1007/s11481-011-9332-1. Epub 2011 Dec 27. PubMed PMID: 22198699; PubMed Central PMCID: PMC3354017.

    Contributions: Contributed to the design of experiments, interpretation of data and editing the manuscript.

24. Notarangelo FM, Wu HQ, Macherone A, **Graham DR** and Schwarcz R.GC/MS/MS Detection of Extracellular Kynurenine and Related Metabolites in Normal and Lesioned Rat Brain. Analytical Biochemistry. 2012 Feb 15;421 (2):573-81. PMC3274646

    Contributions: Contributed to the design of experiments, oversaw data collection and interpretation and assisted in writing the manuscript.

25. Hartler J, Tharakan R, Köfeler HC, **Graham DR**, Thallinger GG. Bioinformatics tools and challenges in structural analysis of lipidomics MS/MS data. Bioinform. 2012 Jul 3.

    Contributions: Assisted in writing a portion of the manuscript.

26. Hain A, Weltzer RR, Hammond H.; Jayabalasingham B, Dinglasan R, **Graham DR**, Colquhoun DR, Coppens I and Bosch J. Structural characterization and inhibition of the Plasmodium Atg8-Atg3 interaction. J Struct Biol. 2012 Dec;180(3):551-62. doi: 10.1016/j.jsb.2012.09.001. Epub 2012 Sep 13. PubMed PMID: 22982544; PubMed Central PMCID: PMC3496014.

    Contributions: Assisted in data interpretation of mass spectrometry experiments and editing the manuscript.

27. Ubaida Mohien C, Colquhoun DR, Mathias DK, Gibbons JG, Armistead JS, del Carmen-Rodriguez M, Rodriguez MH, Edwards JH, Hartler J, Thallinger GG, **Graham DR**, Martinez-Barnetche J, Rokas A, Dinglasan RR. A Bioinformatics Approach for Integrated Transcriptomic and Proteomic Comparative Analyses of Model and Non-sequenced Anopheline Vectors of Human Malaria Parasites. Mol Cell Proteomics. 2012 Oct 17. PMID: 23082028.

    Contributions: Designed the informatics approach for the manuscript. Oversaw data analysis and assisted in writing the manuscript.

28. Tavano B, Neil SJD, **Graham DR**, Galao RP, Aquino VN, Fuchs D, Boasso A. Immunoglobulin-like transcript 7 (ILT7) but not bone marrow stromal cell antigen 2 (BST2, HM1.24, tetherin, CD317) modulates plasmacytoid dendritic cell function (pDC) in primary human blood leukocytes**.** Journal of Immunology, 2013 Mar 15;190(6):2622-30.

    Contributions: Provided materials and assisted in writing of the manuscript.

29. Linde ME, Colquhoun DR, Ubaida Mohien C, Kole T, Aquino VN, Cotter R, Edwards N, Hildreth JEK, **Graham DR**. The conserved set of host proteins incorporated into HIV-1 virions suggests a common egress pathway in multiple cell types. Journal of Proteome Research. 2013 Feb 22.

    Contributions: Designed all aspects of the project, supervised data collection, interpreted data and assisted in manuscript writing.

30. Nzowa LK; Teponno RB; Tapondjou LA; Verotta L; Liao Z; **Graham D**; Zink MC; Barboni L. Two New Tryptophan Derivatives from the Seed Kernels of Entada rheedei: Effects on Cell Viability and HIV Infectivity. Fitoterapia. 2013 Jun;87:37-42. doi: 10.1016/j.fitote.2013.03.017. Epub 2013 Mar 26. PubMed PMID: 23537889; PubMed Central PMCID: PMC3755262.

    Contributions: Designed experiments testing tryptophan derivatives on HIV infectivity and cell viability. Assisted in writing of the manuscript.

31. Tovar-Y-Romo LB, Kolson DL, Bandaru VV, Drewes JL, Graham DR, Haughey NJ. Adenosine triphosphate released from HIV-infected macrophages regulates glutamatergic tone and dendritic spine density on neurons. J Neuroimmune Pharmacol. 2013 Sep;8(4):998-1009. doi: 10.1007/s11481-013-9471-7. Epub 2013 May 18. PubMed PMID: 23686368; PubMed Central PMCID: PMC3740066.

    Contributions: Designed assays for measurement of glutamate/glutamine, oversaw acquisition of data and assisted in writing of the manuscript.

32. Royle CM, Tsai MH, Tabarrini O, Massari S, **Graham DR**, Aquino VN, Boasso A. Modulation of HIV-1-Induced Activation of Plasmacytoid Dendritic Cells by 6-Desfluoroquinolones. 2014 Apr;30(4):345-54. doi: 10.1089/AID.2013.0154. Epub 2013 Dec 9. PubMed PMID: 24229417; PubMed Central PMCID: PMC3976578.

    Contributions: Provided intellectual input and materials for the study. Assisted in writing of the manuscript.

33. Drewes JL, Szeto G, Engle EL, Liao Z**,** Shearer, GM, Zink MC, **Graham, DR**. Attenuation of pathogenic immune responses during infection with human and simian immunodeficiency virus (HIV/SIV) by the tetracycline derivative minocycline. PLoS One. 2014 Apr 14;9(4):e94375. PMID: 24732038.

    Contributions: Designed experiments, interpreted data and oversaw the project. Assisted in manuscript writing and editing.

34. Kelly KM, Tocchetti CG, Lyashkov A, Tarwater PM, Bedja D, **Graham DR**, Beck SE, Metcalf Pate KA, Queen SE, Adams RJ, Paolocci N, Mankowski JL. CCR5 inhibition prevents cardiac dysfunction in the SIV/macaque model of HIV. J Am Heart Assoc. 2014 Apr 2;3(2):e000874. doi: 10.1161/JAHA.114.000874. PMID: 24695652.

    Contributions: Provided intellectual input into the possible mechanisms of SIV mediated cardiac dysfunction. Helped interpret data, provided material support and assisted in manuscript writing.

35. Meulendyke KA, Ubaida-Mohien C, Drewes JL, Liao Z, Gama L, Witwer KW, **Graham DR**, Zink MC. Elevated Brain Monoamine Oxidase Activity in SIV- and HIV-associated Neurological Disease. J Infect Dis. 2014 May 2. PMID: 24688074.

    Contributions: Assisted in project design, data interpretation and manuscript writing.

36. Bora A, Ubaida-Mohien C. Chaerkady R, Chang L, Moxley R, Sacktor N, Haughey N, McArthur J, Cotter R, Nath A and **Graham DR.** Identification of putative biomarkers for HIV-associated neurocognitive impairment in the CSF of HIV-infected patients under cART therapy determined by mass spectrometry. Journal of Neurovirology, 2014 Oct;20(5):457-465. PMID: 25056907.

    Contributions: Oversaw all aspects of the project after initial data acquisition. Assisted in data analysis, interpretation and in manuscript writing.

37. Kooij V, Venkatraman V, Kirk JA, Ubaida-Mohien C, **Graham DR**, Faber MJ and Van Eyk J. Identification of Cardiac Myofilament Protein Isoforms Using Multiple Mass Spectrometry Based Approaches. Proteomics Clinical Applications, 2014 Aug;8(7-8):578-89. PMID: 24974818.

Contributions: Provided intellectual contributions about how to use advance proteomics software workflows, contributed to data analysis and contributed to manuscript writing.

38. Tao D, Ubaida-Mohien C, Mathias DK, King JG, Pastrana-Mena R, Tripathi A, Goldowitz I, **Graham DR**, Moss E, Marti M, Dinglasan RR. Sex-partitioning of the Plasmodium falciparum Stage V Gametocyte Proteome Provides Insight into falciparum-specific Cell Biology. Mol Cell Proteomics. 2014 Oct;13(10):2705-24. PMID: 25056935.

    Contributions: Assisted in data interpretation and writing of the manuscript.

39. Talman AM, Prieto JH, Marques S, Ubaida-Mohien C, Lawniczak M, Wass MN, Xu T, Frank R, Ecker A, Stanway RS, Krishna S, Sternberg MJ, Christophides GK, **Graham DR**, Dinglasan RR, Yates JR 3rd, Sinden RE.Proteomic analysis of the Plasmodium male gamete reveals the key role for glycolysis in flagellar motility. Malar J. 2014 Aug 13;13:315. PMID: 25124718.

    Contributions: Assisted in data analysis and interpretation and in writing of the manuscript.

40. Royle CM, **Graham DR**, Sharma S, Fuchs D, Boasso A. HIV-1 and HIV-2 differentially mature plasmacytoid dendritic cells into IFN-producing cells or APCs. J Immunol. 2014 Oct 1;193(7):3538-48. PMID: 25156368.

    Contributions: Provided materials, input on study design and in manuscript writing.

41. Meulendyke KA, Queen SE, Engle EL, Shirk EN, Liu J, Steiner JP, Nath A, Tarwater PM, **Graham DR**, Mankowski JL, Zink MC. Combination fluconazole/paroxetine treatment is neuroprotective despite ongoing neuroinflammation and viral replication in an SIV model of HIV neurological disease. J Neurovirol. 2014 Sep 17. PMID: 25227932.

    Contributions: Provided intellectual input on the study design, interpretation of data and participated in manuscript writing.

42. Sacktor N, Miyahara S, Evans S, Schifitto G, Cohen B, Haughey N, Drewes JL, **Graham DR**, Zink MC, Anderson C, Nath A, Pardo CA, McCarthy S, Hosey L, Clifford D; on behalf of the ACTG A5235 team. Impact of minocycline on cerebrospinal fluid markers of oxidative stress, neuronal injury, and inflammation in HIV-seropositive individuals with cognitive impairment. J Neurovirol. 2014 Nov 7. PMID: 25377444.

    Contributions: Provided intellectual input on study design, oversaw acquisition of data, interpreted data and contributed to manuscript writing.

43. Goldenberg N, Everett A, **Graham DR**, Bernard T, and Nowak-Gottl U. Proteomic Biomarker Discovery and Validation in Pediatric Venous Thromboembolism and Arterial Ischemic Stroke: Current State, Unmet Needs, and Future Directions. Proteomics Clin Appl. 2014 Dec;8(11-12):828-36. doi: 10.1002/prca.201400062. Review. PubMed PMID: 25379629.

    Contributions: Provided intellectual input into the manuscript and contributed to writing and editing.

44. Liang Y, Eng WS, Colquhoun DR, Dinglasan RR, **Graham DR**, Mahal LK. Complex N-linked glycans serve as a determinant for exosome/microvesicle cargo recruitment. J Biol Chem. 2014 Nov 21;289(47):32526-37. doi: 10.1074/jbc.M114.606269. Epub 2014 Sep 26. PubMed PMID: 25261472; PubMed Central PMCID: PMC4239607.

    Contributions: Provided intellectual input into the manuscript, oversaw proteomics data acquisition and analysis and contributed to writing and editing.

45. Tharakan R, Tao D, Ubaida-Mohien C, Dinglasan RR, **Graham DR**. Integrated Microfluidic Chip and Online SCX Separation Allows Untargeted Nanoscale Metabolomic and Peptidomic Profiling. J Proteome Res. 2015 Mar 6;14(3):1621-6. doi: 10.1021/pr5011422. Epub 2015 Feb 18. PubMed PMID: 25574574.

