Clayton E. Mathews
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BIOGRAPHICAL

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Birth Date: April 1, 1969
Birth Place: Franklin, VA
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EDUCATION AND TRAINING

UNDERGRADUATE:

Dates Attended	Name and Location of Institution	Degree Received (Year)	Field of Study
1987-1991	The North Carolina State University Raleigh, NC	B.S. (1991)	Biochemistry

GRADUATE:

1992-1994	The University of Georgia Athens, GA Thesis topic: Correlation of Mitochondrial Mutations with Glucose Intolerance	M.S. (1994)	Foods & Nutrition
1994-1997	The University of Georgia Athens, GA Dissertation Topic: Effects of Mitochondrial Mutations on Cellular Energy Production and Pancreatic Beta Cell Function	Ph.D. (1997)	Foods & Nutrition

POST-DOCTORAL FELLOWSHIP:

1997-2001	The Jackson Laboratory, Bar Harbor, ME	

PROFESSIONAL EXPERIENCE

Academic:

2024-Present	University of Florida Department of Infectious Diseases and Immunology University of Florida	Chariman and Professor
2013-2025	University of Florida Department of Pathology, Immunology, & Laboratory Medicine	Professor
2023-2024	Department of Pathology, Immunology, and Laboratory Medicine	Vice Chair for Research
2021-2025	Center for Immunology and Transplantation	Director
2020-Present	Center for Cellular Reprogramming	Director

2008-Present	Immunology and Microbiology Program Interdisciplinary Biomedical Graduate Program University of Florida College of Medicine	Graduate Faculty Status
2013-Present	Department of Food Science and Human Nutrition	Professor
2013-Present	Department of Pediatrics	Professor
2016-2023	Department of Pediatrics Career Development Committee	Chair
2019-2022	University of Florida College of Medicine Promotion and Tenure Committee	Member
2009-2021	Immunology and Microbiology Program Interdisciplinary Biomedical Graduate Program University of Florida College of Medicine	Co-Director
2008-2013	University of Florida Department of Pathology, Immunology, & Laboratory Medicine	Associate Professor with Tenure
2008-2013	University of Florida Department of Food Science and Human Nutrition	Associate Professor
2008-2013	University of Florida Department of Pediatrics	Associate Professor
2007-2008	The University of Pittsburgh, Pittsburgh, PA Department of Pediatrics Department of Immunology	Associate Professor with Tenure
2007-2008	The University of Pittsburgh, Pittsburgh, PA Department of Immunology	Associate Professor
2001-2007	Immunology Program Interdisciplinary Biomedical Graduate Program The University of Pittsburgh School of Medicine	Graduate Faculty Status
2001-2007	The University of Pittsburgh, Pittsburgh, PA Department of Pediatrics	Assistant Professor
9/1997-4/2001	The Jackson Laboratory, Bar Harbor, ME	Postdoctoral Fellow
10/1994-9/1997	The University of Georgia, Athens, GA	Graduate Research Assistant
2/1994-10/1994	The National Institutes of Health, Bethesda, MD	Predoctoral Fellowship
	NIDDK: Research Area: Trafficking and Plasma Membrane Docking and Fusion of GLUT4 Containing Low Density Microsomes in Adipocytes	
1/1992-1/1994	The University of Georgia, Athens, GA	Graduate Research Assistant

Non-Academic

1988, 1989	The Weyerhaeuser Company	Environmental Research Technician

MEMBERSHIPS IN PROFESSIONAL AND SCIENTIFIC SOCIETIES

American Diabetes Association
American Association of Immunologists

PUBLICATIONS

Citations 8,985 h-index 53 i10-index 122

Refereed Articles

1. **Mathews CE**, McGraw RA, Berdanier CD. 1995. A point mutation in the mitochondrial DNA of diabetes prone BHE/Cdb rats. FASEB J 9:1638-1642.
2. **Mathews CE**, Wickwire KL, Hathcock-Rice D, Berdanier CD. 1996. Maternal diet has little effect on the glucose tolerance and age changes in enzyme activity in male progeny of gestationally diabetic rats. Int J Diabetes 4:17-27.
3. **Mathews CE** and Berdanier CD. 1997. A gene screen for mitochondrial diabetes mellitus in BHE/Cdb rats. Exp Clin Endocrinol Diabetes 105:86-87.
4. Jia T, Wickwire KL, **Mathews CE**, Berdanier. 1998. Neither the cholesterol nor arginine content of whole egg explains its beneficial effect on glucose homeostasis in BHE//Cdb rats. J Nutr Biochem 9:170-177.
5. **Mathews CE** and Berdanier CD. 1998. Noninsulin-dependent diabetes mellitus as a mitochondrial genomic disease. Proc Soc Exp Biol Med 219:97-108.
6. Ebert DH, Bischof LJ, Steeper RS, Chapman SC, Svitek CA, Goldman JK, **Mathews CE**, Leiter EH, Hutton JC, O'Brien RM. 1999. Structure and promoter activity of an islet-specific glucose-6-phosphatase catalytic subunit-related gene. Diabetes 48:543-551.
7. Graser RT, **Mathews CE**, Leiter EH, Serreze DV. 1999. MHC characterization of ALR and ALS mice: Respective similarities to the NOD and NON strains. Immunogenetics 49:722-726.
8. **Mathews CE** and Leiter EH. 1999. Resistance of ALR/Lt islets to free radical-mediated diabetogenic stress is inherited as a dominant trait. Diabetes 48:2189-2196.
9. **Mathews CE** and Leiter EH. 1999. Constitutive differences in antioxidant defense status distinguish alloxan-resistant and alloxan-susceptible mice. Free Radic Biol Med 27:449-455.
10. **Mathews CE**, McGraw RA, Dean R, Berdanier CD. 1999. Inheritance of a mitochondrial DNA defect and impaired glucose tolerance in BHE/cdb rats. Diabetologia 42:35-40.
11. **Mathews CE**, Graser RT, Serreze DV, Leiter EH. 2000. Reevaluation of the major histocompatibility complex genes of the NOD-progenitor CTS/Shi strain. Diabetes 49:131-134.
12. **Mathews CE**, Wickwire K, Flatt WP, Berdanier CD. 2000. Attenuation of circadian rhythms of food intake and respiration in aging diabetes-prone BHE/Cdb rats. Am J Physiol. 279:R230-R238.
13. **Mathews CE**, Graser RT, Savinov AY, Serreze DV, Leiter EH. 2001. Unusual resistance of ALR/Lt beta cells to autoimmune destruction: Role for beta cell expressed resistance determinants. Proc Natl Acad Sci USA. 98:235-240.
14. Berdanier CD, Everts HB, Hermoyian C, **Mathews CE.** 2001. Role of vitamin A in mitochondrial gene expression. Diabetes Res Clin Pract 54:11-27.
15. **Mathews CE**, Dunn BD, Hannigan MO, Huang C-K, Leiter EH. 2002. Genetic Control Of Neutrophil Superoxide Burst Activity In Diabetes Resistant ALR/Lt Mice. Free Radical Biol. Med. 32:744-751.
16. **Mathews CE**, Langley SH, Leiter EH. 2002. New Mouse Model to Study Islet Transplantation in Insulin Dependent Diabetes Mellitus. Transplantation 73:1333-1336.
17. **Mathews CE**, Pietropaolo SL, Pietropaolo M. 2003. Reduced Thymic DC Expression of Islet Cell Antigen 69 Contributes to Loss of Self Tolerance. Ann NY Acad Sci. 1003:412-417.
18. **Mathews CE**, Graser RT, Bagley RJ, Caldwell JW, Li R, Churchill GA, Serreze DV, Leiter EH. 2003. Genetic Analysis of Resistance to Type 1 Diabetes in ALR/Lt Mice, a NOD-related Strain with Defenses Against Autoimmune-mediated Diabetogenic Stress. Immunogenetics. 55:491-496.
19. **Mathews CE,** Bagley RJ, Leiter EH. 2004 ALS/Lt: A New Type 2 Diabetes Mouse Model Associated with Low Free Radical Scavenging Potential. Diabetes. 53:125-129.
20. Milton MJ, Poulin M, **Mathews C**, Piganelli JD. 2004 Generation, maintenance, and adoptive

transfer of diabetogenic T-cell lines/clones from the nonobese diabetic mouse. Methods Mol Med. 102:213-226.

21. **Mathews CE**, Leiter EH, Spirina O, Bykhovskaya Y, Ringquist S, Gusdon AM, Fischel-Ghodsian N. 2005 *mt-Nd2* Allele of the ALR/Lt Mouse Confers Resistance Against both Chemically-Induced and Autoimmune Diabetes. Diabetologia 48:261-267.
22. Kitiphongspattana K, **Mathews CE**, Leiter EH, Gaskins HR. 2005 Proteasome inactivation alters glucose-stimulated insulin secretion and turnover in pancreatic ß cells. J Biol Chem. 280:15727-15734.
23. Pomerleau DP, Bagley RJ, Holl TM, Serreze DV, **Mathews CE**, Leiter EH. 2005 MHC-linked diabetes susceptibility in NOD/Lt mice: subcongenic analysis localizes a component of *Idd16* at the *H2-D* end of the diabetogenic $H2^{g7}$ complex. Diabetes 54:1603-1606.
24. **Mathews CE**, Suarez-Pinzon WL, Baust JJ, Strynadka K, Leiter EH, Rabinovitch A. 2005 Mechanisms Underlying Resistance of Pancreatic Islets from ALR/Lt Mice To Cytokine-Induced Destruction. J Immunol. 175:1248-1256.
25. Chang Y-G, Yap S, Ge X, Piganelli J, Bertera S, Giannokakis N, **Mathews CE**, Prud'homme G and Trucco M. 2005. DNA vaccination with an insulin construct and a chimeric protein binding to both CTLA4 and CD40 ameliorates type 1 diabetes in NOD mice. Gene. Ther. 12:1679-1685.
26. Takaki T, Marron MP, **Mathews CE**, Guttmann ST, Bottino R, Trucco M, DiLorenzo TP, Serreze DV. HLA-A*0201-restricted T-cells Contributing to Type 1 Diabetes in "Humanized" Mice are Cytotoxic to Human Pancreatic ß Cells, and Identify Autoantigens with Potential Clinical Relevance. 2006 J Immunol. 176:3257-3265.
27. Ge X, Piganelli JD, Tse HM, Bertera S, **Mathews CE**, Trucco M, Wen L, Rudert WA. 2006 Co-expression of HLA-DR4 Alleles Diminishes HLA-DQ8-restricted CD4 T Cell Responses: A Possible Mechanism For the DR4-mediated Modulation Effect To the Type 1 Diabetes Susceptibility. Diabetes. 55:3455-3462
28. Sen P, Wallet M, Yi Z, Huang Y, Henderson M, **Mathews CE**, Earp HS, Matsushima G, Baldwin Jr. AS and Tisch R. 2007 Apoptotic cells induce MerTK-dependent blockade of NF-κB activation in dendritic cells. Blood. 109:653-660
29. Gusdon AM, Votyakova TV, Reynolds IJ, **Mathews CE**. 2007 Nuclear-Mitochondrial Interaction Involving *mt-Nd2* Leads to Increased Mitochondrial Reactive Oxygen Species Production. J Biol Chem. 282:5171-517
30. Wallet MA, Sen P, Flores R, Yi Z, Huang Y, **Mathews CE**, Earp HS, Matsushima G, Wang B, Tisch R. 2008 MerTK is required for apoptotic cell-induced T cell tolerance. J Exp Med. 205:219-232.
31. Gusdon AM, Votyakova TV, **Mathews CE**. 2008 $mt\text{-}Nd2^{a}$ Suppresses Mitochondrial Reactive Oxygen Species Production. J Biol Chem. 283:10690-10697.
32. Chen J, Gusdon AM, Thayer TC, **Mathews CE**. 2008 Role of increased ROS dissipation in prevention of T1D: Lessons from the ALR mouse. Ann N Y Acad Sci. 1150:157-166
33. Chen J, Lu Y, Lee C-H, Li R, Leiter EH, **Mathews CE**. 2008 Comparative Genetics of Spontaneous Autoimmune versus Chemically-Induced Diabetes in Mice. Free Radic Biol Med. 45:1263-1270
34. Wallet MA, Flores RR, Wang Y, Yi Z, Kroger CJ, **Mathews CE**, Earp HS, Matsushima1 G, Wang B, Tisch R. 2009 MerTK regulates thymic selection of autoreactive T cells. Proc Natl Acad Sci USA. 106:4810-4815.
35. Gusdon AM, Chen J, Votyakova TV, **Mathews CE**. 2009 Quantification, Localization, and Tissue Specificities of Mitochondrial Reactive Oxygen Species Production. Methods Enzymol. 456:439-457.

