CURRICULUM VITAE

BIOGRAPHICAL

Diana J. Goode, Ph.D.
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Biddeford, ME 04005
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EDUCATION and TRAINING

POSTGRADUATE

2019 Graduate, North American Pain School (NAPS), Montebello, QC, Canada
"Biggest Neglected Problems in Pain Research… and What To Do About Them"
Mentors: Jeffrey S. Mogil, Ph.D. and Christine T. Chambers, Ph.D.

2016-2019 Post-doctoral fellow, University of New England, Biddeford, ME
Epac2 signaling regulates mitochondrial respiration in DRG neurons
Mentor: Derek Molliver, Ph.D.

2012-2015 Post-doctoral fellow, Population Council, New York City, NY
Role of integrins and adhesion molecules in vaginal transmission of HIV/SIV
Mentor: Elena Martinelli, Ph.D.

GRADUATE

2006-2012 Ph.D. in Immunology, Johns Hopkins School of Medicine, Baltimore, MD
Triggering receptor expressed on myeloid cells 2 (TREM-2) Molecule: biochemistry, counter-receptors, and functions in innate and adaptive immunity.
Mentor: Lieping Chen, MD, Ph.D.

2011-2012 Visiting Student, Yale University, New Haven, CT
Role of TREM-2 in the imprinting of $CD8^+$ T cell memory
Mentor: Lieping Chen, MD, Ph.D.

POST-BACCALAUREATE

2004-2006 Intramural Research Training Award, National Institutes of Health, NIAID
HIV-1 envelope protein binds to and signals through integrin $\alpha_4\beta_7$
Mentor: Anthony Fauci, MD, Ph.D.

UNDERGRADUATE

2000-2004 B.S. in Microbiology with Summa cum laude, University of New Hampshire, Durham, NH
Role of *Escherichia coli* 0157:H7 verotoxin in hemolytic uremic syndrome (HUS)
Mentor: Frank Rodgers, Ph.D.

APPOINTMENTS and POSITIONS

2019-present Assistant Professor, Biomedical Sciences, University of New England, College of Osteopathic Medicine, Biddeford, ME

2017-2019 Adjunct Assistant Professor, Biomedical Sciences, University of New England, College of Osteopathic Medicine, Biddeford, ME

2016-2017 Adjunct Assistant Professor, Infectious Disease, University of Southern Maine, Lewiston, ME

2016-2017 Adjunct Professor, Microbiology, Southern Maine Community College, South Portland, ME

2015-2016 Apheresis Collections Specialist, American Red Cross, Portland, ME

2009-2010 Teaching Assistant, Immunology, Johns Hopkins University School of Medicine, Baltimore, MD

2003-2004 Microbiology Intern, Cetek Corporation, Marlborough, MA
Fungi identification by restriction fragment length polymorphism
Mentor: Victoria Knight, PhD

MEMBERSHIPS in PROFESSIONAL and SCIENTIFIC SOCIETIES

2022- present United States for the Study of Pain (USASP)

2017- present Society for Neuroscience (SFN)

2018- 2020 International Association for the Study of Pain (IASP)

HONORS

2022 Selected to attend the 2022 Fundamentals of Proteomics Workshop. IDeA National Resource for Quantitative Proteomics. University of Arkansas for Medical Sciences, Little Rock, AR.

2013 Keystone Symposia Scholarship, Immune Activation in HIV Infection: Basic Mechanisms and Clinical Implications, Breckenridge, Colorado

2004-2006 Post baccalaureate Intramural Research Training Award (IRTA) Program, NIH

2004 Selected as a Grand Marshals for the College of Life Sciences and Agriculture (COLSA), University of New Hampshire 2004 commencement ceremony. Selection was based on receiving the highest GPA in COLSA.