Contributions: Designed project, oversaw data acquisition, helped in data interpretation, provided intellectual input into the manuscript and contributed to writing and editing. **Coresponding author.**

46. Drewes JL, Meulendyke KA, Liao Z, Witwer KW, Gama L, Ubaida-Mohien C, Li M, Notarangelo FM, Tarwater PM, Schwarcz R, ***Graham DR**, *Zink MC. Quinolinic acid/tryptophan ratios predict neurological disease in SIV-infected macaques and remain elevated in the brain under cART. J Neurovirol. 2015 Mar 17. [Epub ahead of print] PubMed PMID: 25776527.

    Contributions: Designed project, oversaw data acquisition, helped in data interpretation, provided intellectual input into the manuscript and contributed to writing and editing. ***Equal Contribution.**

47. Colquhoun DR, Lyashkov AE, Mohien CU, Aquino VN, Bullock BT, Dinglasan RR, Agnew B, **Graham DR.** Bio-orthogonal mimetics of palmitoyl-coa and myristoyl-coa and their subsequent isolation by click chemistry and characterization by mass spectrometry reveal novel acylated host-proteins modified by hiv-1 infection. Proteomics. 2015 Apr 25. doi: 10.1002/pmic.201500063. PMID: 25914232

    Contributions: Designed project, oversaw data acquisition, helped in data interpretation, provided intellectual input into the manuscript and contributed to writing and editing. **Coresponding author.**

48. Bradburne C, **Graham D**, Kingston HM and Pamuku M. Overview of 'omics technologies for military occupational health surveillance and medicine. Mil Med. 2015 Oct;180(10 Suppl):34-48. doi: 10.7205/MILMED-D-15-00050. Review. PubMed PMID: 26444891.

    Contributions: Planned and executed framework for manuscript and wrote sections of the manuscript.

49. Shearer GM, Clerici M, **Graham DR**, Boasso A. Curing HIV/AIDS beyond hematopoietic stem cell transplant. AIDS. 2015 Nov;29(17):2364-6. PMID: 26544708

    Contributions: Generated and refined hypothesis generated/edited figures and co-wrote manuscript.

50. Lukyanenko YO, Younes A, Lyashkov AE, Tarasov KV, Riordon DR, Lee J, Sirenko SG, Kobrinsky E, Ziman B, Tarasova YS, Juhaszova M, Sollott SJ, **Graham DR**, Lakatta EG. Ca(2+)/calmodulin-activated phosphodiesterase 1A is highly expressed in rabbit cardiac sinoatrial nodal cells and regulates pacemaker function. J Mol Cell Cardiol. 2016 Sep;98:73-82. doi: 10.1016/j.yjmcc.2016.06.064. Epub 2016 Jun 27. PMID: 27363295

    Contributions: Assisted in design of some experiments, interpretation of data and editing manuscript.

51. Drewes JL, Croteau JD, Shirk EN, Engle EL, Zink MC, **Graham DR.** Distinct Patterns of Tryptophan Maintenance in Tissues during Kynurenine Pathway Activation in Simian Immunodeficiency Virus-Infected Macaques. Front Immunol. 2016 Dec 19;7:605. doi: 10.3389/fimmu.2016.00605. eCollection 2016. PMID: 28066416

    Contributions: Assisted in design, interpretation, oversight and writing/editing of manuscript. **Corresponding author.**

52. Williams M, Zhang Z, Nance E, Drewes D, Lesniak W, Singh S, Chugani C, Rangaramanujam K , **Graham DR**. , Kannan S. Maternal Inflammation Results in Altered Tryptophan Metabolism in Rabbit Placenta and Fetal Brain. Dev Neurosci. 2017;39(5):399-412. doi: 10.1159/000471509. Epub 2017 May 11. PubMed PMID: 28490020; PubMed Central PMCID: PMC6447288.

    Contributions: Interpreted data, participated in manuscript writing and editing.

53. Freeman JD, Rosman LM, Ratcliff JD, Strickland PT, **Graham DR**, Silbergeld EK. State of the Science of Dried Blood Spots. Clin Chem. 2018 Apr;64(4):656-679. doi: 10.1373/clinchem.2017.275966. Epub 2017 Nov 29. Review. PubMed PMID: 29187355.

    Contributions: Participated in design of the manuscript and interpretation and analysis of data interpreting and curating methods tables. Participating in writing and editing of the manuscript.

54. Everett AD, Buckley JP, Ellis G, Yang J**, Graham DR**, Griffiths M, Bembea M, Graham EM. Association of Neurodevelopmental Outcomes With Environmental Exposure to Cyclohexanone During Neonatal Congenital Cardiac Operations. A Secondary Analysis of a Randomized Clinical Trial. JAMA Netw Open. 2020 May 1;3(5):e204070. doi: 10.1001/jamanetworkopen.2020.4070. PubMed PMID: 32374395; PubMed Central PMCID: PMC7203603.

    Contributions: Proposed hypothesis, designed methodology, oversaw data acquisition and interpretation and participated in writing and editing of the manuscript.

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    Contributions: Designed experiments, supervised DD while acquiring data, performed data analysis, co-wrote and provided critical feedback on manuscript

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    Contributions: Assisted in experimental design, oversaw data collection, performed data analysis, performed critical feedback on manuscript.

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    Contributions: Assisted in experimental design, assisted in assay development, performed data analysis, provided critical feedback on manuscript

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    Contributions: Designed experiments, performed data analysis, provided critical feedback and participated in writing the manuscript

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Contributions: Designed experiments, performed data analysis, oversaw data collection, co-wrote manuscript. **Corresponding Author.**

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    Contributions: Participated in experimental design, performed data analysis, provided critical feedback on manuscript.

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    Contributions: Participated in model design oversaw some data collection and provided critical feedback on manuscript.

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    Contributions: Participated in experimental design, supervised data collection, interpreted data, provided critical feedback on manuscript.

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    Contributions: Designed experiments, performed data analysis, co-wrote manuscript and supervised project. Corresponding author.

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    Contributions: Oversaw data collection, interpreted data and provided critical feedback on manuscript.

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    Contributions: Oversaw data collection, interpreted data and provided critical feedback on manuscript.

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10.1152/ajplung.00177.2023. Epub 2023 Oct 3. PubMed PMID: 37786941; PubMed Central PMCID: PMC11068393.

Contributions: Oversaw data collection, interpreted data and provided critical feedback on manuscript.

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    Contributions: Oversaw data collection, interpreted data and provided critical feedback on manuscript.

Recent publications

68. Kuiper JR, Bembea M, Gaynor JW, **Graham D**, Graham EM, Kannan K, Posnack NG, Everett AD, Buckley JP. Exposed and Vulnerable: Sources and Health Implications of Chemical Exposures in Neonatal, Pediatric, and Cardiac Intensive Care Units. Curr Environ Health Rep. 2025; 12(1):11. doi: 10.1007/s40572-025-00477-8. PMID: 39951231. PMCID: PMC12020004.
69. Desiraju S, Zhao E, Kuiper J, Salorio CF, **Graham D**, Buckley JP, Russell MW, Graham EM, Gottlieb Sen D, Ellis G, Gilmore M, Jantzie L, Juul SE, Simkhada K, Everett AD, Bembea MM. Cyclohexanone and metabolites exposure in critically Ill neonates and children. Pediatr Res. 2025; 98(6):2270-2277. doi: 10.1038/s41390-025-04027-8. PMID: 40188215. PMCID: PMC12353214.
70. DeNicola N, Zhang J, Hasenburg A, Schwab R, Gupta K, Decena D, Edna F, **Graham D**, Morris E, Dao B. FIGO committee opinion: Environmental drivers of gynecologic and reproductive health. Int J Gynaecol Obstet. 2025; 171(3):1008-1021. doi: 10.1002/ijgo.70547. PMID: 41001939. PMCID: PMC12640183.
71. DeNicola N, Lasher E, BakenRa A, Joglekar R, Zhang J, Hasenburg A, Gupta K, Decena D, Edna F, **Graham D**, Morris E, Dao B, Woodruff T. FIGO committee opinion: Environmental drivers of obstetric health and early childhood development. Int J Gynaecol Obstet. 2025; 171(3):951-964. doi: 10.1002/ijgo.70549. PMID: 41031523. PMCID: PMC12640175.
72. Wolff N, Triantafyllou M, Ghaemmaghami J, Sanidas G, Byrd CE, Simonti G, Aja S, Roux A, Aziz K, Goldstein E, Zhang J, Everett AD, **Graham D**, Kratimenos P, Koutroulis I, Northington F. Brain metabolomic profiling reveals ischemia-dominant disruption of metabolic pathways and tissue homeostasis in neonatal hypoxic-ischemic brain injury. Sci Rep. 2026; 16(1):22006. doi: 10.1038/s41598-026-51705-6. PMID: 42135394. PMCID: PMC13365387.
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74. Eke AC, Eleje GU, Sani MU, Ezebialu IU, Dankishiya FS, Sodangi IS, Ibrahim IY, Wester CW, Aliyu MH, **Graham DR**. Integrated proteomics and metabolomics for predicting cardiometabolic risk in pregnant women living with HIV: current evidence and future directions. Expert Rev Mol Diagn. 2026:1-18. doi: 10.1080/14737159.2026.2741065. PMID: 42803644.

Preprints

Catherine Demos, Nikhil Padmanabhan, Jermaine Brown, Taron Gorham, Daniel Romero, Rachel Cohen, Jason Abraham, Brian Ngo, Sol Rivera Velez, Allan Barnes, Jun Yang, David Graham, Allen D Everett, Frances Northington, Christopher Campbell, Martin Stengelin, Jacob Wohlstadter, George Sigal. Analytical validation of an ultrasensitive multiplexed immunoassay for blood-based biomarkers GFAP, NF-L and tau. Research square. 2026. doi: 10.21203/rs.3.rs-10616400/v1. PMID: 42687911. Preprint; not peer reviewed.
Dylan W Crawford, Maria Triantafyllou, Nora Wolff, Marc Carlson, Chad Byrd, David R Graham, Panagiotis Kratimenos, Vittorio Gallo, Ioannis Koutroulis. Cross-species biomarkers of cerebellar injury in acute sepsis: integrated metabolomics of mouse cerebellum and plasma identify conserved human plasma biomarkers and therapeutic modulation by human MSC-sEVs. bioRxiv : the preprint server for biology. 2025. doi: 10.1101/2025.06.26.660174. PMID: 40666955. Preprint; not peer reviewed.

Inventions, Patents, Copyrights

2006 Development of Peptide Antibody Depletion (PAD) and its Application to Mass Spectrometry Sample Preparation. **D Graham**, R Gundry, J Van Eyk, Published January 10, 2008 (Pub number WO 2008/005455 A2).

Description: Suppression of ionization by peptides derived by high abundance proteins remains a huge challenge in mass spectrometry and limits the detection of low abundance peptides. Present solutions rely on the depletion of proteins by antibodies. This approach can non-specifically deplete other proteins that interact. This patent protects the discovery that antibodies targeting partially enzymatic digested proteins reduce non-specific interactions and by targeting only peptides that compete for ionization.