36. Ben-Yehudah A, White C, Navara CS, Castro CA, Ize-Ludlow D, Shaffer B, Sukhwani M, **Mathews CE**, Chaillet JR, Witchel SF. Evaluating protocols for embryonic stem cell differentiation into insulin secreting-cells using Insulin II-GFP as a specific and non-invasive reporter. Cloning and Stem Cells. 112;245-257
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38. Parker MP, Xue S, Alexander JJ, Wasserfall CH, Campbell-Thompson ML, Battaglia M, Gregori S, **Mathews CE**, Song S, Troutt M, Eisenbeis S, Williams J, Schatz DA, Haller MJ, Atkinson MA Immune depletion with cellular mobilization imparts immunoregulation and reverses autoimmune diabetes in NOD mice. Diabetes. 2009, 58:2277-2284
39. Tse HM, Thayer TC, Steele C, Cuda CM, Morel L, Piganelli JD, **Mathews CE**. NADPH oxidase deficiency regulates Th lineage commitment and modulates autoimmunity. J Immunol. 2010, 185:5247-5258. PMID: 20881184
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41. Chen J, Gusdon AM, Piganelli J, Leiter EH, **Mathews CE**. *mt-Nd2*^{a} modifies resistance against autoimmune Type 1 diabetes in NOD mice at the level of the pancreatic beta cell. Diabetes. 2011, 60:355-359. PMID: 20980458
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43. Chen J, Grieshaber S, **Mathews CE**. Methods to assess beta cell death mediated by cytotoxic T lymphocytes. J Vis Exp. 2011 Jun 16;(52). pii: 2724. doi: 10.3791/2724. PMID: 21712795
44. Delano MJ, Kelly-Scumpia KM, Winfield RD, Scumpia PO, Cuenca AG, Harrington PB, O'Malley KA, Warner E, Gabrilovich S, **Mathews CE**, Laface D, Heyworth PD, Ramphal R, Strieter RM, Moldawer LL. Neutrophil Mobilization from the Bone Marrow During Polymicrobial Sepsis Is Dependent On CXCL12 Signaling. J Immunol. 2011 Jul 15;187(2):911-918. PMID: 21690321
45. Lightfoot YL, Chen J, **Mathews CE**. Role of the Mitochondria in Immune-Mediated Apoptotic Death of Human Beta□Cells. PLoS One. 2011;6(6):e20617. PMID: 21738580
46. Ize-Ludlow D, Lightfoot YL, Parker MJ, Xue S, Wasserfall CH, Haller MJ, Schatz DA, Becker DJ, Atkinson MA, **Mathews CE**. Progressive Erosion of Beta Cell Function Precedes the Onset of Hyperglycemia in the NOD Mouse Model of Type 1 Diabetes. Diabetes. 2011. PMID: 21659497
47. Thayer TC, Delano MJ, Liu C, Chen J, Padgett L, Annamali M, Piganelli JD, Tse HM, Moldawer LL, **Mathews CE**. Superoxide Production by Macrophages and T cells is Critical for the Induction of Autoreactivity and Type 1 Diabetes. Diabetes. Diabetes. 2011 Aug;60(8):2144-51. PMID: 21715554
48. Chen J, Gusdon AM, **Mathews CE**. Role of *mt-Nd2* in Type 1 Diabetes. Diabetes Metab Res Rev. 2011 Nov;27(8):849-53. PMID: 22069272
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51. Xu Y, Lee PY, Li Y, Liu C, Zhuang H, Han S, Nacionales DC, Weinstein J, **Mathews CE**, Moldawer LL, Li SW, Satoh M, Yang LJ, Reeves WH. Pleiotropic IFN-dependent and -independent effects of IRF5 on the pathogenesis of experimental lupus. J Immunol. 2012 Apr 15;188(8):4113-4121. PMID: 22422888
52. Lightfoot YL, Chen J, **Mathews CE**. Oxidative Stress and Beta Cell Dysfunction. Methods Mol Biol. 2012;900:347-62. PMID: 22933078
53. Lightfoot YL, Chen J, **Mathews CE**. Immune-mediated β-cell death in type 1 diabetes. Eur J Clin Invest. 2012;42(11):1244-1251. PMID: 22924552
54. Broniowska KA, **Mathews CE**, Corbett JA. Do β-cells generate peroxynitrite in response to cytokine treatment? J Biol Chem. 2013 Dec 20;288(51):36567-78. PMID: 24194521
55. Chen J, Mathews CE. Use of chemical probes to detect mitochondrial ROS by flow cytometry and spectrofluorometry. Methods Enzymol. 2014;542:223-41. PMID: 24862269
56. Newby BN, Terada N, **Mathews CE**. In search of a surrogate: engineering human beta cell lines for therapy. Trends Endocrinol Metab. 2014 Aug;25(8):378-80. PMID: 24958526
57. Zhang S, **Mathews CE**. Metabolic abnormalities in the pathogenesis of type 1 diabetes. Curr Diab Rep. 2014 Sep;14(9):519. PMID: 25023213
58. Haller MJ, Gitelman SE, Gottlieb PA, Michels AW, Rosenthal SM, Shuster JJ, Zou B, Brusko TM, Hulme MA, Wasserfall CH, **Mathews CE**, Atkinson MA, Schatz DA. Anti-thymocyte globulin/G-CSF treatment preserves β cell function in patients with established type 1 diabetes. J Clin Invest. 2014 Dec 15. pii: 78492. doi: 10.1172/JCI78492. PMID: 25500887
59. Xu Y, Zhuang H, Han S, Liu C, Wang H, **Mathews CE**, Massini J, Yang L, Reeves WH. Mechanisms of Tumor Necrosis Factor α Antagonist-Induced Lupus in a Murine Model. Arthritis Rheumatol. 2015 Jan;67(1):225-37. PMID: 25252121
60. Cuenca AG, Joiner DN, Gentile LF, Cuenca AL, Wynn JL, Kelly-Scumpia KM, Scumpia PO, Behrns KE, Efron PA, Nacionales D, Lui C, Wallet SM, Reeves WH, **Mathews CE**, Moldawer LL. TRIF-Dependent Innate Immune Activation Is Critical for Survival to Neonatal Gram-Negative Sepsis. J Immunol. 2015 Feb 1;194(3):1169-77. PMID: 25548220
61. Gusdon AM, Fang F, Chen J, **Mathews CE**, Li W, Chu CT, Ding JQ, Chen SD. Association of the mt-ND2 5178A/C polymorphism with Parkinson's disease. Neurosci Lett. 2015 Feb 5;587:98-101. PMID: 25511548
62. Broniowska KA, Oleson BJ, McGraw J, Naatz A, **Mathews CE**, Corbett JA. How the location of superoxide generation influences the β-cell response to nitric oxide. J Biol Chem. *In Press*
63. Broniowska KA, **Mathews CE**, Corbett JA. Cytokines, Nitric Oxide, and β-Cells. J Biol Chem. 2015 Apr 17;290(16):10571. PMID: 26065037
64. Gusdon AM, Fernandez Bueno G, Fernandez J, Jing Chen J, and **Mathews CE**. Respiration and reactive oxygen species production distinguish mitochondria from brain and liver. BMC Biochemistry. BMC Biochem. 2015 Sep 10;16:22. PMID: 26358560
65. Xue S, Wasserfall C, Myhr C, Campbell-Thompson M, **Mathews CE**, Burn P, Rabinovitch A, Savinov A, Schatz D, Haller M, Atkinson M. Combination Therapy Reverses Hyperglycemia in NOD Mice with Established Type 1 Diabetes. Diabetes. Diabetes. 2015 Nov;64(11):3873-3884, PMID: 26185279
66. Oleson BJ, McGraw JA, Broniowska KA, Annamalai M, Chen J, Bushkofsky JR, Davis DB, Corbett JA, **Mathews CE**. Distinct differences in the responses of the human pancreatic beta-cell line EndoC-βH1 and human islets to proinflammatory cytokines. Am J Physiol Regul Integr

Comp Physiol. 2015 Sep;309(5):R525-534. PMID: 26084699

67. **Mathews CE**, Xue S, Posgai A, Lightfoot Y, Xie L, Wasserfall C, Haller M, Schatz D, Atkinson, MA Acute Versus Progressive Onset of Diabetes in NOD Mice –Potential Implications for Therapeutic Interventions in Type1 Diabetes. Diabetes. 2015 Nov;64(11):3885-3890. PMID: 26216853
68. Candice Z. Ulmer, Richard A. Yost, Jing Chen, **Clayton E. Mathews**, Timothy J. Garrett . Liquid Chromatography-Mass Spectrometry Metabolic and Lipidomic Sample Preparation Workflow for Suspension-Cultured Mammalian Cells using Jurkat T lymphocyte Cells. J Proteomics Bioinform. 2015 Jun;8(6):126-132. PMID: 26401069
69. Bradley J. Willenberg, Jose Oca-Cossio, Yunqing Cai, Alicia R. Brown, William L. Clapp, Dale R. Abrahamson, Naohiro Terada, Gary W. Ellison, **Clayton E. Mathews**, Christopher D. Batich, and Edward A. Ross. Repurposed Biological Scaffolds: Kidney To Pancreas. Organogenesis. 2015 11(2):47-57. PMID: 26252820
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72. Seyhan AA, Nunez Lopez YO, Xie H, Yi F, **Mathews C**, Pasarica M, Pratley RE. Pancreas-enriched miRNAs are altered in the circulation of subjects with diabetes: a pilot cross-sectional study. Sci Rep. 2016 Aug 25;6:31479. doi: 10.1038/srep31479. PMID: 27558530
73. Richardson SJ, Rodriguez-Calvo T, Gerling IC, **Mathews CE**, Kaddis JS, Russell MA, Zeissler M, Leete P, Krogvold L, Dahl-Jørgensen K, von Herrath M, Pugliese A, Atkinson MA, Morgan NG. Islet cell hyperexpression of HLA class I antigens: a defining feature in type 1 diabetes. Diabetologia. 2016 Nov;59(11):2448-58. doi: 10.1007/s00125-016-4067-4. PMID: 27506584
74. Babon JA, DeNicola ME, Blodgett DM, Crèvecoeur I, Buttrick TS, Maehr R, Bottino R, Naji A, Kaddis J, Elyaman W, James EA, Haliyur R, Brissova M, Overbergh L, Mathieu C, Delong T, Haskins K, Pugliese A, Campbell-Thompson M, **Mathews C**, Atkinson MA, Powers AC, Harlan DM, Kent SC. Analysis of self-antigen specificity of islet-infiltrating T cells from human donors with type 1 diabetes. Nat Med. 2016 Dec;22(12):1482-1487. doi: 10.1038/nm.4203. PMID: 27798614
75. Haller MJ, Gitelman SE, Gottlieb PA, Michels AW, Perry DJ, Schultz AR, Hulme MA, Shuster JJ, Zou B, Wasserfall CH, Posgai AL, **Mathews CE**, Brusko TM, Atkinson MA, Schatz DA.Antithymocyte Globulin Plus G-CSF Combination Therapy Leads to Sustained Immunomodulatory and Metabolic Effects in a Subset of Responders With Established Type 1 Diabetes. Diabetes. 2016 Dec;65(12):3765-3775. PMID: 27669730
76. Lowe JR, Perry DJ, Salama AK, **Mathews CE**, Moss LG, Hanks BA. Genetic risk analysis of a patient with fulminant autoimmune type 1 diabetes mellitus secondary to combination ipilimumab and nivolumab immunotherapy. J Immunother Cancer. 2016 Dec 20;4:89. doi: 10.1186/s40425-016-0196-z. PMID: 28031819
77. Delitto D, Delitto AE, DiVita BB, Pham K, Han S, Hartlage ER, Newby BN, Gerber MH, Behrns KE, Moldawer LL, Thomas RM, George T, Brusko T, **Mathews CE**, Liu C, Trevino JG, Hughes SJ, Wallet S. Human pancreatic cancer cells induce a MyD88-dependent stromal response to promote a tumor-tolerant immune microenvironment. Cancer Res. 2017 Feb 1;77(3):672-683. doi: 10.1158/0008-5472.CAN-16-1765. PMID: 27864347