PUBLICATIONS

Peer-Reviewed Articles

1) **Goode, D. J*.** Whitaker, E.E, and Mecum, N. E. (2022) Ovariectomy increases paclitaxel-induced mechanical hypersensitivity and reduces anti-inflammatory CD4+ T cells in the dorsal root ganglion of female mice. Journal of Neuroimmunology. 367(15):577878. doi.org/10.1016/j.jneuroim.2022.577878. ***Corresponding author**

2) **Goode, D.J.** and Molliver, D.C. (2021) Regulation of Mitochondrial Function by Epac2 Contributes to Acute Inflammatory Hyperalgesia. J Neurosci. 41(13):2883-2898. doi: 10.1523/JNEUROSCI.2368-20.2021

3) **Goode, D.J**. and Molliver, D.C. (2019) Phospho-substrate profiling of Epac-dependent protein kinase C activity. Mol Cell Biochem, DOI: 10.1007/s11010-019-03502-

4) Rieder CA, Rider J, Sannajust SJ, **Goode D**, Geguchadze R, Relich R, Molliver D, King T, Vaughn V, May M. (2019) A Novel Mechanism for Zika Virus Host-Cell Binding. Viruses. 11(12):1101. doi: 10.3390/v11121101.

5) Arrode-Bruses G, **Goode D**, Kleinbeck K, Wilk J, Byrareddy S, Arthos J, Lifson J, Grasperge B, Blanchard J, Zydowsky T, Gettie A, Martinelli E. (2016) A Small Molecule, Which Competes with MAdCAM-1, Activates Integrin $\alpha_4\beta_7$ and Fails to Prevent Mucosal Transmission of SHIV-SF162P3. PLoS Pathog. 12(6):e1005720.

6) Guerra-Perez N, Aravantinou M, Veglia F, **Goode D**, Truong R, Derby N, Blanchard J, Grasperge B, Gettie A, Robbiani M, Martinelli E. (2016) Rectal HSV-2 infection may increase rectal SIV acquisition even in the context of SIVΔnef vaccination. PLoS One. 11(2):e0149491.

7) Guerra-Perez N, Frank I, Veglia F, Aravantinou M, **Goode D**, Blanchard JL, Gettie A, Robbiani M, Martinelli E. (2015) Retinoic acid imprints a mucosal-like phenotype on dendritic cells with an increased ability to fuel HIV-1 infection. J Immunol. 194(5):2415-23.

8) **Goode D**, Truong R, Villegas G, Calenda G, Guerra-Perez N, Piatak M, Lifson J, Blanchard J, Gettie, A. Robbiani M, Martinelli E. (2014) HSV-2 driven increase in the expression of $\alpha_4\beta_7$ correlates with increased susceptibility to vaginal $SHIV_{SF162P3}$ infection. PLoS Pathog. 10(12):e1004567.

9) **Goode D**, Aravantinou M, Jarl S, Derby N, Guerra-Perez N, Kenney J, Blanchard J, Gettie A, Robbiani M, Martinelli E. (2014) Sex hormones selectively impact the endocervical mucosal microenvironment: implications for HIV transmission. PLoS One. 9(5):e97767.

10) Martinelli E, Vegali F, **Goode D**, Guerra-Perez N, Aravantinou M, Arthos J, Piatak M Jr, Lifson, JD, Blanchard J, Gettie A, Robbiani M. (2013) The frequency of $\alpha_4\beta_7$ (high) memory $CD4^+$ T cells correlates with susceptibility to rectal simian immunodeficiency virus infection. J Acquir Immune Defic Syndr. 64(4):325-31.

11) **Goode DJ**. (2012) Triggering receptor expressed on myeloid cells 2 (TREM-2) Molecule: biochemistry, counter-receptors, and functions in innate and adaptive immunity. ProQuest

Dissertations and Theses database. U.M.I. no. 3528527.

12) Yao S, Zhu Y, Zhu G, Augustine M, Zheng L, **Goode DJ**, Broadwater M, Ruff W, Flies S, Xu H, Flies D, Luo L, Wang S, Chen L. (2011) B7-H2 is a costimulatory ligand for CD28 in human. Immunity. 34(5):729-40.