2008 A Novel Method for Unambiguous, Quantitative Detection of Full-length Thioredoxin (TRX) and Truncated Thioredoxin (TRX80) from Complex Biological Samples. **D. Graham**, S. Trow, C Zink, Provisional Patent Filed (JHU Ref.: C10475)

Description: Thioredoxin is a major component of the oxido-reductase system. Truncated thioredoxin produced from activated macrophages acts as a pro-inflamatory cytokine. Since this protein is a cleavage product antibody approaches for relative detection and quantitation is problematic. The patent protects a novel sample preparation strategy that produces a novel peptide of thioredoxin that can be either detected by mass spectrometry or ELISA.

2012 ANTI-VIRAL AZIDE-CONTAINING COMPOUNDS. B Agnew, **D Graham**, U Singh, S Gecian WO Patent WO/2012/016,048; US Patent 20,120,027,846.

Description: Membrane microdomains are involved in the fusion process of several viruses. This patent protects the application of bio-orthogonal metabolites containing azide groups that target protein acylation. We have found that the introduction of a dipole-moment in the form of an azide (or other related chemistries) into areas of the membrane with high levels of cholesterol and saturated fatty acids results in the neutralization of infectivity of broad classes of viruses including HIV, influenza and baculovirus. Thus these compounds may represent a new class of broad-spectrum antiviral drugs.

2012 METHODS FOR TREATING OR PREVENTING CARDIAC AND NEUROLOGICAL DISORDERS USING CHEMOKINE RECEPTOR ANTAGONISTS. JL. Mankowski and **D. Graham.** WO/2012/097062. International Application: PCT/US2012/020938.

Description: This patent protects the discovery that cardiomyocytes have the CCR5 receptor just like neurons and many other cell types and that signaling through the CCR5 receptor by S/HIV-1 is pro-inflammatory. We have shown that CCR5 mediated pro-inflammatory signaling can be blocked by Maraviroc, and protect the use of other CCR5 receptor binding inhibitors.

2017 Dried specimen preservation kit and associated algorithm for collection under extreme environmental ranges and long term room temperature storage. Provisional patent filing pending (JHU Ref D14746).

Description: This patent protects the discovery that desiccants can be used to control drying rates of specimens in a manner that preserves sample stability and integrity under a wide range of collection conditions. An associated algorithm calculates amount of desiccant required to achieve the appropriate rate given input of humidity, container volume and sample volume. This method inactivates enzymes and quenches metabolism in a manner that is faster and more stable than other physical methods like freezing.

2021 PCT/US2021/019928 DEVICES AND RELATED ASPECTS FOR COLLECTING AND STORING SAMPLES

Description: This patent covers new design elements and a full manufacturable prototype for large scale studies. Improvements in drying time with kit re-engineering. Provisional patent filing pending (JHU Ref C14746).

2021 Comprehensive Sex Hormone Mass Spectrometry Assay (JHU Ref D16558/C16558)

Description: This invention comprises a comprehensive LCMS/MS panel for virtually all of the sex hormones so that they can be run from a single specimen.

2021 Peri-operative blood metabolites predict cardiac surgery outcomes (JHU Ref D16779/C16779)

Description: This invention is based upon our JAHA study (2022; PMID: 35946448), wherein we have found pre-surgery markers that are predictive of post-surgical outcomes.

2021 Multiplex Mass Spectrometry Assay on a Pentaflouropropyl (PFPP) Stationary Phase. (JHU Ref D16787 C16787)

Description: This invention covers our unique methodology and approaches to run a nearly 400-plex mass spectrometry assay covering broad areas of metabolism and pro-inflammatory metabolites.

2021 Metabolites predict neurodevelopmental outcomes in neonatal encephalopathy. (JHU Ref D16858 / C16858)

Description: This invention is based upon our recent publication under review in Pediatric Research where we have found predictive biomarkers of neonatal encephalopathy in the plasma of patients.

Research funding history

Selected grants and contracts

1R01HL158593-01A1 (Everett & Graham) NIH/NHLBI	06/22-05/26 $729,268 total (~150,000 to DG)	1.2 Calendar

Role of Cyclohexanone Toxicity in Mediating Congenital Cardiac Surgery Outcomes

We propose a new study to determine the role of cyclohexanone, an organic solvent contaminant of medical plastics, in mediating adverse cardiovascular outcomes in neonatal cardiac surgery. We will determine cyclohexanone and its breakdown products effect on test MP and validation U Michigan and CATCH studies morbidity, mortality, and neurodevelopmental outcomes, determine mechanism of toxicity by examining in vitro neural cell and brain slice culture, effects on the blood brain barrier and in vivo on learning and memory and whether exposure can be reduced by CPB circuit manipulation. Reduction of organic solvent exposure from medical plastics offers an opportunity for an immediate and actionable means to improve neonatal cardiac surgical outcomes.
Role: Co-PI

1R01HL155760-01 (Halperin, H, PI) NIH/NHLBI	3/21-2/25 $736,751 total (~$100,000 to DG)	1.2 Calendar

The Hemodynamic and Metabolic Effects of Advanced Circulatory Support for Resuscitation

We are studying the molecular determinants and blood flow requirements for survival from cardiac arrest, and ways of improving resuscitation to increase the number of survivors from cardiac arrest while also increasing the number of organ donors for transplants, the latter who have failed resuscitative efforts.
Role: Co-I

Grants supported through the Molecular Determinants Center

1R01 HD100540 (E Jelin, PI)	9/19-8/24	1.2 Calendar
NIH/NICHD	$703,936 total (~$150,000 DG)	

The Renal Anhydramnios Fetal Therapy (RAFT) Trial

This is a multicenter prospective trial that will assess the safety, feasibility and efficacy of serial amnioinfusions for anhydramnios caused by renal anomalies. Amniotic fluid will be serially measured for protein and lipid biomarkers of lung maturity.
Role: Co-I

1R01DK127222-01 (Bennett)	09/20/20-06/30/24
NIDDK	$704,335 (~$430,000 to MDC)

THE EFFECT OF SEX HORMONES ON CARDIOMETABOLIC OUTCOMES IN MEN AND WOMEN WITH DIABETES: THE LOOK AHEAD (ACTION FOR HEALTH IN DIABETES)

Although women and men have about an equal prevalence of type 2 diabetes (DM), DM imposes a clinically significant excess relative risk of coronary heart disease (44% higher), stroke (27% higher) and vascular dementia (19% higher) in women compared to men. Postulated reasons for the “female disadvantage” include an adverse cardiometabolic profile (particularly greater obesity) and differences in endogenous sex hormones, including estradiol (E2), testosterone (T) and sex hormone binding globulin (SHBG).
Role: Consultant

Completed awards

1U01 NS114144 (C Campbell, PI)	9/19-8/24	0.6 Calendar
NIH/NINDS	$823,266 total (~$60,000 to DG)	

Blood Test to Aid Treatment Decisions for Perinatal Asphyxiation

This is a multicenter validation study to cross-validate the MesoScale Diagnostics test for brain damage.
Role: Co-I

R01 NS106292 (M Bembea, PI)	11/18-10/23	2.0 calendar
NIH/NINDS	$489,000 total (~$180,000 to DG)	

Biomarkers of Brain Injury in Critically-Ill Children on Extracorporeal Membrane Oxygenation (ECMO)

This multi-institution will use a combination of proteomic and metabolic discovery and targeted assays to determine predictors of neurodevelopmental outcome in children on ECMO.
Role: Co-I

5R01MD011746-02 (Hoyo)	08/18/17-05/31/22
NIMHHD	$652,005 (~$25,000 to MDC)

SOCIAL ADVERSITIES, EPIGENETICS, AND THE OBESITY EPIDEMIC

This application is focused on Minority Health and Health Disparities (R01), and the overarching long-term goal of this research effort is to learn how to positively influence health trajectories, modify disease risk in racial/ethnic minorities, and reduce health disparities.

5R01CA196845-03 (Sears) 07/08/16-06/30/21
NCI $862,426 (~$15,000 to MDC)

BIOFILM EPIDEMIOLOGY AND MECHANISMS IN COLON CANCER

Colorectal cancer (CRC) is a public health threat in the United States. We hypothesize that the proximal colon is susceptible to marked changes in bacterial organization that drive carcinogenesis. We will test our hypothesis using experimental approaches applied to a clinical colonoscopy cohort. Our specific aims are: 1) to establish the natural history of colon mucosal biofilm development; and 2) to define bacterial community and host mechanisms by which biofilms contribute to colon carcinogenesis. Our results will provide guidance to development of new tools for the prevention of CRC.

Completed awards

R01 DK108803 (Grams) 6/13/16-3/31/21 .36 calendar
NIH $395,000 (~$9,965 to DG)
Metabolomics and Genomics in African Americans with CKD
Role: Mentor

5K01 DK10778203 (Rebholz) 09/12/16-6/30/21 .25 calendar
NIDDK $154,876 (~$4,152 to DG)

METABOLOMICS FOR IDENTIFYING BIOMARKERS OF DIETARY INTAKE & KIDNEY DISEASE PROGRESSION

Role: Mentor

INNOVATION AWARD (Everett/Graham) 07/19-07/20
Pediatrics $30,000

Role of cyclohexanone metabolites in pediatric kidney disease.

Rothman Grant (Walters, USF) 01/18-12/20
Rothman Founation $100,000

Biomarkers of chromosomal deletions.

5R01DK107726-04 (Pluznick) 12/01/15-11/30/20

NDDK $364,000

UNCOVERING THE FUNCTIONAL ROLE OF OLFR78 IN BLOOD PRESSURE REGULATION

5R01HL128512-03 (Pluznick) 01/16/18-03/31/19

NDDK $405,000

MICROBIAL SHORT CHAIN FATTY ACIDS AND BLOOD PRESSURE REGULATION

1U01HL130048-S1 (Goldenberg (PI)) 10/1/2018 – 06/30/2020

NHLBI $360,250

Kids-DOTT Trial

Johns Hopkins All Children's Hospital Foundation
(Betensky (PI; mentor: Goldenberg)) 2/1/2017 – 1/31/2020
$231,957

iPICS VTE

Use of Comparative Plasma Metabolomics and Lipidomics in the Discovery of Prognostic Biomarkers for Recurrent Venous Thromboembolism (VTE) and Post-Thrombotic Syndrome (PTS) in Children with VTE

5U01DK085689-09 (Coresh) 09/30/09-07/31/20

NIDDK $413,000

CKD BIOMARKER CONSORTIUM-PHASE 2: RISK MARKERS IN BLOOD

5R01CA196845-03 (Sears) 07/08/16-06/30/21

NCI $862,426

BIOFILM EPIDEMIOLOGY AND MECHANISMS IN COLON CANCER

RO1 HL 63038-11 A. Murphy (PI) 4/15-3/31/19
Molecular Physiology of Myocardial Troponin I Variants
GOAL: Study utilizing transgenic and biochemical approaches to dissect physiology of TnI variants.
Role: PI

NIH P50HL2349-01 PI Ho Site PI 4/1/2012-3/31/2017 (NCE for 2017-19)
Using Genetics for Early Phenotyping and Prevention of Hypertrophic Cardiomyopathy (HCMNet) VANISHInterventional trial
GOAL: This is a phase 2 interventional trial to study safety and efficacy of therapy to ameliorate phenotype progression in HCM caused by sarcomere gene mutations.
Role: Site director at Johns Hopkins

NIH T32HL125239-04 PI A. Murphy 7/1/2015-6/30/2020 (renewal submitted)
"Training for Clinician Scientists in Pediatric Critical Cardiopulmonary Disease"
Goal: Train Pediatric Cardiologists and Intensivists in Research
Role: PI

NIH/NHLBI 1R01 HL119664 (J Brown, PI, Dartmouth) 8/14-6/19 0.3 calendar
AD Everett Co-I (Johns Hopkins PI) $465,000
Novel biomarkers to Predict Readmission in Pediatric and Adult Heart Surgery

The overall goal is to examine the predictive value of new biomarkers to predict 30 day readmission or 1 year mortality in adults and children after cardiac surgery. Dr. Everett will perform biomarker assays and provide the congenital heart disease validation cohort.