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82. Chen J, Chernatynskaya AV, Li J-W, Kimbrell MR, Cassidy RJ, Perry DJ, Muir AB, Atkinson MA, Brusko TM, **Mathews CE**. T cells display mitochondria hyperpolarization in human type 1 diabetes. Scientific Reports. Sci Rep. 2017 Sep 7;7(1):10835. doi: 10.1038/s41598-017-11056-9. PMID: 28883439
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2018 The T1D-risk allotype of PTPN22 (PTPN22-620W) potentiates IFNγ receptor signaling and production of the TH1/TC1 chemoattractant CXCL10 in macrophages. Lucas Armitage, Katherine Santostefano, Melanie Cash, Naohiro Terada, Clayton Mathews, Mark Wallet. 2018 HIRN Annual Meeting, Washington, DC, May, 2018

2018 Generation of type 1 diabetes relevant mesodermal lineages from induced pluripotent stem cells. Katherine Santostefano, Lucas Armitage, Mark Wallet, Naohiro Terada, Clayton Mathews. 2018 HIRN Annual Meeting, Washington, DC, May, 2018

2018 Interferon alpha-induced phosphorylation dynamics reveals molecular mechanisms of human beta cells under stress. Brittney N. Newby, Lian Yi, Adam C. Swensen, Therese Rw Clauss, Marina A. Gritensko, Ronald J. Moore, Rohit N. Kulkarni, Clayton E. Mathews, Wei-Jun Qian. 2018 HIRN Annual Meeting, Washington, DC, May, 2018

2018 The Human Islet of Langerhans Cell Type Specific Proteome Map. Adam C. Swensen, Chi Yuet X'avia Chan, Vladislav A. Petyuk, Ercument Dirice, Marina AGritsenko, Ernesto S. Nakayasu, Ronald J. Moore, Raghavendra G. Mirmira, Clayton E Mathews,Rohit N. Kulkarni, and Wei-Jun Qian. 2018 HIRN Annual Meeting, Washington, DC, May, 2018

2018 Cellular phenotypic and adaptive receptor repertoire profiles from pancreatic organ donors with type 1 diabetes. Daniel Perry, Howie Seay, Keshav Motwani, Laura Jacobsen, Clayton Mathews, Todd Brusko. 2018 HIRN Annual Meeting, Washington, DC, May, 2018

2018 Nanodroplet Processing Platform for Spatially Resolved in-situ Proteome Characterization of Pancreatic Islets and Tissue Sections. Ying Zhu, Paul D. Piehowski, Maowei Dou, Jing Chen, Rui Zhao, Ronald J. Moore, Richard D.Smith, Mark A. Atkinson, Martha Campbell-Thompson, Clayton E Mathews, Ryan T. Kelly, Wei-Jun Qian. 2018 HIRN Annual Meeting, Washington, DC, May, 2018

2018 Analysis of Transcriptome Data from 261 Individual Laser-captured Islets from Non-diabetic, Autoantibody Positive and Type 1 Diabetic Organ Donors. Martha Campbell-Thompson, Elizabeth Butterworth, Nataliya Lenchik, Mark Atkinson, Clayton Matthews, Ivan Gerling. American Diabetes Association Annual Scientific Sessions, June 2018

2018 The leader region of preproinsulin contains common epitopes for islet-infiltrating CD8 T-cells derived from organ donors with type 1 diabetes. Maki Nakayama, Theodore Williams, Laurie Landry, Clayton Mathews, Bart Roep, Aaron Michels. FOCIS Annual Meeting, June 2018

2018 Transcriptome Data from 260 Individual Laser-captured Islets from Non-diabetic, Autoantibody Positive and Type 1 Diabetic Organ Donors. Martha Campbell-Thompson, Elizabeth Butterworth, Nataliya Lenchik, Mark Atkinson, Clayton Mathews, Ivan Gerling. Immunology of Diabetes Society, October, 2018

2018 Unraveling the needs of a killer: Glucose required for CD8+ T-cell destruction of β-cells. Scott Stimpson, Jing Chen, Brittney N. Newby, Ram Khattri, Matthew Merritt and Clayton E. Mathews. Immunology of Diabetes Society, October, 2018

2018 T cells from patients with type 1 diabetes fail to upregulate mitochondrial genes upon activation. Jing Chen, Clayton Mathews. Immunology of Diabetes Society, October, 2018

2018 Analysis of T cell receptor and specificity of T cells in the islets of type 1 diabetes organ donors. Maki Nakayama, Laurie Landry, Theodore Williams, Howard Davidson, Sally Kent, Clayton Mathews, Alvin C. Powers, Bart Roep, Aaron Michels. Immunology of Diabetes Society, October, 2018

2019 Live human pancreas tissue slices as a platform for investigating the immunopathological processes of type 1 diabetes. Scott Stimpson, Jing Chen, Helmut Hiller, Paul Joseph, Irina Kusmartseva, Alberto Pugliese, Mark Atkinson, Stephan Speier, Todd Brusko, Maigan Brusko, Clayton E. Mathews, and Edward A. Phelps, on behalf of the nPOD Tissue Slice Working Group. nPOD Annual Meeting, Ft. Lauderdale, FL, February 2019

2019 T-cell receptor repertoires in peripheral blood encode type 1 diabetes status. Keshav Motwani, Milena Pavlovic, Laura Jacobsen, Geir K. Sandve, Clayton Mathews, Victor Greiff, Todd Brusko. HIRN Annual Meeting, Washington, DC, April 2019

2019 The T1D-associated variant of PTPN22 (rs2476601), augments macrophage activation by CD40L and IFNγ. Lucas Armitage, Katherine Santostefano, Naohiro Terada, Clayton Mathews, Mark Wallet. HIRN Annual Meeting, Washington, DC, April 2019

2019 Islet: immune cellular and genetic defects in type 1 diabetes modeled in an isogenic cellular system. Scott Stimpson, Katherine Santostefano, Jared Taylor, Lina Sui, Natalie Fredette, Brittney Newby, Mani Annamalai, Lucas Armitage, Alexei Savinov, Mark Wallet, Naohiro Terada, Todd M Brusko1, Jing Chen, Dietrich M. Egli and Clayton. E Mathews. HIRN Annual Meeting, Washington, DC, April 2019

2019 Live pancreas tissue slices as a platform for investigating the pathogenesis of T1D. M Huber, D Drotar, S Speier, T Brusko, M Brusko, E Phelps, C Mathews. Midwest Islet Club, Ann Arbor, MI, May 2019

2019 Efficacy of New Onset Type 1 Diabetes (T1D) Intervention Trials: Variation in 1 Year Outcomes. Michael J Haller, Madison N Greco, Desmond A Schatz, Mark A Atkinson, Todd M Brusko, Clayton E Mathews, Laura M Jacobsen, Kevan C. Herold, Stephen E. Gitelman, Jeffrey P. Krischer, and Brian N. Bundy. American Diabetes Association Scientific Sessions, San Francisco, CA, June 2019

2019 NKG2D signaling within the pancreas reduced diabetes in NOD mice by enhancing CD8+ central memory T cell formation. Andrew P Trembath, Kelsey L Krausz, Neekun Sharma, Ivan C Gerling, Clayton E Mathews, Mary A Markiewicz. 2019 AAI Annual Meeting

2020 The application of the live tissue slice model in the study of type 1 diabetes pathogenesis. Mollie Huber, Denise Drotar, Andrea Lin, Helmut Hiller, Maria Beery, Paul Joseph, Irina Kusmartseva, Stephan Speier, Todd Brusko, Maigan Brusko, Mark Atkinson, Edward Phelps and Clayton Mathews. Islet Biology: From Gene to Cell to Micro-Organ (J6). Santa Fe, NM, January, 2020

2020 Investigating type 1 diabetes pathogenesis with the live pancreas tissue slice platform. Mollie Huber, Denise Drotar, Helmut Hiller, Paul Joseph, Irina Kusmartseva, Stephan Speier, Todd Brusko, Maigan Brusko, Alberto Pugliese, Mark Atkinson, Edward Phelps, and Clayton Mathews. nPOD Annumal Meeting, Tampa, FL February 2020

2020 Circulating neutrophil numbers increase with age but are not a biomarker of T1D risk. Andrea Lin, Daniel Perry, Mark Brantly, Desmond Schatz, Mark Atkinson, Michael Haller, Todd Brusko, Clayton Mathews. American Diabetes Association's 80th Scientific Sessions, Chicago, IL, June 2020. *ADA Presidents' Select Abstract Presentation

2020 Senescent phenotype of islet-infiltrating CD8+ T cells from donors with type 1 diabetes. Jenny Aurielle B. Babon, Megan E. DeNicola, Ali Naji, Clayton E. Mathews, Alvin C, Powers, Dirk Homann and Sally C. Kent. 2020 HIRN Annual Meeting. October, 2020

2020 γδ T cells infiltrate pancreatic islets and are dysregulated in the peripheral blood of subjects with type 1 diabetes (T1D). Shray Amin, Megan E. DeNicola, Eddie A. James, Sally C. Kent, Clayton E. Matthews, Ali Naji, Alvin C. Powers. 2020 HIRN Annual Meeting. October, 2020

2021 m6A mRNA Methylation Regulates the Innate Immune Response to Inflammatory Cytokines in Human β-Cells, Dario F De Jesus, Zijie Zhang, Natalie Kay Brown, Giorgio Basile, Ling Xiao, Sevim Kahraman, Clayton E Mathews, Alvin C Powers, Mark A. Atkinson, Decio L. Eizirik, Chuan He, and Rohit N Kulkarni. 2021 HIRN Annual Meeting, September, 2021

