

# Matthew A. Cottam, Ph.D.

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## Education

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### Vanderbilt University

Nashville, TN

DOCTORAL CANDIDATE

2016 - 2022

- Advisor: Dr. Alyssa Hasty

### Wake Forest University

Winston-Salem, NC

BS CHEMISTRY

2012 - 2016

- Undergraduate Research Advisor: Dr. Michael Gross

## Experience

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- 2023-  
Current **Staff Scientist**, Department of Surgical Oncology, Vanderbilt University Medical Center
- 2022-2023 **Bioinformatics Analyst**, Creative Data Solutions, Vanderbilt Center for Stem Cell Research, Vanderbilt University
- 2016-2022 **Doctoral Candidate**, Department of Molecular Physiology and Biophysics, Vanderbilt University
- 2015 **Summer Research Fellow**, Department of Chemistry, Wake Forest University
- 2014-2016 **Undergraduate Research Assistant**, Department of Chemistry, Wake Forest University
- 2014 **Summer Research Student**, Department of Urology, Vanderbilt University
- 2012-2014 **Undergraduate Research Assistant**, Department of Biology, Wake Forest University
- 2013 **Summer Research Student**, Department of Biomaterials, Wake Forest Institute for Regenerative Medicine

## Publications

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### PUBLISHED

- Smart CD, Fehrenbach DJ, Wassenaar JW, Agrawal V, Fortune NL, Dixon DD, **Cottam MA**, Hasty AH, Hemnes AR, Doran AC, Gupta DK, Madhur MS. 2023. Immune profiling of murine cardiac leukocytes identified Trem2 as a novel mediator of hypertensive heart failure. *Cardiovascular Research*
- Caslin HL, **Cottam MA**, Pinon JM, Boney LY, Hasty AH. 2023. Weight cycling induces innate immune memory in adipose tissue macrophages. *Front Immunol*.
- Winn NC, **Cottam MA**, Bhnnot M, Caslin HL, Garcia JN, Arrojo E Drigo R, Hasty AH. 2023. Weight cycling impairs pancreatic insulin secretion but does not perturb whole-body insulin action in mice with diet-induced obesity. *Diabetes*.
- Cottam MA**, Winn NC, Caslin HL, Hasty AH. 2022. Multiomics reveals persistence of obesity-associated immune cell phenotypes in adipose tissue during weight loss and weight regain in mice. *Nat Comm*.
- Patil P, Russo KA, McCune JT, Pollins AC, **Cottam MA**, Dollinger BR, Colazo JM, Yu F, Martin JR, Gupta MK, Cardwell NL, Davison JM, Thompson CM, Brabul A, Hasty AH, Guelcher SA, Duvall CL. 2022. ROS-Degradable Polythioketal Urethane Foam Dressings to Promote Porcine Skin Wound Repair. *Sci Transl Med*. 14(641):eabm6586
- Winn NC, Wolf EM, **Cottam MA**, Bhanot M, Hasty AH. 2021. Myeloid-specific deletion of ferroportin impairs macrophage bioenergetics but is disconnected from systemic insulin action in adult mice. *Am J Physiol Endocrinol Metab*. 1;321(3):E376-E39
- Winn NC, **Cottam MA**, Wasserman DH, Hasty AH. 2021. Exercise and Adipose Tissue Immunity: Outrunning Inflammation. *Obesity* (Silver Spring). 29(5):790-801
- Jackson MA, Patel SS, Yu F, **Cottam MA**, Glass EB, Hoogenboezem EN, Fletcher RB, Dollinger BR, Patil P, Liu DD, Kelly IB, Bedingfield SK, King AR, Miles RE, Hasty AM, Giorgio TD, Duvall CL. 2021. Kupffer cell release of platelet activating factor drives dose limiting toxicities of nucleic acid nanocarriers. *Biomaterials*. 268:120528
- McDonnell WJ, Koethe JR, Mallal SA, Pilkinton MA, Kirabo A, Ameka MK, **Cottam MA**, Hasty AH, Kennedy AJ. 2018. High CD8 T-Cell Receptor Clonality and Altered CDR3 Properties Are Associated With Elevated Isolevuglandins in Adipose Tissue During Diet-Induced Obesity. *Diabetes*. 67(11):2361-2376

- Cottam MA**, Itani HA, Beasley AA 4th, Hasty AH. 2018. Links between Immunologic Memory and Metabolic Cycling. *J Immunol.* 200(11):3681-3689
- Peterson KR, **Cottam MA**, Kennedy AJ, Hasty AH. 2018. Macrophage-Targeted Therapeutics for Metabolic Disease. *Trends Pharmacol Sci.* 39(6):536-546
- Muhoza SP, **Cottam MA**, Gross MD. 2017. Temperature Fabrication of Nanostructured Yttria-Stabilized-Zirconia (YSZ) Scaffolds by In Situ Carbon Templating Xerogels. *J Vis Exp.* (122):55500
- Cottam MA**, Muhoza SP, Gross MD. 2016. Preserving Nanomorphology in YSZ Scaffolds at High Temperatures via textitIn Situ Carbon Templating of Hybrid Materials. *J. Amer. Ceram. Soc.* 99(8):2625–2631