NIH/NICHD R01HD086058 9/16-8/21 2.16 calendar
AD Everett and FJ Northington, Co-PIs $494,484
Adult biomarkers in neonatal brain injury and development

Determine if circulating levels of brain injury biomarkers are dependent on gestational age and correlate with brain injury imaging (HUS and MRI) and 24 month neurodevelopmental outcomes in premature neonates and neonates with birth related HIE.

NIH/NHLBI 1R01HL135114 (AD Everett, PI) 1/17-12/21 2.4 calendar
Clinical and mechanistic role of HDGF in pulmonary hypertension $483,500

We propose a new study to validate HDGF, a new circulating indicator of PAH severity and survival, in multicenter PAH Cohorts of children and adults and the presence of HDGF genomic variants in IPAH. Finally define the contribution of HDGF to the phenotypic responses of pulmonary vascular cells (PAEC and PASMC) from PAH and normal donors.

- Pays effort of research associate in the MDC for proteomics

Cardiovascular Research and Medical Education Fund (CMREF) 7/17-6/20 0.6 calendar
PI: E Austin (Vanderbilt University), Co-PI AD Everett $130,000
PPHNet BiOspecimen Laboratory Depot (PPHNet-BOLD)

Develop a biorepository for the Pediatric Pulmonary Hypertension Network (PPHNet)

NIH/NICHD R21 HD096389 (M Bembea, PI) 12/18-11/20 0.6 calendar
AD Everett, Co-I $75,000
Leveraging biomarkers of traumatic brain injury in adults to assess pediatric neurocritical illness

Partnering with Mesoscale Discovery, we will determine if a portfolio of brain injury assays will be associated with neurodevelopmental outcomes in ECMO patients

P01 HL107153 (Hart) 7/1/11-5/31/18 2.4 calendar

NIH $1,535,224

Glycoconjugates and Cardiovascular Disease
Extracellular and intracellular glycoconjugates contribute directly to the etiology of atherosclerosis myocardial infarction and heart failure. This PEG brings a group of experts in glycosciences to not only elucidate the roles of glycoconjugates in these disease processes, but also to create a team qualified to lead a world-class training experience to create the next leaders in glycosciences focused on the mission of NHLBI.

R01 MH077542 (Haughey) 8/1/12-5/31/17 .48 calendar

NIH $265,971

Mechanisms of Neuro-Inflammation in HAND
The goal of this application is to better understand the molecular mechanisms by which HIV-1 proteins, and soluble mediators released from HIV infected macrophages regulate neuro-inflammation and further elucidate interactions of the CNS with the immune system that evoke the transmigration of leukocytes into brain parenchyma.

P30 MH075673 (McArthur) 7/1/11-6/30/16 .96 calendar

NIH $1,084,451

Center for Novel Therapeutics for HIV-Associated Cognitive Disorders
Surrogate Markers Core
The aims of the surrogate markers so are (1) to assist in the development, validation and monitoring of surrogate markers for HAND and (2) to provide mentorship and consultation for Neuro-AIDS researchers in the development of clinically useful surrogate markers for HAND and to validate these as associative, predictive markers, and as longitudinal markers of therapeutic effectiveness.

R01 AI118495 (Reynolds) 2/10/15-1/31/18 .24 calendar
University of Wisconsin $4,363
Alloimmunization as a Novel Prophylactic Vaccine for AIDS Viruses
The variability of HIV makes it difficult to develop an effective vaccine by directly targeting the virus. An alternative approach is to focus immune responses against human molecules incorporated into the virus. We will investigate the potential of this approach as an HIV vaccine using a unique NHP model of HIV infection.

R03 MH103985 (Haughey) 5/15/14-3/31/16 .48 calendar

NIH $50,000

Combinational Systems Analyses to Identify Neural Circuits Perturbed by HAND
In this application we propose to better understand the molecular mechanisms that underlie the development of cognitive impairment in HIV infected individuals so that we can identify those at risk for developing cognitive impairments, and develop therapies that target neural systems perturbed in HIV infection.

R01 MH087233 (Zink/Graham) 4/1/10-1/31/15 2.4 calendar

NIH/NIMH $321,512

Minocycline Immune Effects on SIV CNS Disease
The aim of this grant is to determine the action of minocycline in various cell types in vitro, the effect on animals in vivo and determine the degree to which the calcium binding properties of minocycline are responsible for this effect.

P01 MH070306 (Clements) 12/01/09-11/30/14 1.8 calendar

NIH/NIMH $963,045

CNS & Peripheral Viral Reservoirs in an SIV Model of HIV HAART
This is an interdisciplinary program that uses SIV-infected macaques treated with combination antiretroviral therapy to identify CNS and peripheral viral reservoirs in vivo to identify the mechanisms that establish and maintain HIV/SIV latency and/or persistence and contribute to the development of CNS disease.
RO1 MH085554 (Zink, MC) 5/1/09-2/28/14 3.0 calendar

NIH $367,313

IDO Regulation in the SIV Model of HIV CNS Disease
ROLE: Co-Investigator

Project Summary: In this application we are investigating the hypothesis that IDO is a central mechanism for the development of HIV-associated neurological disease, determining the extent and timing of IDO expression in brain and the periphery of SIV-infected macaques, quantitate inducers of IDO expression (IFNγ and virus), identify IDO expressing cells in the CNS and periphery and define the consequences of IDO expression by quantitating

tryptophan, kynurenine, kynurenine metabolites, inflammatory and neurodegeneration markers and viral load. Our model hypothesizes that not only do kynurenine metabolites suppress immune responses in the periphery, but also cross the blood brain barrier resulting in the production of the excitotoxic molecule quinolinic acid and also the depletion of serotonin in the brian.

P20 DA026164 (Cotter, R) 3/1/09-3/31/11 1.2 calendar

NIDA $150,000

Pilot Proteomics Center for HIV-Related Dementia and Drug Abuse
Role: Co-Investigator

Project Summary: The Aims of this grant application was 1) to identify unique proteins in the CSF of SIV/infected macaques from acute through terminal infection and in macaques with or without encephalitis of varying severity, and 2) to determine whether the profile or quantity of proteins identified in Aim 1 vary in relationship to markers of oxidative stress, inflammation, or neurodegeneration in the brain or in relationship to virus replication in the CSF or brain. My role was to provide bioinformatics support.

Life Sciences / Invitrogen (Graham) 7/1/09-12/31/09 1.2 calendar
Invitrogen $50,000
A Three-tier Approach to Assessing Biologically Relevant Post-translational Modifications of Human Immunodeficiency Virus (HIV) using Click-iT® Reagents and Mass Spectrometry
ROLE: Principal Investigator

Project Summary: We proposed to use Invitrogen Click-iT® PTM metabolic labeling reagents to rapidly assess PTMs relevant to HIV or their biological consequences on host cell interactions.

P01HL081427 (Van Eyk / O'Rourke) 8/10/2005-06/30/2010 6 calendar

MITOCHONDRIAL FUNCTION IN ISCHEMIC HEART DISEASE

NHLBI $714, 455

ROLE: Key Personnel

Project Summary: Key personnel of project 3 with the goals to undertake in-depth proteomic analysis to identify protein alteration within the mitochondria with preconditioning and ischemia reperfusion injury. Specifically developing methods to address post-translational modifications.

CONTRACTS:

Completed awards

Inst. Proposal # 21032830 (D Graham) 11/24/20-06/30/21 1.2 Calendar

NASA

COVID-19 Patient Breath VOC Analysis
NASA Ames Research Center (ARC) developed the E-Nose gas-sensing array several years ago. This system is now being adapted to detect Volatile Organic Compounds (VOCs) in human breath that are indicators of COVID-19. In support of this effort, the supplier will perform testing and provide detailed information on the VOCs found in the breath of persons infected with COVID-19.
Role: PI

Southern Research Institute (Goldenberg) (12/01/2020-11/30/2021) 0.6 Calendar
Contract $170,387.17 (~$50,000 to DG)

Chip-scaLe mAss spectRometry for wIdespread cOvid screeNing (CLARION)

This award is to test a new device for Covid screening.

NHLBI-HV-10-05_(2) (J. Van Eyk) 4/2/2010 – 3/31/2016 1.2 calendar

NIH/NHLBI $2, 300, 000.

"The Johns Hopkins Proteomic Innovation Center in Heart Failure"
Role: Co-Principal Investigator Technical Project 4; Co-Investigator Biological Project 1 and Director Bioinformatics Core

Project Summary: This contract is for the development and application of proteomics tools to heart disease. My role in Project 4 of this grant is to develop the use of bio-orthogonal compounds to label glycoproteins and use click chemistries to isolate and identify proteins for whole animal labeling and use in heart failure models. In Biological Project 1 I am investing methods to enrich proteins in caveolin-enriched membrane microdomains to understand better signaling mediated through calcium handling proteins and the interplay between oxidative stress and the activation of guanylyl cyclases. As the Director of the Bioinformatic Core, I oversee the operation of software for proteomics data analysis including advanced informatics pipelines, and as data curator for the modeling core.

NO1-HV-28180(Van-Eyk, Jennifer) 9/30/02-9/29/09 4.6 calendar

NHLBI $1,227,820

National Heart, Lung and Blood Institute Proteomics Initiative
Role: Key personnel

Project Summary: Development of proteomics tools to the study of cardiovascular disease.

UNIPATH (Van-Eyk) 05/01/2006 - 04/30/2008 4.8 calendar

MYOCARDIAL ISCHEMIA BIOMARKER DISCOVERY $1, 017, 043

Principal Investigator: JENNIFER VAN-EYK
ROLE: Key Personnel

Project Summary: Key personnel of proteomic discovery large scale analysis of two human cohorts. Specifically developing software and bioinformatics approaches to managing data.

Varian (Graham) 06/15/2006-06/14/2008 1.2 Calendar
PAD Peptide antibody depletion $20,218
Role: Principal Investigator

Project Summary: Developing proprietary technology for sample clean-up in mass spectrometry based on intellectual property filed by PI.

Research Program Building

09/19-present Implementation of a Preconception to Infancy (P2i) Program in collaboration with The International Federation of Obstetrics and Gynecology (FIGO) and The FORUM institute

Summary: FIGO and the FORUM have solicited me to drive the development of clinical wellness panels supporting Women's and Neonatal Health that are integrated with methods to detect toxics. This research program involves establishing a funding source of dedicated to philanthropy directed to the Johns Hopkins All Children's Research Foundation and directed to the Graham academic laboratory. Both the FIGO board and FORUM board have approved the proposal that is now pending with JHACH leadership. A multi-year global research program is envisioned involving FIGO's member associations including The American College of Obstetrics and Gynecology.