2021 Islet-derived Chemokine Gradients from Human Islets within 3-D Pancreatic Extracellular Matrix Hydrogels Significantly Alters the Migration Characteristics of Cytotoxic T Lymphocytes. Magdalena M. Samojlik, Smit N. Patel, Ying Li, Leeana D. Peters2 Todd M. Brusko2 Clayton E. Mathews, Edward A. Phelps, and Cherie L. Stabler. 2021 HIRN Annual Meeting, September, 2021

2021 Preproinsulin-reactive CD4 T cells in the islets of type 1 diabetes organ donors. Clayton Mathews, Maki Nakayama. 2021 nPOD Annual Meeting, February, 2021

2022 Spatially-resolved proteome mapping of >4000 proteins at 50-µm resolution by coupling laser dissection, nanoPOTS, and FAIMS-MS. Yumi Kwon, Sarah Williams, Jing Chen, Tyler

Sagendorf, Ernesto Nakayasu, James Carson, Martha Campbell-Thompson, Clayton Mathews, Wei-Jun Qian, Ying Zhu. American Society for Mass Spectrometry, June 2022

2022 Differences in Islet Transcriptomes of Insulitic versus Normal Human Islets of Langerhans in Type 1 Diabetes (T1D). Dye AM; Ashbery G, Lenchik N, Atkinson MA2 Mathews CE2 Campbell-Thompson M, Gerling IC. ADA Annual Scientific Sessions, June 2022

2022 Autoimmunity risk loci tagged to CIITA and MHC class II impact CD8+ T cell and monocyte HLA-DR expression. Melanie R. Shapiro, Daniel J. Perry, Rhonda L. Bacher, James A. McNichols, Srikar Chamala, Andrew Muir3 Desmond A. Schatz, Clayton E. Mathews, Mark A. Atkinson, Todd M. Brusko. 2022 FOCIS Annual Meeting

2022 Investigating β cell dysfunction during T1D progression with the live pancreas tissue slice model. Mollie Huber, Marjan Slak Rupnik, Denise Drotar, Helmut Hiller, Maria Beery, Irina Kusmartseva, Mark Atkinson, Edward Phelps, Clayton E. Mathews. 2022 ADA Scientific Sessions, New Orleans, LA.

2022 The Type 1 Diabetes Protective Variant of Tyrosine Kinase 2 (*TYK2*) Protects β-cells from Autoimmunity. Aymee Rodriguez Tamayo, Mollie K. Huber, Opeoluwa F. Iwaloye, Edward J. Butfiloski, Clayton E. Mathews. 2022 ADA Scientific Sessions, New Orleans, LA.

2022 SH2B3 risk allotype is associated with increased vascular inflammation in induced pluripotent stem cells from Type 1 Diabetes donors. Similoluwa Ogundare, Amy Meacham, Clayton Mathews. 2022 HIRN Annual Meeting

2023 Declines in β Cell Function and Glucose Responsiveness Are Independent of Insulitis During T1D Pathogenesis. Mollie Huber, Adrienne Widener, Dylan Smurlick, Helmut Hiller, Maria Beery, Ellen Verney, Irina Kusmartseva, Martha Campbell-Thompson, Mark Atkinson, Edward A. Phelps, and Clayton E. Mathews. 2023 nPOD Annual Meeting

2023 Virus-specific T cells in the pancreas of organ donors regardless the presence of type 1 diabetes. Kristen Wells, Amanda M. Anderson, Laurie G. Landry, Ali H. Shilleh, Alvin C. Powers, Mark A. Atkinson, Clayton E. Mathews, Alberto Pugliese, Holger A, Russ, Aaron W. Michels, Maki Nakayama. 2023 nPOD Annual Meeting

2023 Single Islet Proteomics Profiling of Intra-donor Heterogeneity in Pre-symptomatic T1D Patients Reveals an Immune Signature Reflecting the Progressive Islet dysfunction. Ying Zhu, An D. Fu, Sarah Williams, Elizabeth A. Butterworth, Tyler Sagendorf, Yumi Kwon, Vlad Petyuk, Adam C Swensen, Jing Chen, Rohit N. Kulkarni, Clayton E Mathews, Martha Campbell-Thompson, Wei-Jun Qian. 2023 nPOD Annual Meeting

2023 Declines in β Cell Function and Glucose Responsiveness Are Independent of Insulitis During T1D Pathogenesis. Mollie Huber, Adrienne Widener, Dylan Smurlick, Helmut Hiller, Maria Beery, Ellen Verney, Irina Kusmartseva, Martha Campbell-Thompson, Mark Atkinson, Edward A. Phelps, and Clayton E. Mathews. 2023 Immunology of Diabetes Society, Paris, France

2023 Cellular and phosphoproteomic studies reveal the role of NOX2 in CD8+ T cell functions. Jing Chen, Xiaolu Li, Chelsea M. Hutchinson, Wei-Jun Qian, Clayton E. Mathews. 2023 Immunology of Diabetes Society, Paris, France

2023 Presence of virus-specific CD8 T cells in the pancreas of organ donors with and without type 1 diabetes. Kristen L. Wells, Amanda M. Anderson, Laurie G. Landry, Ali H. Shilleh, Alvin C. Powers, Mark A. Atkinson, Clayton E. Mathews, Alberto Pugliese, Holger A, Russ, Aaron W. Michels, Maki Nakayama. 2023 Immunology of Diabetes Society, Paris, France

2023 The MDA5627X variant is associated with Type 1 Diabetes protection via attenuated inflammatory anti-viral responses. Opeoluwa F. Iwaloye, Lucas H. Armitage, Edward Butfiloski, Amy Meacham, Clayton E. Mathews. 83rd American Diabetes Association Scientific Sessions, June 2023, San Diego, CA

2023 *SH2B3* Risk Allotype is Associated with Increased Vascular Inflammation in Induced Pluripotent Stem Cells from Type 1 Diabetes donors. Similoluwa Ogundare, Amy Meacham, Todd Brusko, Clayton E Mathews. FOCiS 2023, Boston, MA

2024

Genbank Entries

1. AY533108 Mus musculus strain NON/Lt mitochondrion, complete genome
2. AY533107 Mus musculus strain NOD/LtJ mitochondrion, complete genome
3. AY533106 Mus musculus strain ALS/Lt mitochondrion, complete genome
4. AY533105 Mus musculus strain ALR/Lt mitochondrion, complete genome
5. AF538059 Mus musculus strain ALR/Lt interleukin-2 (Il2) mRNA, partial cds
6. AF542385 Mus musculus strain CTS/Shi interleukin-2 (Il2) mRNA, partial cds
7. AF542384 Mus musculus strain C57BL/Ks interleukin-2 (Il2) mRNA, partial cds
8. AF542383 Mus musculus strain ALS/Lt interleukin-2 (Il2) mRNA, partial cds
9. AF119254 Mus musculus MHC class II antigen IE alpha (H2-Ea) mRNA, H2-Ea-nb1 allele, partial cds
10. AF119253 Mus musculus MHC class II antigen IE alpha (H2-Ea) mRNA, H2-Ea-nb1 allele, partial cds
11. AF119252 Mus musculus MHC class II antigen IA beta 1 (H2-Ab1) mRNA, H2-Ab1-nb1 allele, complete cds
12. AF119251 Mus musculus MHC class II antigen IA beta 1 (H2-Ab1) mRNA, H2-Ab1-nb1 allele, complete cds
13. AF115771 Rattus norvegicus Sprague-Dawley tRNA-Lys gene, partial sequence; and ATP synthase subunit 8 (atp8) gene and mutant ATP synthase subunit 6 (atp6) gene, atp6-a allele, mitochondrial genes encoding mitochondrial products, complete cds
14. AF115770 Rattus norvegicus BHE/Cdb tRNA-Lys gene, partial sequence; and ATP synthase subunit 8 (atp8) gene and mutant ATP synthase subunit 6 (atp6) gene, atp6-b allele, mitochondrial genes encoding mitochondrial products, complete cds

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PROFESSIONAL ACTIVITIES

Teaching: University of Georgia

1995, 1996 Graduate Teaching Assistant. Nutrition 100. Introduction to Human Nutrition

Teaching: University of Pittsburgh

2002 - 2007 Immunological Aspects of Autoimmune Diabetes Journal Club
2003 - 2007 INTBP2005 “Foundations of Biomedical Science Conference”
2004 Chemistry 1710 “Undergraduate Research”
2005 - 2007 IMM 3240 “Immunology Grant Writing Course”
2005 - 2007 MSCMP2740 "Molecular Pathobiology”

Teaching: University of Florida

2026-Present VME 5141 Introduction to Comparative Immunology (Lecturer)
2025-Present VME 5101 Comparative Biomedical Sciences and One Health (Lecturer)
2009-2021 Co-Director of the Immunology and Microbiology Concentration, University of Florida Biomedical Sciences Graduate Program
2008-2023 GMS5905 “Immunology & Microbiology Grant Writing” Course Director

2020-2022	GMS6143 "Cells of the Innate Immune" Course Director
2019-Present	VME6505 "Autoimmunity" (Lecturer)
2008-2015	ANG6532/ANT4531 “Molecular Genetics of Disease” (Lecturer)
2008-2016	GMS6140 “Principles of Immunology” (Lecturer)
2009	GMS6006 “Fundamentals of Immunology & Microbiology” (Lecturer)
2012	GMS6382 “Advanced Cellular & Molecular Immunology” Course Director

Graduate Student Committees:

2002 - 2004	Thesis Committee, Grace Olshansky, Program of Immunology University of Pittsburgh
2003 - 2006	Dissertation Committee, Maria Soledad Santos, Program of Molecular Pharmacology University of Pittsburgh
2006 - 2010	Dissertation Committee, Terri Thayer, Program of Immunology, University of Pittsburgh. **Committee Chair**. Ph. D. Conferred 2010,
2007 - 2010	Dissertation Committee, Maigan Hulme, Program of Immunology and Microbiology
2008 - 2012	Dissertation Committee, Yaima Luzardo, Program of Immunology and Microbiology, **Committee Chair**
2008 - 2012	Dissertation Committee, Alex Cuenca, Program of Immunology and Microbiology, **Committee Chair**
2008 - 2011	Dissertation Committee, Daniel Perry, Program of Immunology and Microbiology
2008 - 2012	Dissertation Committee, Dana Catalfamo, Program of Immunology and Microbiology
2009 - 2015	Dissertation Committee, Christopher Fuhrman, Program of Immunology and Microbiology
2009 - 2014	Dissertation Committee, Sindhu Arivazhagan, Program of Immunology and Microbiology
2009 - 2015	Dissertation Committee, Allison Sang, Program of Immunology and Microbiology
2009 - 2017	Dissertation Committee, Benjamin Looney, Program of Immunology and Microbiology
2009 - 2014	Dissertation Committee, Young Mee Yoon, Program of Immunology and Microbiology
2010 - 2015	Dissertation Committee, Chao Liu, Program of Immunology and Microbiology **Committee Chair**
2010 - 2015	Dissertation Committee, Sofia Appleberg, Program of Immunology and Microbiology
2010 - 2015	Dissertation Committee, Yiming Yin, Program of Immunology and Microbiology
2011 - 2016	Dissertation Committee, Ramya Sivakumar, Program of Immunology and Microbiology
2011 - 2015	Dissertation Committee, Judit Cserny, Program of Immunology and Microbiology
2012 - 2016	Dissertation Committee, Robert Whitener, Program of Immunology and Microbiology, **Committee Chair (2013-2016)**
2013 - 2017	Dissertation Committee, Brittney Newby, UF MD/PhD Program, **Committee Chair**
2013 - 2017	Dissertation Committee, Joonseok Cho, Program of Immunology and Microbiology
2013 - 2018	Dissertation Committee, Evelyn Bracho-Sanchez, Program of Immunology and Microbiology
2013 - 2018	Dissertation Committee, Jennifer Wiggins, Program of Immunology and Microbiology
2014 - 2016	Dissertation Committee, Richard Coffey, Program of Immunology and Microbiology
2014 - 2016	Thesis Committee, Alicia Chechele, Program of Immunology and Microbiology
2015 - 2019	Thesis Committee, Cheng Ye, Program of Immunology and Microbiology
2015 - 2019	Dissertation Committee, Gabriel Fernandez Bueno, Program of Immunology & Microbiology, **Committee Chair**