## IN PREPARATION/REVIEW

- Lodge M, Scheidemantle G, **Cottam MA**, Richard D, Breuer D, Adams VR, Thompson P, Liu X, Kennedy A. 2023. Fructose Regulates Anti-Inflammatory and Extracellular Matrix Gene Expression Through the Pentose Phosphate Pathway in Kupffer Cells. *Under review at Scientific Reports.*
- Cottam MA**, Garcia JN, Caslin HL, Winn NC, Hasty AH. 2023. Weight loss enriches adipose tissue for granzyme K producing clonal CD8+ T cells that induce inflammation in bystander cells during weight regain.
- Bader JE, Wolf MM, Madden MZ, Reinfeld BI, Arner EN, Hathway ES, Steiner KK, Needle GA, Landis MD, **Cottam MA**, Ye X, Christofides A, Boussiotis VA, Haake SM, Beckermann KE, Rathmell WK, Hasty AH, Rathmell JC. 2022. PD-1 is induced on tumor-associated macrophages in obesity to directly restrain anti-tumor immunity. *bioRxiv*
- Bhanot M, **Cottam MA**, Winn NC, Hasty AH. Empagliflozin treatment during weight loss does not improve post-weight regain glucose homeostasis in mice.

## Awards, Fellowships, & Grants

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<b>Ruth L. Kirschstein National Research Service Award</b> , NIH/NIDDK 5F31DK123881	2021-2023
<b>Vanderbilt Diabetes Scholar</b> , Vanderbilt Diabetes Research and Training Center	2021-2022
<b>Dean's Award for Exceptional Achievement</b> , Vanderbilt University	2019-2021
<b>Symposia Poster Award</b> , Vanderbilt Program in Molecular Medicine	2019
<b>Multidisciplinary Training in Molecular Endocrinology</b> , NIH/NIDDK T32DK007563	2017-2019
<b>Graduate Student Travel Award</b> , Vanderbilt University	2017
<b>Grant Backerman Undergraduate Student Award</b> , American Institute of Chemists	2016
<b>Summer Research Fellowship</b> , Wake Forest University	2015
<b>Summer Research Scholar</b> , Vanderbilt University	2014
<b>Summer Research Scholar</b> , Wake Forest Institute for Regenerative Medicine	2013
<b>Undergraduate Scholar</b> , Wake Forest University	2012-2016

## Presentations

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- Cottam, MA.** 2021. Clonal expansion of exhausted CD8+ T cells in weight loss and weight cycling. Departmental seminar: Molecular Physiology and Biophysics, Nashville, TN.
- Cottam, MA.** 2020. Alterations in systemic glucose homeostasis following weight cycling. Departmental seminar: Molecular Physiology and Biophysics, Nashville, TN.
- Cottam, MA.** 2019. CD8+ Memory T Cells in Weight Cycling.. Departmental seminar: Molecular Physiology and Biophysics, Nashville, TN.
- Cottam, MA**, Kennedy AJ, Hasty AH. 2019. Adipose Tissue CD4+ and CD8+ Memory T cells are Retained with Weight Loss and CD8+ Memory T Cells Expand During Weight Regain. Poster presentation: Southeastern Immunology Symposium, Emory University, Atlanta, GA.
- Cottam, MA**, Kennedy AJ, Hasty AH. 2019. Adipose Tissue CD4+ and CD8+ Memory T cells are Retained with Weight Loss and CD8+ Memory T Cells Expand During Weight Regain. Poster presentation: Keystone Symposia: Immunometabolism, Metaflammation and Metabolic Disorders, Vancouver, British Columbia, Canada.

- Cottam, MA**, Kennedy AJ, Hasty AH. 2018. Adipose Tissue CD8+ Memory T Cells Expand During Weight Regain. Poster presentation: Vanderbilt Diabetes Day, Nashville, TN.
- Cottam, MA**, Jang C, Buchanan, J. 2015. Novel Processing of Porous Ceramic Nanocomposites for Fuel Cell Electrodes. Poster Presentation: International Symposium on Clusters and Nanomaterials, abstract, Richmond, VA.
- Cottam, MA**, Jang Cm Buchanan, J. 2015. Novel Processing of Porous Ceramic Nanocomposites for Fuel Cell Electrodes. Poster Presentation: State of North Carolina Undergraduate Research and Creativity Symposium, Highpoint, NC.

## Teaching Experience

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- Introduction to R for Bulk RNA-seq Analysis**, Short Course Instructor *Spring 2021*
- Introduction to Clinical and Translational Research**, Graduate Teaching Assistant, Vanderbilt University *Spring 2018*

## Mentoring

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- Omar Shaikh**, Undergraduate Student *2020-2021*
- Julianne Burkett**, Rotation Student *Fall 2021*
- Brittney Covington**, Rotation Student *Fall 2019*
- Oykü Sensoy**, Rotation Student *Spring 2019*
- Noyna Fabre**, Summer Undergraduate Student *Summer 2018*
- Adam Beasley**, Summer Undergraduate Student *Summer 2017*

## Outreach & Professional Development

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### SERVICE AND OUTREACH

- Edge for Scholars**, Discussion Panelist, Vanderbilt University, Nashville, TN *Summer 2022*
- Science Fair**, Volunteer Judge, Pope John Paull II High School, Henderson, TN *Spring 2021*
- Molecular Physiology and Biophysics Graduate Student Association**, Committee Member *2017-2020*
- Student Representative**, Vanderbilt Program in Molecular Medicine *2018-2020*

### DEVELOPMENT

- Regression and Modeling in R**, Vanderbilt Center for Quantitive Sciences *Summer 2021*
- Big Data in Biomedical Research**, Vanderbilt Center for Quantitive Sciences *Summer 2019*