04/15-present Establishment of the Johns Hopkins All Children's Molecular Determinants Core & Center for Resources in Integrative Biology. **Role:** Director

Summary: After being selected by an institutional selection committee in a national job search for the Director of the Molecular Determinants Core at Johns Hopkins All Children's Hospital, I have been actively building a world-class center that will support basic sciences research between JHACH, JHSOM, nationally and internationally, with a path to clinical implementation. Thus the center will be the first of its kind to allow the completion of research from basic sciences to translational research and clinical implementation. The center began operations in the Spring of 2017.

06/12-10/15 Establishment of the Johns Hopkins Center for Resources in Integrative Biology (CRIB – www.jhmicrib.org). Johns Hopkins School of Medicine and Johns Hopkins School of Public Health (multi-school, multi-departmental faculty driven initiative). **Role:** Co-Founder and Executive-Director.

Summary: In January of 2012 I was asked help organize the response to a consignment by Agilent of mass spectrometers, peripherals and software valued at approximately $1.4 million. I drafted a mission and leadership plan for the center, and was unanimously elected the School of Medicine Executive Director in June of 2012 of the newly created "Center for Resources in Integrative Biology (CRIB)." Along with my School of Public Health counterpart Dr. Alan Scott and Gabrielle Ronnett, the Chairperson of the Board (now Dr. Brian O'Rourke), we obtained commitments of >$250,000.00 in renovated laboratory space in the School of Public Health to house the facility, and commitments from Agilent to provide a full time technician to run the center. We negotiated commitments from Agilent to share all of the assays that they have developed on their instrumentation for immediate use in the CRIB. These initiatives have put Johns Hopkins on a path from having a lack of presence in the metabolomics community to having a fully recognized world-class facility in metabolomics and integrative biology.

By early 2013, with leadership from my laboratory, we generated a universal sample preparation protocol compatible with lipidomics, metabolomics and proteomics and have published these protocols on our website (www.jhmicrib.org) in addition to writing an application note for Agilent to assist in dissemination of the information. We have recently exceeded 5000 samples injections and completed multiple sample sets.

In collaboration with the welch medical library, we have assisted in the generation of a portal for bioinformatics (http://infosuite.welch.jhmi.edu/Bioinformatics/) providing most of the content for metabolomics resources.

As of November 2013, our revenues had exceeded our operational expenses, and we were operating in the black.

As of June 2014, I successfully renegotiated a placement of 1.5 million dollars of Agilent instrumentation in the CRIB, and have collected >$80,000 in revenue to fund operations. We acquired our first two instruments in October of 2014

01/04-12/06 January 2004 – December 2006. Johns Hopkins NHLBI Proteomics Initiative. Department of Medicine, Division of Cardiology. Role: Contributor / Co-Principal Investigator.

Summary: As a new Sr. Postdoctoral Fellow/Research Associate in the Van Eyk Laboratory, I helped to develop new techniques in proteomics and new analysis methods. When I eventually obtained my own principal investigator position, I was asked by Dr. Van Eyk to help to re-compete for the NHLBI contract as a co-PI on the projects. I made substantial contributions to the grant application and serve in multiple roles. These contributions helped to secure a second seven year award that has helped to propel Johns Hopkins as one of the world's leading institutes in Proteomics.

Since 2004, I have assisted in obtaining four shared instruments that were placed in the Van Eyk and Cotter laboratories. These instruments have been essential to obtaining subsequent funding and grants.

Leadership / Administrative

01/12-05/12 Molecular and Comparative Pathobiology (MCP) Year in Review and Training Program Site Visit. MCP. Role: Organizer and Emcee.
Summary: This is a bi-annual event held by our Department to showcase our research to the University and invited guests. Additionally this year we concurrently held our site visit for our training program for Veterinary Pathologists and Laboratory Animal Veterinarians. The event was held on May 17 and >100 individuals were in attendance.

09/11-05/12 Molecular and Comparative Pathobiology (MCP) Seminar Series. MCP. Role: Organizer.
Summary: Responsible for organizing the departmental seminar series, inviting and introducing speakers.

09/07-09/08 Molecular and Comparative Pathobiology (MCP) Seminar Series. MCP. Role: Organizer.
Summary: Responsible for organizing the departmental seminar series, inviting and introducing speakers.

EDUCATIONAL ACTIVITIES

Books:

1. **David R.Graham** (editor) and David E. Ott (co-editor). HIV Proteomics: From discovery to clinical application. Springer-Verlag New York. 2016. eBook ISBN 978-1-4939-6542-7. DOI 10.1007/978-1-4939-6542-7. Hardcover ISBN 978-1-4939-6540-3.

Contributions: Designed the book content and chapters, co-wrote chapters, managed contributing authors and provided overall editing and layout for the book. This is the first stand along book in the field of viral proteomics.

Book Chapters:

1. **David R.M. Graham**. HIV and other Viral Screens. In Clinical Proteomics: From Diagnosis to Therapy. Editors: Jennifer Van Eyk and Mike Dunn. Published by Wiley-VCH, 2007 ISBN 352731637X, 9783527316373.
2. M. Christine Zink, Joseph L. Mankowski, **David R. Graham**, Lucio Gama and Janice E. Clements. Simian immunodeficiency Virus. In The Neurology of AIDS, third edition, Chapter 5: Animal Models. Editors: Howard Gendelman, Igor Grant, Ian Everall, Howard Fox, Harris Gelbard, Stuart Lipton and Susan Swindells. Published by Oxford University Press, 2012, ISBN 978-0-19-539934-9.

Journal Special Issues:

1. Cristea I and Graham D. Virology meets Proteomics. Proteomics, 10 June 2015. DOI: 10.1002/pmic.201570103.

Contributions: Co-designed concept for the special issue and managed/edited contributing authors. Issue contained 16 original manuscripts and highlighted the application of proteomics to virology.

Teaching

Date	Course Title	Role	Location

Date	Course Title	Role	Location
01/96-04/96	1A03: Introductory Cellular and Molecular Biology	Laboratory Instructor	McMaster Univeristy
09/96-04/97	3A06: Introduction to Pharmacology	Teacher's Assistant	McMaster University
01/97-04/97	HLTH SCI 3I03: Introductory Immunology	Teacher's Assistant	McMaster University
12/09	ME 330.80: Role of Chromatography and Mass Spectrometry in Biological Research. Lecture Title: "Targeted Proteomics."	Instructor	JHU
12/10	ME 330.80: Role of Chromatography and Mass Spectrometry in Biological Research. Lecture title: "Targeted Proteomics and Bioinformatics."	Instructor	JHU
09/11	ME:680.707: Experimental Design and Scientific Writing. Lecture Title: "Idealism vs. Reality: How to survive."	Instructor	JHU
09/12	ME:780.309: Fundementals of Glycobiology. Lecture title: Glycoproteomics (roundtable).	Instructor	JHU
10/13	ME: 340.710: Techniques in Glycobiology. Lecture title: MS analysis of Glycans/Glycoproteins (90 minute lecture).	Instructuor	JHU
10/13	ME: 340.710: Techniques in Glycobiology. Lab title: Glycan site mapping (3 hour computer lab).	Instructor	JHU
10/13	ME: 340.710: Techniques in Glycobiology. Lab title: Analysis of glycolipids. (3 hour wet lab).	Instructor	JHU
10/13	ME: 340.710: Techniques in Glycobiology. Lab title: MS Theory (3 hour computer lab).	Instructor	JHU
04/15	Mass Spectrometry in an "Omics" World. ME.330.804	Instructor	JHU
04/22	Mass Spectrometry in an "Omics" World. ME.330.804	Instructor	JHU
04/23	Mass Spectrometry in an "Omics" World. ME.330.804	Instructor	JHU

Mentoring

While a senior PDF/Research associate in the Van Eyk Laboratory (04-06) I actively participated in the mentoring of graduate students by participation in group meetings and with substantial involvement in mentoring of projects. In the Retrovirus Laboratory (07-present), we have an open mentoring model where the PIs have joint graduate student meetings, weekly group meetings and journal clubs. We routinely cross-advise students and take an active role in mentoring each other's students. I therefore have indicated my role as "mentor" for these students where I have taken an active mentoring role versus the title "thesis advisor" for my own graduate students.

Graduate Training Programs:

Dates	Program	Role
01/07-Present	Art as Applied to Medicine	Faculty Advisor
01/07-Present	Molecular and Comparative Pathobiology. Training grant title: Training Veterinarians for Careers in Biomedical Research (hopkinsmedicine.org/mcp/Education/postdoctoral_training.html).	Faculty Advisor

Dates	Program	Role
06/12-Present	Cellular and Molecular Medicine (cmm.jhu.edu).	Member

Graduate Students:

Note: Mentor denotes participating in advising student on a regular basis in collaboration with the student's thesis advisor. Thesis advisor denotes active oversight and primary responsibility for the student.

Completed:

Dates	Name	Program	Completed	Role
01/04-12/06	Christina Yung	Biological Chemistry, JHU	05/07	Mentor
11/06-08/07	Christine Helke	Pathobiology, JHU	05/07	Mentor
01/04-12/06	Geoffrey Hesketh	Biological Chemistry, JHU	05/09	Mentor
01/04-12/06	Lesley Kane	Biological Chemistry, JHU	05/10	Mentor
01/04-12/06	Christopher Murray	Biological Chemistry, JHU	05/11	Mentor
01/04-12/06	Brian Stanley	Biochemistry, Queens University, Canada	05/10	Mentor
01/07-05/09	Angela Brice	Cellular and Molecular Medicine	05/09	Mentor
01/07-05/10	Greg Szeto	Cellular and Molecular Medicine	05/10	Mentor
01/07-05/10	Juliene Co	Biochemistry, Cellular and Molecular Biology	05/10	Mentor
01/07-05/10	Susan Trow	Cellular and Molecular Medicine	05/10	Mentor
01/07-05/11	Kelly Meulendyke	Cellular and Molecular Medicine	05/11	Mentor
01/07-05/12	Katie Kelley	Pathobiology	05/12	Mentor
01/07-05/13	Kelly Pate	Cellular and Molecular Medicine	05/13	Mentor
01/07-05/15	Julia Drewes	Cellular and Molecular Medicine	05/15	Co-Advisor
08/12-03/15	Ravi Tharakan	Cellular and Molecular Medicine	05/18	Former Thesis Advisor
08/12-03/16	Josh Croteau	Cellular and Molecular Medicine	05/16	Mentor
01/15-12/18	Jeffrey Freeman	Environmental and Health Sciences (JHSPH)	Co-Thesis advisor (Primary Ellen Silbergeld)	

Rotation Students:

Dates	Name	Program	Role
09/12-12/12	Katherine Bruner	Cellular and Molecular Medicine	Rotation Advisor
01/13-04/13	Kyle Bruner	Cellular and Molecular Medicine	Rotation Advisor

Post-Doctoral Fellow Trainees

Dates	Name	Department	Project	Role
09/19 (start)	Dr. Sol Riviera	Pediatrics	Role of Mother's own Milk in the Protection of Pre-Term Neonates	Primary Mentor.