2015 - 2019 Dissertation Committee, Andrea Lin, Program of Immunology & Microbiology, **Committee Chair**
2015 - 2020 Dissertation Committee, Lucas Armitage, Program of Immunology & Microbiology, **Committee Chair**
2015 - 2017 Thesis Committee, Jessica Stanfield, Program of Immunology & Microbiology
2015 - 2017 Thesis Committee, Joseph Dean, Program of Immunology & Microbiology
2015 - 2017 Dissertation Committee, Maria Coronel, Program of Immunology & Microbiology
2015 - 2018 Dissertation Committee, Jonathan Cho, Program of Immunology & Microbiology
2015 - 2019 Dissertation Committee, Morgan Smith, Program of Immunology & Microbiology
2015 - 2020 Dissertation Committee, Ashley Zuniga, Program of Immunology & Microbiology
2018 - 2022 Dissertation Committee, Siddant Gupta, Program of Immunology & Microbiology
2018 - 2023 Dissertation Committee, Marc McLeod, Program of Biochemistry
2018 - 2023 Dissertation Committee, Leeana Peters, Program of Immunology & Microbiology
2019 - 2023 Dissertation Committee, Puchong Thirawat, Program of Immunology & Microbiology
2019 - 2023 Dissertation Committee, Zach Krumm, Neuroscience Program
2020 - 2023 Dissertation Committee, Megan Berryman, Microbiology & Cell Science
2021 - 2023 Dissertation Committee, Alexandra Cuaycal, Microbiology & Cell Science
2018 - 2025 Dissertation Committee, Magdalena Samojlik, Biomedical Engineering
Committee Co-Chair
2018 - 2024 Dissertation Committee, Mollie Huber, Program of Immunology & Microbiology, **Committee Co-Chair**
2019 - 2025 Dissertation Committee, Simi Ogundare, Program of Immunology & Microbiology, **Committee Chair**
2020 - 2025 Dissertation Committee, Anna DeVries, Cancer Program
2020 - 2025 Dissertation Committee, Charles Lazimi , Biomedical Engineering
2021 - 2025 Dissertation Committee, Diana Nord, Program of Immunology & Microbiology
2022 - Present Dissertation Committee, Opeoluwa Iwaloye, Program of Immunology & Microbiology, **Committee Chair**
2022 - 2025 Dissertation Committee, Elizabeth Butterworth, Program of Immunology & Microbiology, **Committee Co-Chair**
2023-2025 Thesis Committee, Roxanne Fink, Program of Molecular Genetics and Microbiology
2022-Present Dissertation Committee, Dalton Graham, Program of Biochemistry and Molecular Biology
2023-Present Dissertation Committee, Alex Hung, Program of Immunology & Microbiology
2024-Present Dissertation Committee, Yu Li, Veterinary Medical Sciences
2024-Present Dissertation Committee, Wanling Liu, Veterinary Medical Sciences
2024-Present Dissertation Committee, Adam Jacob Mearig, Microbiology and Cell Science
2025-Present Dissertation Committee, Kamilah Roca-Datzer, Program of Immunology & Microbiology, **Committee Chair**

Mentorship of Students/Fellows:

2025-Present Kamilah Roca-Datzer, Graduate Student. University of Florida College of Medicine
Project Title: *SH2B3*-mediated hyperinflammation and T1D
2025-Present Benjamin Thompson, Post-doctoral Fellow, University of Florida
Project Title: Succinate Dehydrgenase Deficiency and HLA-Calss 1 Hyperexpression in T1D
2023-Present Richard Coffey, Post-doctoral Fellow, University of Florida College of Medicine
Project Title: Role of Type 1 Interferons in the Pathogenesis of Type 1 Diabetes

2023-Present	Alexandra Cuaycal, Post-doctoral Fellow, University of Florida College of Medicine Project Title: Mechanisms of Beta Cell Failure in Autoimmune Diabetes
2022-Present	Elizabeth Butterworth, Graduate Student. University of Florida College of Medicine Project Title: Role of iron metabolism in beta cell health and dysfunction Role: Co-mentor, with primary mentor Martha Campbell-Thompson
2022-Present	Ope Iwaloye, Graduate Student. University of Florida College of Medicine Project Title: Determining the mechanism of IFIH1 disease-associated variants on immune responses in Type 1 diabetes.
2020-Present	Simi Ogundare, Graduate Student. University of Florida College of Medicine Project Title: Role of *SH2B3* in the Pathogenesis of T1D *Co-mentored with Todd M Brusko
2019-Present	Mollie Huber, Graduate Student. University of Florida College of Medicine Project Title: Use of pancreas tissue slices to study T1D pathogenesis in situ. *Co-mentored with Edward Phelps and Mark Atkinson
2019-2020	Lucas Armitage, Graduate Student. University of Florida College of Medicine Project Title: Genetics of *PTPN22* in human T1D
2015-2019	Andrea Lin, Graduate Student. University of Florida College of Medicine Project Title: Combination Immunotherapy for permanent reversal of T1D
2015-2019	Gabriel Fernandez-Bueno Graduate Student. University of Florida College of Medicine Project Title: Genetics of Beta Cell Failure
2014-2018	Scott Stimpson, Post-doctoral Fellow, University of Florida College of Medicine Project Title: Role of Metabolism in CD8+ T cell Effector Function Role: Mentor
2012-2017	Brittney Newby, MD/PhD Scholar. University of Florida College of Medicine Project Title: Role of T1D in the pathogenesis of T1D
2012-2016	Robert Whitener, Graduate Student. University of Florida College of Medicine. Project Title: Idd22 and Resistance to Type 1 Diabetes
2010 - 2015	Chao Liu. Graduate Student. University of Florida College of Medicine. Project Title: Role of Free Radicals in Diabetogenic Immune Activation
2008 - 2012	Alex G. Cuenca. Ph.D. student. University of Florida College of Medicine. Project Title: The Role of TRIF and CXCL10 Signaling in the Murine Neonatal Response to Sepsis
2008 - 2012	Yaima Luzardo. Graduate Student. University of Florida College of Medicine. Project Title: Transformed human beta cells as targets of autoimmune effectors
2008-2010	Lisa Gallo. Fellow in Pediatric Endocrinology. Research Fellow of the Lawson Wilkins Pediatric Endocrine Society Project Title: Role of adhesion molecules in pathogenesis of T1D Project Title: Identification of *Susp* and the role of *Susp* in T1D-Resistance
2005 - 2007	Jing Chen. Post-Doctoral Fellow. University of Pittsburgh. Project Title: Generation of and Study of Cybrid Cell Lines to Define the Mechanism of T1D Resistance Imparted by a Single Nucleotide Polymorphism in *mt-Nd2*.
2004 - 2007	Diego Ize-Ludlow. Fellow in Pediatric Endocrinology. Project 1: Role of solute carrier family 7, member 2 in arginine-induced insulin secretion. Project 2: Accelerator hypothesis and T1D development of the NOD mouse.
2003 - 2008	Aaron M. Gusdon. Undergraduate Student, University of Pittsburgh. Project Title: Contributions of the mt-Nd2 alleles to Type 1 Diabetes Susceptibility/Resistance

2003	Aaron Gusdon. Senior Thesis (Seneca Valley High School). Project Title: Use of Pyrosequencing to Precisely Determine Levels of Mitochondrial Heteroplasmy
1999	Brian D. Dunn. The Jackson Laboratory Undergraduate Summer Program. Project Title: Genetic Similarities of Free Radical Dissipation and IDDM Resistance in ALR/Lt Mice.
1998	Jason W. Caldwell. Burroughs Wellcome Medical Student Research Fellowship. Project title: Reducing Potential And Peripheral Glucose Uptake. Mechanisms Of Free Radical Induced Glucose Intolerance.

Active Grants:

P01 AI42288 Mathews (PI) 7/1/13-6/30/2028
NIH/NIDDK
Immune Function and the Progression to Type 1 Diabetes
Role of applicant: Principal Investigator of Project 2

R01DK135081 Mathews/Ostrov/Qian (MPI) 2/1/23-1/31/28
NIH/NIDDK
Discovery and Roles of In Situ Islet Neoantigens in Human Type 1 Diabetes
Role: Contact Principal Investigator

R01 AI175334 Hudalla/Keselowski/Mathews (MPI) 11/1/2023-10/31/2028
NIH/NIAID
Synthetic Multivalent Galectin Assemblies as Anti-Inflammatory Therapies
Role: Principal Investigator

RM1 GM139690 Efron/Kladde/Maile/Mathews (MPI) 5/1/21-4/30/26
NIH/NIGMS
Dysfunctional Myelopoiesis and Myeloid-Derived Suppressor Cells in Sepsis Pathobiology
Role: Principal Investigator

R01 DK127497 Tse/Mathews/Millman (MPI) 12/01/20-11/30/26
NIH/NIDDK
Determining the mechanism of IFIH1 disease-associated variants on beta-cell and immune responses in Type 1 diabetes
Role: Principal Investigator

U54 DK127823 Qian/Carson/Mathews (MPI) 9/1/20-8/31/24 (NCE)
NIH/NIDDK
Multi-omic 3D Pancreatic maps for a Human BioMolecular Atlas
Role: Principal Investigator

<u>Previous Funding</u>

UG3 DK122638 Stabler/Agarwal/Brusko/Mathews (MPI) 08/01/19-7/30/24
NIH/NIDDK
Engineering a Human Microphysiological System for the Characterization of Islet-Immune Interactions
Role: Principal Investigator

R01 DK122160 Qian/Campbell-Thompson/Kulkarni/Mathews (MPI) 08/01/19-7/30/24

NIH/NIDDK
Pathways and critical regulators of early beta-cell dysfunction in type 1 diabetes
Role: Principal Investigator

R01DK112865 Sunny/Mathews/Merritt (MPI) 04/01/17-05/31/22
NIH/NIDDK
Metabolic Origins of Nonalcoholic Steatohepatitis
Role: Principal Investigator
Currently in No Cost Extension

W911NF-17-3-003 Kaymen (PI)/Angellini (Site PI) 01/01/17-12/31/23
Adv. Regenerative Manufacturing Inst./US Army
Advanced Liver 3-D Tissue Models for Drug Development Applications to Support Toxicology, Drug Metabolism, Target ID & Pharmacology
Role: Co-Investigator
Currently in No Cost Extension

T32 DK108736 Atkinson/Keselowski 09/30/22-09/29/27
NIH/NIDDK
Interdisciplinary Graduate Program in Type 1 Diabetes and Biomedical Engineering
Role: Program Director

R01DK121130 Lorca (PI) 9/1/19-6/30/24
NIH/NIDDK
Evaluation of safety, tolerability and immunological responses to Lactobacillus johnsonii N6.2 supplementation in young subjects with Diabetes type I
Role: Co-Investigator

AGR DTD 01-08-2019 Leiding (PI) 1/08/2018-7/07/2021
Horizon Pharma
The Role of IFNγ supplementation in T cell effector function in Patients with Chronic Granulomatous Disease
Role: Co-Investigator

UC4 DK104194 Mathews (PI) 12/1/14-11/30/19 2.4 calendar
NIH $3,270,830
Genetic regulation of human beta cell destruction
Our goal is to create an innovative platform to study how Type 1 Diabetes genetic risk factors precipitate autoimmunity leading to the loss of insulin producing cells.
Role: Principal Investigator

F30 DK105788 Newby (PI) 5/11/15-5/10/19 0 calendar
NIH/NIDDK $105,965
Type 1IFN in Type 1 Diabetes: Influencing beta-cell and CD8+ T cell interactions
Role: Mentor

DP3 DK110845 Michaels (PI) 07/01/16-06/30/19 0.60 calendar
UC Denver/NIH $249,996

Insulin Specific T and B cells in Type 1 Diabetes
Role: Co-Investigator

DP3 — Qian (PI) — 07/01/16-06/30/19 — 1.20 calendar
PNNL/NIH — $225,000
Serum protein biomarkers for predicting type 1 diabetes development
Role: Co-Investigator

1-15-TS-22 — Mathews (PI) — 1/1/2015-12/31/2017
ADA
Mechanisms of Type 1 Diabetes Remission Induced by Combination Therapy
The major goals of this project are hoped to dramatically improve on our goal to identify a successful immunotherapeutic intervention for T1D.
Role: Principal Investigator

R01 DK074656 — Mathews (PI) — 6/1/12-5/31/17
NIH/NIDDK
mt-Nd2 and resistance to autoimmune diabetes
Understand the role that the sequence variation in *mt-Nd2* plays in resistance to T1D.
Role: Principal Investigator

JDRF/Helmsley — Mathews (PI) — 9/1/13-8/31/15
Role: Principal Investigator
Title: Causes for the Loss of Beta Cell Function in Pre-Diabetes
Source: Juvenile Diabetes Foundation International
Total Award: $165,000 ($150,000/ year Direct)
Objective: The proposed studies will address a major gap in our understanding of type 1 diabetes, namely, to identify the mechanisms of beta cell failure from a metabolic as well as an immunological perspective.

2007-2010 — JDRF 1-2007-77
Title: Identification of *Susp* and the role of *Susp* in T1D-Resistance
Project Role: Principal Investigator (20% Effort)
Source: Juvenile Diabetes Foundation International
Total Award: $462,000 ($140,000/ year Direct)
Objective: Define the T1D protective gene that is *Susp*, and examine the role of *Susp* in protection against T1D.

2003-2008 — U19 AI056374
Title: Utilization of ALR Derived T1D Resistance Loci to Improve Islet Graft Outcome
Project Role: Principal Investigator
Source: National Institutes of Health (NIAID)
Total Award: $1,480,000
Objective: to determine if the heritable resistance of ALR islets to autoimmunity will extend to a defense against both allo-graft and auto-graft rejection

2000-2007 — ERMS# 00035010 (PI: Massimo Trucco)

Title: New Advanced Technology to Improve Prediction and Prevention of Type 1 Diabetes
Project Role: Co-Investigator
Source: Department of Defense
Total Award: $4,936,454 ($715,786/ year Direct)
Objective: To utilize new technology, increasing the speed and relieving economic strain of genetic screening in large populations studies.

2007-2008 Smith and Nephew Diabetes Project (PI: Jeffrey Hollinger, Carnegie Mellon University)
Title: Bone Wound Healing in the Akita model of type 1 Diabetes
Project Role: Subcontract to Clayton E. Mathews
Source: Smith & Nephew Inc.
Direct Cost of Subcontract: $50,000 Annual
Objective: Determine whether "bioactive molecule 1" and "bioactive molecule 2" enhance bone wound healing in the C57BL/6-Ins2^{Akita} model of insulin requiring diabetes.

2006-2007 JDFI 5-2006-232
Title: Generation of Cybrids to Study a mtDNA SNP Associated with T1D
Project Role: Principal Investigator
Source: Juvenile Diabetes Foundation International
Total Award: $108,900 ($100,000/ year Direct)
Objective: To generate and study cell lines with a polymorphism in the mitochondrial DNA polymorphism that is protective against Type 1 Diabetes.

2001-2006 JDFI 2-2001-860
Title: Genetics of Resistance to Immune-Mediated Beta Cell Destruction
Project Role: Principal Investigator
Source: Juvenile Diabetes Foundation International
Total Award: $693,750 ($125,000/ year Direct)
Objective: Fine map Insulin Dependant Diabetes resistance loci and elucidate the molecular basis for the unique resistance of ALR to immune-mediated injury
NOTE: This grant was submitted for renewal July 14th, 2006. Listed as #2 under the Pending Support Section.

1999-2001 NIH F32 DK09865
Title: Mechanisms of susceptibility to alloxan in mice
Project Role: Principal Investigator
Source: National Institutes of Health (NIDDK)
Total Award: $201,600 ($40,000/ year Direct)
Objective: Establish the genetic and biochemical basis for the differential susceptibility of ALR and ALS strains to chemically-induced diabetes.

1999-2002 ADA EHL, Inc.
Title: Molecular genetics of free radical defenses in alloxan resistant (ALR) mice
Project Role: Co-Principal Investigator
Source: American Diabetes Association
Total Award: $333,000 ($100,000/ year Direct)
Objective: Identify both the genetic map location and the function of the gene or genes conferring upon ALR/Lt mice such remarkable resistance to ROS damage.

1999-2001 JDF 1-1999-642
Title: Genetic up-regulation of free radical defenses to prevent IDDM in NOD mice

Project Role: Co-Principal Investigator
Source: Juvenile Diabetes Foundation International
Total Award: $222,000 ($100,000/ year Direct)
Objective: Examine the resistance of ALR islets to autoimmune effector mediated stress.

Seminars and Invited Lectureships

1997

1. **Role of mitochondrial mutations in inherited metabolic diseases**
   The Jackson Laboratory, Bar Harbor, ME. September 30th, 1997
2. **Inheritance of NIDDM in the BHE/Cdb Rat**
   The Jackson Laboratory, Bar Harbor, ME. November 11, 1997

1998

1. **Molecular Characterization of the MHC region of ALR and ALS Mice**
   New England Immunology Society, Woods Hole, MA. Spetember 23, 1998
2. **Genetics of Resistance to Alloxan Induced Diabetes**
   The Jackson Laboratory, Bar Harbor, ME. November 4th, 1998

1999

1. **Importance of ICR Derived Mouse Strains for Diabetes Research**
   The Jackson Laboratory, Bar Harbor, ME. April 23rd, 1999
2. **ALR/Lt Islets Are Remarkably Resistant To Cytokine and Autoimmune Attack**
   4th Immunology of Diabetes Society, November 15th,1999

2000

1. **Why Can't CTS Get an Invitation to the Thymocyte Debutante Ball?**
   The Jackson Laboratory, Bar Harbor, ME. February 4th, 2000
2. **Is it Fate? Can Beta Cells Control Their Own Destiny In Autoimmune Diabetes?**
   The Jackson Labroatory, Bar Harbor, ME. April, 28th, 2000
3. **Does the ß cell play a part in autoimmune diabetes or is it the corpse at a funeral?**
   Corixa Corporation, Palo Alto, CA. May 10, 2000
4. **CTS/Shi mice: T-lymphocytopenia due to a lineage specific defect intrinsic to T cell precursors halting emigration of mature thymocytes**
   American Association of Immunologists Annual Meeting, Seattle, WA. May 15, 2000
5. **Genetic Resistance to IDDM: A Role for ß-Cell Expressed Resistance Determinants**
   American Diabetes Association Scientific Sessions, June 5th, 2000
6. **Does the ß cell play a part in autoimmune diabetes or is it the corpse at a funeral?**
   Children's Hospital of Pittsburgh, Pittsburgh, PA. August 29, 2000
7. **Free Radical Scavenging Potential in New Mouse Models of Diabetes Susceptibility and Resistance**
   Roche Symposium for Animals Models of NIDDM, September 19th, 2000
8. **Dissipation is a Good Thing! Genetic Similarities of IDDM Resistance & Free Radical Dissipation in ALR/Lt Mice**
   The Jackson Laboratory, Bar Harbor, ME. December 12th, 2000

2001

1. **Heightened Free Radical Dissipation Ability in a Diabetes-Resistant Mouse Strain**
   Biochemistry Department, University of Maine, Orono, ME. February 2, 2001.
2. **The Alloxan Susceptible Mouse Strain: A New Model for the Study of T2DM**
   The Jackson Laboratory Post-Doctoral Symposium, March 13, 2001

3. **Can Anti-oxidants Dissipate Autoimmune Diabetes? Genetic Similarities of IDDM Resistance & Free Radical Dissipation in ALR/Lt Mice**
   Molecular Genetics and Biochemistry Department, University of Pittsburgh Medical Center, April 22, 2001
4. **Genetic Similarities of Free Radical Dissipation and IDDM Resistance in ALR/Lt Mice.**
   American Diabetes Association Scientific Sessions, June 19, 2001
5. **New Mouse Model to Study Islet Transplantation in Insulin Dependent Diabetes Mellitus**
   Cell Transplant Society, 10th Congress, Keystone, CO. October 17th, 2001
6. **Animal Models for the Study of Autoimmune Diabetes and Islet Transplantation**
   Children's Hospital of Pittsburgh, Pittsburgh, PA. December 12, 2001

2002

1. **Genetic Control of Thymocyte Emigration**
   Children's Hospital of Pittsburgh, Pittsburgh, PA. February 19, 2002
2. **Dietary Components Can Regulate the Penetrance of Autoimmune Diabetes Susceptibility**
   University of Pittsburgh School of Medicine, University Wide Endocrine Conference, March 28, 2002
3. **What Controls End Stage T cell Development? Genetic Analysis of Peripherial T cell Deficiency in the CTS Mouse Strain.**
   Rocky Mountain Labs, Hamilton, MT, August 1st, 2002
4. **Mechanisms Underlying Resistance Of ALR Islets To Cytokine Destruction**
   Immunology of Diabetes Society, Copper Mountain, CO. September 22, 2002
5. **Reduced Thymic DC Expression of Islet Cell Antigen 69 Contributes to Loss of Self Tolerance**
   Immunology of Diabetes Society, Copper Mountain, CO. September 23, 2002
6. **Congenic Analysis of $H2^{gx}$-Linked T1D-Protection**
   Immunology of Diabetes Society, Copper Mountain, CO. September 24, 2002
7. **Thymic Education: What Governs the Change from Thymocyte to T cell?**
   University of Pittsburgh, School of Medicine Immunology Department, October 31st, 2002
8. **Maternal Influence on Resistance to Alloxan-Induced Diabetes**
   Children's Hospital of Pittsburgh Diabetes Institute Seminar, Pittsburgh, PA. November 18th, 2002

2003

1. **Enemies at the Gate: Genetic Resistance at the Pancreatic Islet level in Autoimmune Diabetes**
   Children's Hospital of Pittsburgh Molecular Medicine Research Seminar, January 9th, 2003
2. **Lack of Free Radical Scavenging Potential is linked to Diabetes Susceptibility**
   International Group on Insulin Secretion, March 18th, 2003
3. **Disarming the Immune System, Subversive Propaganda, or Molecular Shielding: How do ALR Pancreatic Islets Avoid Autoimmune Destruction?**
   University of Massachusetts Medical Center, Worchester, MA. April 28th, 2003
4. **Debutantes Need the Right Genetics: A locus that Controls Thymocyte Emigration**
   Merck and Company, Rahway, NJ. May 21st, 2003
5. **Association of Monocyte Free Radical Production and Autoimmune Diabetes**
   Children's Hospital of Pittsburgh Diabetes Institute Seminar, Pittsburgh, PA. May 21st, 2003
6. **Novel Variant of mt-Nd2 Provides Protection Against Autoimmune Diabetes**
   Children's Hospital of Pittsburgh Diabetes Institute Seminar, Pittsburgh, PA. June 1st, 2003