Completed:

Date	Name	Department	Project	Role
09/16-09/17	Dr. Aurelie Roux	Pediatrics	Development of protocols for metabolomics assay development.	Primary Mentor with Allen Everett as secondary mentor
01/09-12-11	Dr. Ceereena Ubaida-Mohien	Molecular and Comparative Pathobiology	Bioinformatics of complex systems	Primary mentor
01/13-12/15	Dr. Adriana Bora	Molecular and Comparative Pathobiology	Proteomics of HIV Associated Neurological Disease	Primary mentor
1/13-12/14	Dr. Hung Trinh	Molecular and Comparative Pathobiology	Malaria gut invasion	Secondary Mentor with Rhoel Dinglasan
01/12-01/14	Dr. Anne Blackwell	Agilent Technologies	Metabolomics assay development	Primary mentor
01/13-12/15	Dr. Isabel Martinez	Molecular and Comparative Pathobiology	Proteomic markers of CD4 Chronic and Acute infection	Primary mentor
01/16-12/16	Dr. Julia Drewes	Molecular and Comparative Pathobiology	SIV associated neurological disease and kynurenine pathway	Co-mentor with Chris Zink

K-award Mentees and Junior Faculty

Dates	Name	Program	Project	Role
04/17-05/20	Dr. Mitsi Go	Maternal, Fetal and Neonatal Institute	Role of Mother's Own Milk in Respiratory Outcomes	Co-Mentor with Dr. Parimi
04/15-09/19	Dr. Mela Bembea (K-awardee and R01 recipient)	Anesthesia and Critical Care Medicine	Role of ECMO in Patient Outcomes	Co-Mentor with Allen Everett
04/15-04/19	Dr. Liz Tucker (K-awardee and Young Scientist Awardee)	Anesthesia and Critical Care Medicine	Tuberculosis and Neurological Disease	Co-Mentor with Sujatha Kannan

Dates	Name	Program	Project	Role
04/15-04/19	Dr. Monica Williams	Anaesthesia and Critical Care Medicine	Effect of birth injury on kynurenine pathway	Co-Mentor with Sujatha Kannan
04/13-2021	Dr. Morgan Grams (K-awardee)	Epidemiology and Population Medicine	Metabolomics and Genomics in Kids with Chronic Kidney Disease	Mentor with Joe Coresh
04/13-2021	Dr. Casey Rebholz (K-awardee and R21 recipient)	Epidemiology and Population Medicine	Metabolomics of Dietary Intake and Chronic Kidney Disease Progression	Mentor with Joe Coresh
04/18-present	Dr. Tony Sochet (ACRI grant awardee)	Pediatrics	Prediction of Disease from Exhaled Breath Condensate	Mentorship team member
04/17-04/19	Dr. Marisol Betensky	Pediatrics	Biomarkers of Thrombosis	Mentorship team member

Completed:

Date	Name	Department	Project	Role
01/16-12/18	Giulio Agnetti (AHA Grant awardee)	Cardiology	Role of Desmin in Heart Failure	Mentor

Graduate Board Activities:

Oral Qualifying Examinations

Date	Name	Program
05/08	Christine Jelinek	Pharmacology and Molecular Sciences
03/08	Catherine Stamper	Pharmacology and Molecular Sciences
12/09	Kathleen Breenan	Cellular and Molecular Medicine
02/12	Hea Seung Sophia Chung	Biological Chemistry
11/12	Joshua Croteau	Cellular and Molecular Medicine
11/12	David Chu	Cellular and Molecular Medicine
11/12	Lisa Mangus	Cellular and Molecular Medicine

Thesis Reader

Date	Name	Program/Degree	Thesis Name
05/07	Christina Yung	Biomedical Engineering, Ph.D.	Transcriptome and Proteome Analysis of Heart Failure

Date	Name	Program/Degree	Thesis Name
05/09	Ashley Beasley	Pharmacology and Molecular Sciences, Ph.D.	Identification and characterization of 3-nitrotyrosine modified proteins in cerebrospinal fluid.
05/09	Jean-Marc Guedon	Molecular Microbiology and Immunology, M.Sc.	Extending the Cytoplasmic Tail of the Influenza M2 protein with Multiple FLAG Epitope Tags
05/10	Angela Brice	Cellular and Molecular Medicine, Ph.D.	Anti-inflammatory mechanisms of minocycline: Suppression of T cell proliferation, activation and cell cycle progression.
05/10	Greg Szeto	Cellular and Molecular Medicine, Ph.D.	The Immunomodulatory and anti-HIV effects of minocycline in human CD4+ T cells.
05/11	Kelly Meulendyke	Cellular and Molecular Medicine, Ph.D.	Dopaminergic System Dysfunction in an SIV Model of HIV-Associated CNS Disease.
05/12	Juliette Jardim	Molecular Microbiology and Immunology, Johns Hopkins School of Public Health, M.Sc.	A Novel Protein Present in Detergent Resistant Membranes of the *Anopheles gambiae* Mosquito Midgut Plays a Role in *Plasmodium falciparum* Ookinete Midgut Invasion
05/12	Apoorva Sharan	Molecular Microbiology and Immunology, Johns Hopkins School of Public Health, M.Sc.	Interaction of adenoviral E4 11k protein with DDX6
04/13	Julia Drewes	Cellular and Molecular Medicine, Ph.D.	Immunosuppression and Neurotoxicity: How IDO Contributes to Pathogenesis of SIV
11/16	Josh Croteau	Cellular and Molecular Medicine, Ph.D.	Immunological Enteropathy in an Accelerated Macaque Model of AIDS

ORGANIZATIONAL ACTIVITIES

Institutional Administrative Appointments

Dates	Description	Role
05/03/12; 05/17/12 and 06/26/12	**Strategic research subcommittee meeting.** T1 Early Translational. The goal of this subcommittee was to provide recommendation to the Vice Deans, Drs. Dan Ford and Landon King to present to the Dean, Dr. Paul Rothman in a final report regarding positioning ourselves to be better equipped to translate basic science discoveries into the early phases of translational science.	Committee Member
~10 meetings between 04/01/14-07/31/14	**JHU Procurement Committee Working Group.** Goal of the committee was to identify and target labware and consumables and issue an RFP to negotiate savings from our supply chain. The committee affected 6.7 million in savings over three years, including a 1 time immediate 1.3 million dollar cash incentive, on a total spend of approximately 20 million. Committee has proposed to extend its mission in an iterative cycle to effect more savings from the supply chain.	Committee Member
01/01/15-Present	**All Children's Cardiovascular Research Council.** Goal of the committee is to provide final oversight and guidance to the executive committee on all matters pertaining to research from all research institutes at JHACH and the All Children's Research Institute. This includes all funding recommendations and operational activities as related to research. Council meets monthly.	Committee Member

Dates	Description	Role
01/01/15-Present	**Biorepository Storage and Access Committee.** The goal of the committee is to oversee all storage and access requests for the JHACH Biorepository and make recommendations to the executive committee.	Committee Member
01/01/15-Present	**All Children's Institute for Heart Research.** The committee oversees research activities for the Heart Institute and makes recommendations to the Heart Institute Executive Committee. Council meets monthly.	Committee Member
01/01/16-21	**Biorepository Operations Committee.** The Committee oversees all of the operational considerations for the biorepository and works directly with the executive committee to make day-to-day operational decisions for biorepository operations.	Committee Member
01/06/16-18	**All Children's Institute for Brain Protection Sciences Research Council.** The committee oversees research activities for the Brain Protection Science Executive committee. Council meets monthly.	Committee Member
01/07/16-Present	**Maternal Fetal Neonatal Institute Research Network.** Committee oversees research activities, reviews proposals and makes funding recommendations to the executive committee.	Committee Member

Editorial activities:

Editorial Boards

Date	Journal	Role
07/16-2020	Journal of Biological Chemistry	Editorial Board Member. Note, this journal has no external reviewers, but solely nominated permanent editorial board members that perform reviews. Associate Reviewer.
01/12-2020	PROTEOMICS	Editorial Board Member. Assistant Reviewer.

Journal Review Activities

Ad-Hoc Reviewer

Date (yr. approx.)	Journal
03	AIDS Research and Human Retroviruses
06	Analytical Chemistry
07	Blood
18	Cell
05	Clinical Chemistry
04	Clinical Proteomics
06	Journal of Immunological Methods
08	Journal of Molecular Biology
05	Journal of Physiology UK
06	Journal of Proteome Research
03	Journal of Virology
06	Molecular and Cellular Proteomics
08	PLOS Pathogens
10	PLOS Neglected Tropical Diseases
08	Physiological Genomics
09	Proceedings of the National Academy of Sciences
04	Proteomics
07	Proteomics – Clinical Applications

Professional Societies

Date	Society
06-Present	American Association for the Advancement of Science
07-Present	American Society for Microbiologists
06-Present	American Heart Association
2010, 2012	Human Proteome Organization

Conference Organizer, Session Chair

Date	Meeting	Session Name	Role
03/06	American Heart Association Scientific Sessions, Chicago, IL	The use and "disuse" of mass spectrometry.	Session Chair
04/06	Pediatric Academic Societies, San Francisco, CA	Overview of Proteomics Approaches	Session Chair

Advisory Committees, Review Groups

Grant Review Panels

Full Time Regular:

Dates	Panel	Role
03/19	NIH Metabolomics Special Emphasis Panel (ZRG1-BST-X(50))	Regular Member
03/06-10/07	American Heart Association - Committee: Basic Cell and Molecular Biology 2, National Committee	Regular Member

Ad Hoc:

Dates	Panel	Role
05/06	Maryland Industrial Partnerships (MIPS)	Reviewer
07/06	Department of Health & Human Services – Cardiovascular Sciences Small Business Activities Review Committee	Reviewer
07/07	The Wellcome Trust	Reviewer

RECOGNITION

Awards, Honors

Date	Description
09/99 and 01/2000	Science Applications International Corporation President's Stock Option Award
02/03	Travel Fellowship Award, 10'Th Conference on Retroviruses and Opportunistic Infections, Boston
02/04	11'Th Conference on Retroviruses and Opportunistic Infections, San Francisco

Invited Talks, Panels

Date	Title	Venue	Sponsor
06/03	Evidence for Virion-Associated Lipid Rafts in HIV and SIV	Kalachar Suryanarayana Memorial Lecture, National Cancer Institue, Frederick, MD	Julian Bess
12/04	Proteomics of Membrane Proteins	Johns Hopkins Digestive Diseases Basic Research Development Center Lecture Series, Baltimore, MD	Dr. Mark Donowitz
10/05	The Role of Virion Associated Lipid Rafts in HIV-1 Pathogenesis	Research Center in Infectious Diseases, CHUL Research Center (CHUQ), University of Laval, Quebec Canada	Dr. Michel Tremblay
02/06	Tracking dynamic post-translational modifications	Oslo-Hopkins Exchange, Johns Hopkins International Division, Oslo Norway	Johns Hopkins International Division
04/06	Overview of Proteomics Approaches	Pediatric Academic Societies, San Francisco	Dr. Anne Murphy
05/06	Viral Proteomics: Towards Understanding Human Immunodeficiency Virus (HIV) Pathogenesis at the Individual Patient Level	Special Seminar, Department of Immunology, Stanford University, Palo Alto, CA	Dr. Will Robinson
06/06	Lipid Rafts and the Heart	International Society of Heart Research, Toronto, Canada	Dr. Peter Liu
11/06	The use and misuse of mass-spectrometry	American Heart Association Scientific Sessions.	Dr. Jennifer Van Eyk
11/06	The Application of Broad-Based Proteomics to Complex Diseases: Towards Understanding HIV Pathogenesis at the Individual Patient Level	Johns Hopkins Department of Comparative and Molecular Pathobiology Special Seminar Series, Baltimore, MD	Dr. Chris Zink
11/06	Strategies to Help Find the Needle in the MS Haystack: Realistic Approaches to Finding Post-Translational Modifications	Johns Hopkins Technology Center for Networks and Pathways (TCNP), Baltimore, MD	Dr. Jef Boeke
10/07	Strategies to Maximize the Efficiency of Biomarker Discovery and Validation	1st Central and Eastern European Proteomic Conference and 3rd Czech Proteomic Conference, Prague, Czech, Republic.	Organizing Committee
11/07	How to Characterize Phosphorylated Proteins: The Protein Outcome of Signaling Cascades	American Heart Association, Scientific Sessions, Orlando, FL	Dr. Jennifer Van Eyk
11/09	Achieving Quantitative Mass Spectrometry: Truncated Thioredoxin (TRX80) - the missing link between oxidative stress and inflammation?	American Heart Association, Scientific Sessions, Orlando, FL	Dr. Anne Murphy