7. **Reduced Thymic DC Expression of Islet Cell Antigen 69 Contributes to Loss of Self Tolerance**
   American Diabetes Association Scientific Sessions, New Orleans, LA, June 11th, 2003
8. **ALS/Lt: A New Mouse Model of Diabetes Susceptibility Associated with Low Free Radical Scavenging Potential**
   Lessons From Animal Models of Diabetes, 9th Congress, Bar harbor, ME. June 15th, 2003

2004

1. **Beta Cell Murder or Suicide: Does Autoimmunity Kill beta cells by Necrotic or Apoptotic Mechanisms in T1D**
   Children's Hospital of Pittsburgh Diabetes Institute Seminar, Pittsburgh, PA. march 16th, 2004
2. **Failure of NF-kB Activity in ALR Islets and Resistance to Autoimmunity**
   St. Louis University Biochemistry Department, St. Louis, MO, April 21st, 2004
3. **A Steel Curtain for Beta Cells. Improved Defenses inhibit Autoimmune Killing of ALR Islets.**
   University of Pittsburgh, School of Medicine Immunology Department, May 24th, 2004
4. **Contribution of the Mitochondrial Genome to Resistance Against both Chemically-Induced and Autoimmune Diabetes**
   American Diabetes Association Scientific Sessions, Orlando, FL. June 5th, 2004
5. **What Failure Makes the Beta Cell Fail in Type 1 Diabetes? Failure in Self Defense.**
   American Diabetes Association Scientific Sessions, Orlando, FL. June 5th, 2004
6. **Mitochondrial Sequence Variation Provides Protection from Oxidative Stress Induced Mitochondrial Dysfunction**
   American Diabetes Association Scientific Sessions, Orlando, FL. June 8th, 2004
7. **A Single Nucleotide Polymorphism in the Mitochondrial Gene for NADPH Dehydrogenase Subunit 2 Contributes Resistance to Autoimmune Diabetes**
   United Mitochondrial Disease Foundation Annual Meeting, Pittsburgh, PA. August 6th, 2004
8. **Association of Diabetes with Genetic Variation in the Mitochondrial Genome in Mice and Man**
   University of Pittsburgh Medical Center, University Wide Clinical Endocrinology Conference October 1st, 2004

2005

1. **Genetics of T1D in Animal Models: 20 Years Later**
   Children's Hospital of Pittsburgh, Diabetes Institute Seminar Series, February 16th, 2005
2. **Novel mt-Nd2 Variant Encoded by the ALR/Lt Mouse Strain Provides Resistance to Free Radical-Induced Mitochondrial Dysfunction**
   International Group on Insulin Secretion. Nice, France. March 10th, 2005
3. **Genetics of resistance to immune mediated beta-cell destruction.**
   Juvenile Diabetes Research Foundation Fellows Conference. Chantilly, VA, March 24th, 2005
4. **Animal Models for the Study of Diabetes**
   Pediatric Endocrinology Fellows Conference. Pittsburgh, PA. May 5th, 2005.
5. **Mutant Cat2 Protects ALR/LtJ Mouse Islets from Cytokine-Induced Beta Cell Destruction.** American Diabetes Association Scientific Sessions, San Diego, CA. June 13th, 2005
6. **Islet Insubordination: ALR/LtJ Genes Bestow a Failure to Comply with Autoimmune Stimuli**
   The Jackson Laboratory, November 10th, 2005

7. **Development of Diabetes Complications in diabetic C57BL/6-Ins2^{Akita} Mice**
   The Jackson Laboratory, November 11th, 2005

2006

1. **New Insights into Thymocyte Emigration.**
   Albert Einstein College of Medicine Research Seminar Series, April 3, 2006
2. **Islet Insubordination: ALR/LtJ Genes Bestow a Failure to Comply with Autoimmune Stimuli**
   Children's Hospital of Pittsburgh Molecular Medicine Research Seminar, June 27th, 2006
3. **Positional Cloning of a Locus Controls Thymocyte Emigration**
   University of Pittsburgh, School of Medicine Immunology Department, July 6th, 2006
4. **A Steel Curtain for Beta Cells. Improved Defenses Inhibit Autoimmune Killing of ALR Islets.**
   University of Michigan, Department of Medicine, July 12th, 2006
5. **Global Resistance to Inflammation Results in Resistance to Both Type 1 and Type 2 Diabetes.**
   University of Pittsburgh, School of Medicine, Metabolism Interest Group, August 23rd, 2006
6. **Resistance to Autoimmune Diabetes at the Beta Cell Level: Tales from the ALR Mouse.**
   University of Florida, Department of Pathology, November 15, 2006
7. **Toxin Resistance Yields Clues for Resistance to Autoimmune Diabetes.**
   University of Pittsburgh, Department of Environmental and Occupational Health, December 7, 2006.

2007

1. **Nuclear-Mitochondrial Interactions Affect Electron Transport Chain ROS production.**
   Children's Hospital of Pittsburgh, Diabetes Institute Seminar Series, Pittsburgh, PA , February 16th, 2005
2. **Solute Carrier Family 7 Member 2 (*Slc7a2*) is critical for Arginine-Stimulated Insulin Release**. International Group on Insulin Secretion. Nice, France. March 10th, 2007
3. **Genetics of Mitochondrial Contribution to Beta Cell Susceptibility to Autoimmune-Mediated Destruction.** American Diabetes Association Annual Scientific Sessions, Chicago, IL. June 24, 2007
4. **Benign Symbiotes or Rebellious Subjugates: Novel Roles for Proteins Encoded by the Mitochondrial Genome.** Symposium for the Use of Animal Models for Understanding the Pathogenesis of Diabetes, Boston, MA. July 26, 2007
5. **Inbred strain variations in glucose tolerance and resistance to metabolic stress.**
   Discovery Strategies Conference: Modeling Human Metabolic Syndrome and Type 2 Diabetes in Rodents, Bar Harbor, ME. August 6, 2007

2008

1. **Role of mitochondria in autoimmune-mediated destruction of beta cells.**
   8th Annual Rachmiel Levine Symposium, Translational Research in Type 1 Diabetes: Beyond Insulin and the Edmonton Protocol, Newport Beach, CA. January 13, 2008
2. **New models to test old hypotheses in mitochondrial biology**
   University of Florida, Mitochondrial Interest Group, June 11, 2009
3. **Genetic variation in the mitochondrial genome & diabetes**
   Department of Food Science and Human Nutrition, University of Florida, October 9, 2009
4. **mt-Nd2 and Resistance to Autoimmune Diabetes**
   National Institutes of Health, NIDDK, November 17, 2009

2009

1. **Prevention of T1D by blocking beta cell death: Lessons from the ALR mouse.**
   Department of Pathology, Immunology, and Laboratory Medicine, work in progress seminar series, January 5, 2009.
2. **Susceptibility to spontaneous autoimmune and free radical-mediated diabetes is controlled by interactions of the nuclear & mitochondrial genomes**
   The Burnham Institute, Orlando, FL. February 13, 2009
3. **Prevention of Beta Cell Destruction Prior to and After Onset of Type 1 Diabetes**
   Grand Rounds, Department of Pathology, Immunology, and Laboratory Medicine, University of Florida
4. **Superoxide Alters the Texture of Inflammation**
   University of Alabama, Birmingham, AL, September 17, 2009
5. **Intergenomic Interactions between the Nuclear & Mitochondrial Genomes Control Susceptibility to Diabetes**
   LSU Health Sciences Center, Shreveport, LA, October 8, 2009

2010

1. **A Little Dissipation is a Good Thing**
   University of South Alabama, Mobile, AL, January 2010
2. **Diabetes Research in the Swamp**
   The Jackson Laboratory, Bar Harbor, ME, August 16, 2010

2011

1. **Dissipating Autoimmunity: Role of Reactive Oxygen Species in Adaptive Immune Effector Function**
   Rheumatology, work in progress seminar series, University of Florida, January 5, 2011.
2. **Mitochondria, Oxidants, Beta Cells, and Diabetes**
   Experimental Biology, Washington, DC, April 12, 2011
3. **Beta Cell Dysfunction and Type 1 Diabetes**
   Endocrinology Conference, University of Florida, July 19, 2011
4. **Autoimmune Diabetes**
   HHMI Seminar Series, University of Florida, September 20, 2011
5. **Personalization of Immunotherapy for Type 1 Diabetes Using Metabolic Markers**
   Program in Personalized & Genomic Medicine Seminar Series, University of Maryland School of Medicine, November 9, 2011

2012

1. **New developments in beta cell participation in type 1 diabetes**
   Diabetes Care Program, Gainesville, FL, January 20, 2012
2. **Wassup in type 1 diabetes research**
   Department of Pathology, Immunology, and Laboratory Medicine, work in progress seminar series, January 5, 2012.

2013

The Role of Mitochondrial Dysfunction in Beta Cells During T1D Pathogenesis
Endocrinology Grand Rounds, Univ Florida, February 28, 2013
T cell Bioenergetics and Diabetes
UF Immune Metabolism Workshop, May 24th, 2013
The beta cell and mitochondrial dysfunction
World Diabetes Congress, Melbourne, Australia, December 5th, 2013
Beta cell responses to Type 1 Interferons
International Diabetes Federation, Lorne, Australia, December 8th, 2013

2014

1. **Causes for the Loss of Beta Cell Function in Pre-Type 1 Diabetes.**
   Florida Hospital Translational Research Institute, Orlando, FL. April 21, 2014
2. **Resistance is not futile: mechanisms protecting against autoimmunie destruction of the beta cell & implications for type 1 diabetes**.
   Experimental Biology, San Diego, CA April 29th, 2014
3. **Genetics and Radical Behavior: Sources and Targets of Reactive Oxygen Species in Diabetes.**
   The Jackson Laboratory, Bar Harbor, ME. May 1, 2014

2015

1. **Backwards Design to Understand Complex Disease**
   University of Florida Celebration of Research, Feb 11, 2015
2. **Beta Cell Brownout in T1D.**
   nPOD Annual Meeting. Feb 23, 2015
3. **mt-ND2 Regulates Beta Cell Responses To Autoimmune Mechanisms**
   GNF-JDRF Symposium, La Jolla, CA, April 29, 2015
4. **Mitochondrial dysfunction and Beta Cell Derrangement in Pre-Type 1 Diabetes.**
   Florida Hospital Research Symposium, Orlando, FL. April 23, 2015
5. **Consortium on Beta Cell Death and Dysfunction**
   NIH-HIRN Annual Meeting, Bethesda, MD, May, 2015
6. **Decreased Bioenergetic Potential of β Cells in Type 1 Diabetes (T1D)**
   2015 American Diabetes Association Annual Scientific Sessions, Boston, MA, June 10, 2015
7. **Influence of inflammation/Autoimmunity by mtDNA haplotypes.**
   Immune Metabolism Retreat, University of Florida, Gainesville, FL, October 9, 2015
8. **I've Got Information Man…**
   UF-Pathology Work in Progress Meeting, October 5th, 2015
9. **Genetics and Radical Behavior: Sources and Targets of Reactive Oxygen Species in Cytotoxic T Lymphocytes.**
   UAB Diabetes Center Plenary Lecture, October 15, 2015, Birmingham, AL
10. ***mt-ND2* Regulates Beta Cell Responses To Autoimmune Mechanisms Through Controlling Oxidative Stress**
    Society for Free Radical Biology and Medicine, Boston, MA, November 19, 2015
11. **Isogenic Stem Cell Systems to Detangle the Etiology of Complex Human Disease**
    UF-CTSI Center for Cellular Reprogramming Annual Meeting, December, 2015 Gainesville, FL