Date	Title	Venue	Sponsor
01/10	The impact of anti-retroviral and immunomodulatory therapies on HIV neurological disease: knowledge gained from the SIV macaque model	Department of Clinical Pharmacology Seminar Series, Baltimore, MD	Dr. Walter Hubbard
02/11	Understanding and sabotaging HIV interactions with target cells: unexpected consequences on infectivity, pathogenesis and immunity.	Molecular Microbiology and Immunology and Infectious Diseases Joint Seminar Series, Johns Hopkins School of Public Health, Baltimore, MD.	Dr. Diane Griffin
03/11	An Update on HIV Proteomics: Comparisons between Macrophage and T Cell Derived HIV-1	HIV Evolution, Genomics and Pathogenesis, Keystone Meeting, Whistler, BC, Canada	Conference Organizers
04/12	The Metabolic Basis of HIV Associated Neurological Disease: A Model for Cognitive Impairment?	Agilent Academic Day, Agilent Center of Excellence, Wilmington, DE	Bob Walker
08/13	Integrating Proteomics: Data Analysis	NHLBI Proteomics Centers Bioinformatics and Database Workshop 2013, Bethesda, MD	Rolf Apweiler,
02/14	An Integrative Biology Approach to the Study of HAND in the cART Era	NIMH Center for Novel CNS Therapeutics: NeuroAIDS symposium, Baltimore, MD	Justin McArthur
03/14	A Combined Proteomics and Metabolomics Study of CSF from HAND Patients Under cART Therapy Reveals Evidence for Ongoing Macrophage Activation and Pertubations in Glutamate Metabolism	HIV Pathogenesis: Virus vs Host, Keystone Symposium, Banff, Alberta, Canada	J. Victor Garcia-Martinez, Daria J. Hazuda and Dan R. Littman
03/14	Predictive biomarkers and mechanisms promoting ongoing neuroinflammation in HIV associated neurocognitive disorders (HAND): Kynurenine metabolism revisited in the context of combined antiretroviral therapy (cART).	Neuro Infectious Disease Interest Group, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD	Avindra (Avi) Nath
04/14	Integrative Biology Approaches for the Study of Complex Diseases: Untangling the Complexities of HIV Neurological Disorders.	JHU TB Center, Johns Hopkins School of Medicine, Baltimore, MD	William Bashai

Date	Title	Venue	Sponsor
05/14	Multi-Omics and Multiple Mass Spectrometry Approaches to the Understanding of HIV Associated Neurological Disease	Location 1 (05/05): Johns Hopkins School of Public Health, Baltimore, MD Location 2 (05/06): National Institutes of Health, Bethesda, MD	Layle Barbacci
06/14	Multi-Omics and Multiple Mass Spectrometry Approaches to the Understanding of HIV Associated Neurological Disease	National Heart Lung and Blood Institute Proteomics and Metabolomics Workshop, Baltimore, MD	Merry Lindsay
06/14	Multi-Omics and Multiple Mass Spectrometry Approaches to the Understanding of HIV Associated Neurological Disease – an exposomics viewpoint	American Association of Mass Spectrometry (2014 Annual Meeting), Workshop: “Using Mass Spectrometry to Characterize the Exposome and its impact on Human Health”, Baltimore, MD	Martyn Smith and Anthony Macherone
06/14	Multi-Omics and Multiple Mass Spectrometry Approaches to the Study of HIV Associated Neurological Disorders under cART: Further Evidence of Ongoing Microglia Activation	Cleveland Clinic, Rochester, OH	Richard Ransahoff and Javier Provencio
07/14	HIV Proteomics: From virion organization to post-translational modifications and pathogenesis. A model for other viral pathogens?	University of Wisconsin, Global Infectious Disease Working Group Seminar	David O’Connor
02/15	Lipidomics (and other ‘Omics) of Acute and Chronic Chronic HIV Infection	University of Texas, Austin, Special Seminar, Emerging ‘Omics	Austin Faculty, Agilent supported
02/15	Lipidomics (and other ‘Omics) of Acute and Chronic Chronic HIV Infection	MD Anderson, Houston Texas, Emerging ‘Omics.	MDC Anderson Faculty, Agilent supported
02/15	The Johns Hopkins Center for Resources in Integrative Biology (CRIB) Check out our CRIB!!!	National Institutes of Health.	NIH faculty, Agilent supported
02/15	Multi-Mass Spectrometry ‘Omics of HIV Infection and HIV Associated Neurocognitive Disorder	BCMB Recruitment Seminar, Johns Hopkins School of Medicine.	Dr. Carolyn Machamer

Date	Title	Venue	Sponsor
05/15	Lipidomics (and other 'Omics) of Acute and Chronic HIV Infection	United States Army Center for Environmental Health Research (USACEHR)	Captain Dancy
05/15	Molecular Determinants Core: Metabolomics, Lipidomics, Proteomics and Peptidomics	All Children's Cardiovascular Research Institute, Johns Hopkins All Children's Hospital	Dr. Allen Everett
09/15	Introducing The All Children's Johns Hopkins Medicine Center for Resources in Integrative Biology (CRIB) & Molecular Determinants Core	Microbiome Interest Group Meeting, Johns Hopkins School of Medicine.	Dr. Cindy Sears
10/15	Multi-Omics Studies of Neurological and Cardiovascular Diseases: Revealing the Molecular Determinants of Disease	All Children's 4'th Annual Research Symposium	Dr. Neil Goldenberg
10/15	Personalized (Precision) Medicine in a Real World Environment	United States Army, *Personalized Tools to Support Potential and Actual Health Hazards in the Megacity Operational Environment.* State of the Science Workshop.	Maj Jonathan Stallings
11/15	Using 'omics, medical information systems and a biorepository "time machine" to "PREDICT" the development of chronic diseases in children.	Society for Environmental Toxicology and Chemistry.	Dr. Antony Macherone
11/15	Mass Spectrometry-Based Integrative Biology Studies of Neurological Disease: Successes and Challenges	Invited Seminar, Georgetown University, Department of Computational Biology	Dr. Nathan Edwards
1/18	Integrating Mass Spectrometry into a Clinical Hospital: Shortening the Path from Bench to Bedside at Johns Hopkins All Children's Hospital	Invited Seminar, University of Wisconsin	Dr. Rebekah Gundry
7/19	Tandem in Time Mass Spectrometry Strategies	Shimadzu Corporation, Invited Global Summit, Kyoto, Japan	Dr. Paul Rementer
02/20	Using Metabolomics to Characterize the Exposome: A Unique Hopkins Story	American Society for Mass Spectrometry: "Unravelling the Exposome"	ASMS selection committee

Date	Title	Venue	Sponsor
03/21	Metabolomics in a Clinical Care Environment: Perioperative environmental exposure to cyclohexanone during neonatal congenital cardiac surgery is associated with decreased neurodevelopmental outcome	The Virtual 37th Annual Conference PAC/LAC (Perinatal Advisory Council: Leadership, Advocacy, and Consultation)	PAC/LAC selection committee
06/2022	Unravelling the exposome: Success stories	American Society for Mass Spectrometry Workshop	Warth Benedikt / Silvia Balbo

Accepted Oral or Poster Abstracts:

1. **David R. Graham**, Mark T. Esser, Lori V. Coren, Charles M. Trubey, Julian W. Bess, Jr., Larry O. Arthur, David E. Ott and Jeffrey D. Lifson. Differential Incorporation of CD45, CD80 (B7-1), CD86 (B7-2), MHC-I and MHC-II into HIV-1 Virions and Microvesicles: Implications for Viral Pathogenesis and Immune Regulation, Poster Presentation, HIV Pathogenesis Meeting, Keystone, Colorado, Winter 2000.

2. **David R. Graham**, Elena Chertova, Joanne Hilburn, Richard Hampton, Zhahao Liao, Lou Henderson, Larry Arthur and James E.K. Hildreth. Loss of Mature Gag Proteins and Retention of Viral Membrane Proteins in Cholesterol Depleted SIV Virions - Disruption of Viral Rafts? Poster Presentation, HIV NC Meeting, Annapolis, Maryland, Fall 2001.

3. **David R. Graham**, Elena Chertova, Joanne M. Hilburn, Larry O. Arthur, James E.K. Hildreth, Cholesterol Depletion of HIV-1 and SIV with Beta-cyclodextrin Inactivates and Permeabilizes the Virions: Evidence for Virion-associated Lipid Rafts, Poster Presentation, 10'th Conference on Retroviruses and Opportunistic Infections, Boston, MA, Winter 2003.

4. **David R. Graham**, Elena Chertova, David Zuckerman, Larry O. Arthur and James E.K. Hildreth, Cholesterol Depletion of HIV-1 and SIV with Beta-Cyclodextrin Inactivates and Permeabilizes the Virions: Evidence for Virion-Associated Lipid Rafts, Poster Presentation, HIV Pathogenesis Meeting, Banff, Canada, Winter 2003.

5. **David R. Graham**, Steven E. Elliott and Jennifer Van Eyk, Significant Improvements in Two-Dimensional Gel Electrophoresis (2DE) of HIV-1 and SIV using Large-Format Bis-Tris SDS-PAGE Gels: Towards HIV Proteomics," Poster Presentation, HIV Pathogenesis Meeting, Banff, Canada, April 12, 2005

6. **David R. Graham**, 4th Frederick Workshop on the Cell Biology of Viral Entry, "Presence of Lipid Rafts on HIV and SIV Particles: Implications for Virus Cell Interactions," May 5 2004, National Cancer Institute, Frederick, MD.

7. **David R. Graham**, Steven E. Elliott and Jennifer Van Eyk, Significant Improvements in Two-Dimensional Gel Electrophoresis (2DE) of HIV-1 and SIV using Large-Format Bis-Tris SDS-PAGE Gels: Towards HIV Proteomics," Poster Presentation, Human Proteomics Organization, Munich, Germany, August 30, 2005

8. **David R. Graham**, Antoine Younes, Alexey Lyashkov, Anna Sheydina, Maria Volkova, Megan Mitsak, Tatiana Vinogradoa, Abdul Ruknudin, Kenneth Boheler, Jennifer Van Eyk and Edward Lakatta (published abstract), Sinoatrial Nodal Pacemaker Cells (SANC) Exhibit High Basal Ca^{2+} Activated Adenylyl Cyclase (AC) Activity and Express Multiple Distinctly Localized AC Types, Poster Presentation, American Heart Association Scientific Sessions, Orlando, Florida, November 4-7, 2007

9. Qian, X-D., T. Nyberg, C. Hart, P. Slade, W. Huang, D. R. Colquhoun, **D.R.M. Graham** and B. Agnew. Click Chemistry-Based Universal Enrichment Columns for Global Identification of Azide-Modified Proteins. Presented at the 58th ASMS Conference on Mass Spectrometry and Allied Topics, Salt Lake City, UT. May 23 – 27, 2010.