2016

1. **nPOD Islet Pilot: An Innovative Resource or a Shot in the Dark**
   nPOD Annual Meeting, Miami, FL, Feb 24, 2016
2. **How do we productively address heterogeneity in T1D**
   2016 Rachmiel Levine-Arthur Riggs Diabetes Research Symposium, Long Beach, CA. March 8, 2016
3. **Contributions of Lymphocyte Bioenergetics To Type 1 Diabetes**
   University of Florida Immune Metabolism Symposium, Gainesville, FL, April 11, 2016
4. **Revising the Model of Beta Cell Failure in Pre-Type 1 Diabetes: Mitochondria Dysfunction Occurs Prior to the Autoimmune Attack**
   Mt. Sinai Diabetes, Obesity & Metabolism Institute's Work in Progress, New York, NY, September 29, 2016

2017

1. **Contributions of Bioenergetic Failure To Type 1 Diabetes**
   University of Colorado, Denver/Barbara Davis Center, Denver, CO, February, 22, 2017
2. **A New Era for nPOD**
   nPOD Annual Meeting, February 19th, 2017
3. **Using iPSC-Derived Cells to Model T1D-Relevant Interactions Between Beta Cells and Autoimmune Effectors**
   nPOD Annual Meeting, February 22nd, 2017
4. **Type 1 Interferons Potentiate Human CD8+ T Cell Cytotoxicity Through a STAT4 and Granzyme B Dependent Pathway**
   Human Islet Research Network Annual Meeting, Bethesda, MD March 9th, 2017
5. **Complexities of Beta Cell Failure in T1D**
   EASD Islet Study Group, Dresden, Germany, May 10th, 2017
6. **It's Always About Diabetes**
   Keynote Lecture: University of Florida MSTP Retreat, September 23rd, 2017
6. **Beta Cell Failure in Pre-Type 1 Diabetes**
   Rutgers New Jersey Medical School, Newark, NJ, October 10th, 2017
7. **nPOD Islet Isolation Project**
   nPOD OPO Workshop, Atlantic Beach, FL, November 11th, 2017
8. **I am going to give a great, great seminar. It will be amazing. Everybody is going to love it and Martha is going to pay for it.**
   University of Florida Pathology Seminar, Gainesville, FL, December 5th, 2017
9. **Utilizing mouse models to identify unique mechanisms of diabetes resistance**
   Department of Genetics colloquium series, University of Wisconsin, Madison, WI, December 14th, 2017

2018

1. **Contributions of Immune Cell Bioenergetic Failure To Type 1 Diabetes**
   Vanderbilt University, February 8th, 2018
2. **A New Era for nPOD – Live Islet Studies Through the nPOD-Islet Isolation Program**
   nPOD Annual Meeting, Ft. Lauderdale, FL February, 23, 2018
3. **Modeling Islet-Immune cells Interactions with Innovative 3D Systems**
   HIRN Annual Meeting, May 10th, 2018
4. **Bioenergetic Changes in Pre-Type 1 Diabetes**
   Immunology of Diabetes Society, London, UK October, 2018

2019

1. **Live human pancreas tissue slices as a platform for investigating the immunopathological processes of type 1 diabetes**
   nPOD Annual Meeting, Ft. Lauderdale, FL February, 21, 2019
2. **Global Metabolic Disturbances Characterize Human Type 1 Diabetes**
   American Diabetes Association Scientific Sessions, San Francisco, June 2019

2020

1. **Identifying Novel Immunodeficiencies Associated with Chronic Granulomatous Disease**
   University of Florida Pathology Grand Rounds. August 18, 2020
2. **"Rigor of the Previous Research" in NIH Grants: Considerations for Applicants & Reviewers**
   UF: Department of Pathology Ethical Moment: Episode 55

3. **Productively addressing heterogeneity in T1D**
   UF-Pathology Work in Progress Meeting, December 7, 2020
4. **Killers with a Sweet Tooth: Macronutrient Requirement for CD8+ T cell Effector Function**
   Preston A. Wells Jr. Center for Brain Tumor Therapy, December 18, 2020

2021

1. **A 4-Way Stop: uncovering mechanisms of immunodeficiency.**
   UF-Pulmonary, Critical, and Sleep Medicine Conference, March 17, 2021
2. **Leveraging Heterogeneity to Understand Human Type 1 Diabetes.**
   Keynote Lecture, Auburn University Diabetes Day, September 17, 2021
3. **Role of Mitochondria in T1D: Utilizing mouse models to identify unique mechanisms of diabetes resistance.** UF Diabetes Institute International Lecture Series, October 25, 2021
4. **Linking T1D Endotypes to T1D Candidate Genes.**
   UF Microbiology and Cell Science Lecture Series, November 15, 2021

2022

1. **NIH Guidelines on Self-Plagiarism**
   UF Pathology Ethical Moment, April 4th, 2022
2. **Multi-omics spatial mapping for human pancreas**
   HuBMAO Annual Meeting, May 18th, 2022

2023

1. **Cutting edge studies to define mechanisms of beta cell failure in T1D**
   nPOD annual meeting, Fernandina Beach, FL, February 2023
2. **Metabolic changes in immune cells and Type 1 diabetes progression**
   Central Florida Metabolism symposium, St. Petersburg, FL, March 2023
3. **Mechanisms of β Cell Functional Decline During T1D Pathogenesis**
   Grand Rounds, Division of Endocrinology, Diabetes & Metabolism, Beth Israel Deaconess Medical Center, Joslin Diabetes Center, Harvard Medical School, April 2023
4. **Understanding β Cell Dysfunction in T1D**
   University of Michigan, Internal Medicine Grand Rounds, November, 2023

2024

1. **Changes in CD8+ T cell Energetics During Acquisition of Effector Function**
   UF Immunity Unity Interest Group, January, 2024
2. **Sex-specific differences in myeloid-derived suppressor cell mitochondrial metabolism after sepsis**
   Central Florida Metabolism symposium, St. Petersburg, FL, March 2024
3. **Autoimmune Target Tissues: Active Participant or Corpse at the Funeral?**
   UF Immunity Unity Interest Group, September, 2024
4. **Identifying Novel Immunodeficiencies Associated with NADPH Oxidase 2 Deficiency / Chronic Granulomatous Disease**

UF-CVM Infectious Diseases and Immunology Departmental Seminar, October 2024

2025

1. **Identifying Real Changes in Islets and Beta Cells During Progression to T1D**

Sugar Science Podcast, July, 2025

Committees

2001-2007	Director of the CHP Diabetes Institute Small Animal Core
2001-2007	Director of the CHP Diabetes Institute Journal Club
2003-2007	Children's Hospital Animal Care and Use Committee

2003-2007	Oversight of the Rangos Research Animal Facility: Chair (2006-2007)
2003-2007	Molecular Medicine Research Seminar Series Committee
2008 & 2010	Department of Food Science and Human Nutrition Department, University of Florida, Search and Screen Committee, Assistant Professor
2008-2009	NIH-NIDDK Diabetes Research Strategic Plan, Autoimmunity/T1D Sub-group
2008-Present	Advisory Board, Medical Science Training Program, University of Florida College of Medicine, Interdisciplinary Biomedical Graduate Program
2009, 2010, 2019	Department of Pathology, University of Florida, Search and Screen Committee, Assistant Professor
2009-2010	Admissions Committee, University of Florida College of Medicine, Interdisciplinary Biomedical Graduate Program
2009-Present	Advisory Board, University of Florida College of Medicine, Interdisciplinary Biomedical Graduate Program
2011-2012	American Diabetes Association, Research Grant Review Executive Committee,
2016-2017	American Diabetes Association Scientific Sessions Planning Committee
2020-2024	University of Florida, College of Medicine, Faculty Promotion Committee
2024-Present	University of Florida, College of Veterinary Medicine, Dean's Council
2024-Present	University of Florida, College of Veterinary Medicine, Administrative Council

Study Sections:

2003	Telethon /JDRF Diabetes Research Centers
2004	NIH/CSR: Diabetes & Obesity Model Systems (Ad Hoc)
2005	JDRF Islet Biology Study Section
2005	JDRF Angiogenesis Study Section
2005-2014	American Diabetes Association: Immunology and Complications
2011-2014	Chair, American Diabetes Association: Immunology and Complications Study Section
2006	RFA-06-002: Biomarkers of Autoimmunity in Type I Diabetes
2007	NIH/CSR: Endocrinology, Metabolism, Nutrition & Reproductive Science (EMNR) IRG. Ad Hoc
2007	JDRF Autoimmunity and Prevention Center
2007	Belgium Diabetes
2007-2008	NIH/CSR: Genes, Genomes, and Genetics (GGG) IRG. Ad Hoc
2008	AAAS: Life Sciences Discovery Fund
2008-2010	JDRF Group 1 (Autoimmunity) Study Section
2009-2010	NIH/SCR: SEP Autoimmunity PPG ZAI1-SV-I-(S1)
2009	NIH/CSR: Challenge Grant Review Panel
2009-2010	Univ Alabama-Birmingham-DRTC Pilot and Feasibility Grant Reviewer
2009-2012	Endocrine Fellows Foundation Review Panel
2010	NIH/CSR: Cellular Aspects of Obesity and Diabetes (CADO). Ad Hoc
2011	NIH: Hypersensitivity, Autoimmune and Immune-mediated Diseases (HAI). Ad Hoc
2012	NIH/CSR: Comparative Medicine (CMRC). Ad Hoc
2012	NIH/CSR: Cellular Aspects of Obesity and Diabetes (CADO). Ad Hoc
2012	ISF-JDRF Collaborative Grants Joint Program in Type I Diabetes Research
2014-2020	NIH NIDDK-B Study Section, Member
2020	NIH HAI Study Section. Ad Hoc
2021	NIH BMDM Study Section, Ad Hoc

2022-2024	NIH BMDM Study Section, Member
2024-Present	NIH BMDM Study Section, Chair

Journal Referee for:

American Journal of Physiology
American Journal of Transplantation
Apoptosis
Cell Biology and Toxicology
Cell Metabolism
Diabetes
Diabetes/Metabolism Research & Reviews
Diabetes Research and Clinical Practice
Diabetologia
Endocrinology
European Journal of Clinical Investigation
Free Radical Biology and Medicine
Frontiers in Endocrinology
Frontiers in Genetics
Frontiers in Immunology
Genetic Testing and Molecular Biomarkers
International Journal of Experimental Diabetes Research
Journal of Autoimmunity
Journal of Biological Chemistry
Journal of Clinical Investigation
Journal of Immunology
Laboratory Investigation
Life Sciences
Nature
Nature Communications
Nature Genetics
Pediatric Diabetes
Physiological Genomics
PNAS USA
Public Library of Science: Medicine
Public Library of Science: One
Science
Science Advanced
Scientific Reports
Yonsei Medical Journal

Current Research Interest:

1. Genetic Basis of Autoimmune Diabetes
2. Mechanisms of beta cell destruction and beta cell functional inhibition in type 1 diabetes
3. Cellular and Mitochondrial ROS production in Health and Disease
4. Immune Bioenergetics in Health and Disease