10. Hart, C., L. Chase, D. R. Colquhoun, **D.R.M. Graham**, B. Agnew. Identification and Characterization of *O*-GlcNAc Modification of Galectin-1 in Mesenchymal Stem Cells Using Click Chemistry. Presented at the Annual Conference of the Society for Glycobiology. St. Pete Beach, FL. November 7 – 10, 2010.

11. Qian, X-D., T. Nyberg, W. Huang, P. Slade, D. R. Colquhoun, **D.R.M. Graham**, B. Agnew. Click Chemistry-based Enrichment Columns for Global Identification of Glycoproteins. Presented at the Annual Conference of the Society for Glycobiology. St. Pete Beach, FL. November 7 – 10, 2010.

12. Qian, X-D., T. Nyberg, C. Hart, D. R. Colquhoun, **D.R.M. Graham**, B. Agnew. A Universal Click Chemistry-based Enrichment Column for the Identification of Multiple Subclasses of PTM-Modified Proteins and Newly Synthesized Proteins. Presented at the US HUPO, Raleigh, NC. March 20 - 23, 2011.

13. **Graham, D. R**., C. U. Mohien, V. Aquino, M. Linde, and D. R. Colquhoun**.** An Update on HIV Proteomics: Comparisons Between Macrophage and T-cell Derived HIV-1. Presented at the HIV Evolution, Genomics and Pathogenesis Keystone Symposia Global Health Series. Whistler, BC. Canada. March 20-25, 2011.

14. Mohien, C. U., D. R. Colquhoun, L. A. Parish, R. Tharakan, R. R. Dinglasan, N. Edwards, **D.R.M. Graham**. When Every Spectrum Counts: An Integrated Grid and Cloud-enabled Software Pipeline for Identification of Elusive Proteins. Presented at the 59th ASMS Conference on Mass Spectrometry and Allied Topics, Denver, CO. June 5 – 9, 2011.

15. D. R. Colquhoun**,** V. Aquino, A. Lyashkov, C. U. Mohien, W. Colquhoun, B. Bullock, R. Dinglasan, B. Agnew, **D. Graham**. Measurement of Cellular Post-translational Modification Perturbation in Response to HIV infection Using Copper (I)-catalyzed Cycloaddition Protein Labeling. Presented at the 59th ASMS Conference on Mass Spectrometry and Allied Topics, Denver, CO. June 5 – 9, 2011.

16. Ubaida Mohien C., Colquhoun D., Tovar-y-Romo, L.B., Bora A., **Graham DR.** and Haughey N.J. Proteomic analysis of microvesicles/exosomes released from astrocytes that regulate the peripheral immune response to CNS inflammation. International Society for NeuroVirology 2013. Washington, D.C.

17. Bora A., Ubaida Mohien C., Chaerkady R., Chang L., Moxley R., Sacktor N., McArthur J.C., Haughey N.J., Nath A., and **Graham DR**. Proteomics evaluation of CSF patients with HIV-associated neurocognitive impairment using iTRAQ labeling. International Society for NeuroVirology 2013. Washington, D.C.

    Note: This poster was selected for a young investigator award.

18. Tharakan R., Soliman M., Blackwell A., Ubaida-Mohien C., Colquhoun D., Zink C. and **Graham DR**. Multiomic profiling of Peripheral Immune Responses in an SIV Macaque Model of HIV-Associated Neurological Disease. International Society for NeuroVirology 2013. Washington, D.C.

    Note: This poster was selected for a young investigator award.

19. Martinez Ferrando I, Deshiere A, Lyashkov A, Ubaida-Mohien C, Colquhoun C, Ouellet M, Tremblay M, **Graham DR**. Dynamic analysis of pure HIV-1 infected and bystander monocyte derived macrophages (MDMs). American Society for Mass Spectrometry 2014. Baltimore, MD.

20. Bora A, Ubaida-Mohien C, Lyashkov A, Blackwell A, Chang L, Moxley R, Sacktor N, McArthur C, Haughey N, Nath A, **Graham DR.** An Omics study of CSF from HAND patients under cART reveals evidence for macrophage activation and perturbations in glutamate metabolism. American Society for Mass Spectrometry 2014. Baltimore, MD.

21. Tharakan R., Soliman M., Blackwell A., Ubaida-Mohien C., Colquhoun D., Zink C. and **Graham DR**. Multiomic profiling of Peripheral Immune Responses in an SIV Macaque Model of HIV-Associated Neurological Disease. American Society for Mass Spectrometry 2014. Baltimore, MD.

22. Trinh H, Colquhoun D, **Graham DR**, Rao M. Identification of viral phosphorylation in human immunodeficiency viruses. American Society for Mass Spectrometry 2014. Baltimore, MD.

23. Ubaida-Mohien C, Tharakan R, **Graham DR**. Mass Spectrometry Approaches to Investigating HIV-1 Sequence Variance. American Society for Mass Spectrometry 2014. Baltimore, MD.

24. Jelinek CH; Ramirez-Correa G, Han G, Colquhoun D, Lyashkov A, Hart G, **Graham DR**, Van Eyk J, Murphy A. Harnessing the power of SWATH-MS for unbiased identification of O-GlcNacylated proteins. American Society for Mass Spectrometry 2014. Baltimore, MD.

25. Younes A, Lukyanenko Y, Lyashkov AE, Tarasov K, Sirenko S, Ziman B, Juhaszova M, **Graham DR**, Lakatta EG. Phosphodiesterase Expression Pattern and Activity Partitioning in Lipid Raft and in Non-Lipid-Raft Microenvironment in Cardiac Sinoatrial Nodal Cells. Published in: Biophysical Journal,Volume 106, Issue 2, Supplement 1, p111a, 28 January 2014.

26. Blythe D. Shepard, Greg Ellis, Susan Aja, **David R.M. Graham**, Jennifer L. Pluznick. Using Targeted Metabolomics to Uncover the Role of a Renal Olfactory Receptor in Proximal Tubule Glucose Handling. AHA young investigator's retreat. 2016.

27. Tim Starosta, Steven S. An, Koen Raedschelders, Jennifer E. Van Eyk, **David Graham** & Giulio Agnetti. Improved Cardiac Fibroblasts *vs.* Myocytes Survival After Oxidative Stress. Programs of Excellence in Glycosciences Annual Retreat. June 2016.

28. Casey M. Rebholz, Morgan E. Grams, Lawrence J. Appel, Mark J. Sarnak**, David R. Graham**, Lesley A. Inker, Andrew S. Levey, Josef Coresh. Metabolites Associated with Dietary Protein Intake in the Modification of Diet in Renal Disease (MDRD) Study. Annual Society for Nephrology Meeting, 2016

29. Heibel JJ, Graham EM, **Graham D**, Everett AD. Serum metabolites as biomarkers for acute kidney injury in neonates with congenital heart disease post-cardiopulmonary bypass. American Heart Association Scientific Sessions, Philadelphia, 2019.

30. Catherine Simpson, Stephen Mathai, Todd Kolb, Paul Hassoun, Susan Aja, Aurelie Roux, **David Graham**, Rachel Damico Metabolic profiling of pulmonary vascular phenotypes in systemic sclerosis European Respiratory Journal Sep 2020, 56 (suppl 64) 1524; DOI: 10.1183/13993003.congress-2020.1524

31. C. Simpson, R. Harlan, A. Roux, S. Aja, **D. Graham**, A. Shah, L. Hummers, S. C. Mathai1, P. M. Hassoun, R. L. Damico, PVDOMICS Study Group. Evolving Metabolism Predicts Development of Pulmonary Arterial Hypertension in Systemic Sclerosis. Am J Respir Crit Care Med 2022;205:A4918

32. J. Coursen, C. Simpson, **D. Graham**, S. Aja, R. Harlan, A. Roux, T. M. Kolb, S. C. Mathai, S. Hsu, R. J. Tedford, P. M., Hassoun, R. L. Damico. Circulating Amino Acid Profiles in Pulmonary Arterial Hypertension at Rest and with Peak Exercise. American Journal of Respiratory and Critical Care Medicine 2023;207:A1188.

33. Koutroulis I, Kratimenos P, **Graham D**, Aja, S, Everett AD, Goldstein E, Zhang J, Martin LJ and Northington FJ. Comprehensive examination of the metabolomic signatures of neonatal HI. PAS 2023

34. Dryer R, Heibel J, Everett AD, Manlhiot C, ROUX A, **Graham D** and Graham E, Perioperative Metabotypes Associated with Post-operative Outcomes in Neonates Undergoing Cardiopulmonary Bypass. PAS 2023

35. Kitase Y, Chin EM, Robinson S, **Graham D**, Everett AE, and Jantzie L. Cyclohexanone Impairs Functional and Anatomical Brain Connectivity Following Perinatal Exposure. PAS 2023

36. Liu O, Kitase Y, **Graham D**, Everett AD and Jantzie L. Perinatal Exposure to Cyclohexanone Induces Profound Behavioral Deficits in Adulthood Including Hyperactivity and Disinhibition. PAS 2023

37. Rivera S, Patel RM, Lukemire J, Shenvi N, Arthur C, Stowell S, Easley KA, Guo Y, Josephson C, and **Graham D**, Bile Acid Metabolism: a potential indicator for red blood cell transfusion in preterm infants. PAS 2023

OTHER PROFESSIONAL ACCOMPLISHMENTS

Position: Research Associate (January 2000 to August 2000)
Institution: **National Cancer Institute**, AIDS Vaccine Program, Science Applications International Corporation, NCI at Frederick

Primary Responsibilities and Achievements:

Responsible for overseeing all aspects of immunoassay kit production, research and development, and the viral production division of the AIDS Vaccine Program. Our operation saved the government and HIV researchers in excess of $1 million dollars annually, and provided critical support to the program and HIV researchers worldwide. Major accomplishments: Development and Deployment of an integrated inventory management, quality control, production and shipping database; Developed a high-throughput, highly sensitive assay to measure host-derived viral incorporated molecules. Management experience: Supervised two Research Associates, and one Senior Research Technician.

Position: Sr. Research Technician (November 1998 to December 1999)
Institution: **National Cancer Institute**, AIDS Vaccine Program, Science Applications International Corporation, NCI at Frederick

Primary Responsibilities and Achievements:

Responsible for improving the sensitivity of both of the programs immunoassay kits by 10 to 100 fold: fully automated quality control procedures and routine sample processing; expanded the role of the laboratory to include basic research support, which resulted in two manuscripts for the program; promoted to Research associate in January 2000.

Duties consisted of: General laboratory and technical procedures, including but not limited to: immunoassay kit production; immunoassay development; performing immunoassays; cell culture of HIV, SIV & other retrovirus-infected cells; manipulation of sera/plasma from HIV or SIV-infected subjects; PAGE; affinity chromatography; FACS analysis and virus purification. Was also responsible for maintaining computer-based inventories; developing spreadsheets to automate data acquisition and computing assay results. Responsible for maintaining adherence to BL-2 and BL-3 safety conditions.