13) Cicala C, Martinelli E, McNally JP, **Goode DJ**, Gopaul R, Hiatt J, Jelicic K, Kottilil S, Macleod K, O'Shea A, Patel N, Van Ryk D, Wei D, Pascuccio M, Yi L, McKinnon L, Izulla P, Kimani J, Kaul R, Fauci AS, Arthos J. (2009) The integrin $\alpha_4\beta_7$ forms a complex with cell-surface CD4 and defines a T-cell subset that is highly susceptible to infection by HIV-1. Proc Natl Sci USA. 106(49):20877-82.

14) Arthos J, Cicala C, Martinelli E, Macleod K, Van Ryk D, Wei D, Xiao Z, Veenstra TD, Conrad TP, Lempicki RA, McLaughlin S, Pascuccio M, Gopaul R, McNally J, Cruz CC, Censoplano N, Chung E, Reitano KN, Kottilil S, **Goode DJ**, Fauci AS. (2008) HIV-1 envelope protein binds to and signals through integrin $\alpha_4\beta_7$, the gut mucosal homing receptor for peripheral T cells. Nat Immunol. 9(3):301-9.

15) Martinelli E, Cicala C, Van Ryk D, **Goode DJ**, Macleod K, Arthos J, Fauci AS. (2007) HIV-1 gp120 inhibits TLR9-mediated activation and IFN-α secretion in plasmacytoid dendritic cells. Proc Natl Acad Sci USA. 104(9):3396-401.

Pre-print

1) Emily E. Whitaker, Neal E. Mecum, and **Diana J. Goode***. Novel expression of major histocompatibility complex II in dorsal root ganglion neurons attenuates paclitaxel-induced cold hypersensitivity in male and female mice. Biorxiv.
doi**:** https://doi.org/10.1101/2023.03.31.535136. *Corresponding author

Published Abstracts/Poster Presentations

1) Emily Whitaker, Neal Mecum, Riley Cott, and **Diana J. Goode**. Paclitaxel increases novel expression of major histocompatibility complex II (MHCII) and the MHCII transcription factor, Regulatory Factor X1 in dorsal root ganglion neurons from female mice. Society for Neuroscience Annual Meeting, November 2022; San Diego, CA.

2) Straub C, Bonet, I, Dinsdale S, Geguchadze R, **Goode D**, Meng I, Levine J, Molliver, D. Antinociceptive actions of mitochondrial uncoupling drugs in rat and mouse. Society for Neuroscience, November 2022; San Diego, CA.

3) **Diana J. Goode**, Emily E. Whitaker, and Neal E. Mecum. Ovariectomy reduces anti-inflammatory CD4+ T cells in the dorsal root ganglion of naïve and paclitaxel-treated female mice. United States Association for the Study of Pain Annual Meeting, May 2022; Cincinnati, OH.

4) **Diana J. Goode**, Emily E. Whitaker, and Neal E. Mecum. Neuron – CD4+ T cell communication in the dorsal root ganglion in healthy and paclitaxel-treated mice. 49th Maine Biological and Medical Sciences Symposium (MBMSS). MDI Biological Laboratory. Bar

Harbor, ME. April 2022.

5) Cattaneo, C, Mecum, N, **Goode, DJ**. Paclitaxel Increases Novel Expression of Major Histocompatibility Complex II in Dorsal Root Ganglion Neurons in Female Mice. Maine Osteopathic Association Mid-Winter Virtual Research & Scholarship Symposium, February 2022; Virtual.

6) Fennell, S, Mecum, N, **Goode, DJ**. Dorsal Root Ganglion Neurons from Paclitaxel-Treated Female Mice Activate Antigen-specific Anti-Inflammatory $CD4^+$ T cells. Maine Osteopathic Association Mid-Winter Virtual Research & Scholarship Symposium, February 2022; Virtual.

7) **Diana J. Goode,** and Neal Mecum. Phenotypic and functional characterization of CD4+ T cells in dorsal root ganglion of naïve and paclitaxel-treated male and female mice. Society for Neuroscience Annual Meeting, November 2021; Chicago, IL.

8) **Diana J. Goode,** and Derek C. Molliver. Gs-coupled receptors activate Epac2 to enhance mitochondrial respiration through non-canonical phosphorylation of pyruvate dehydrogenase in sensory neurons. UMDF, Mitochondrial Disease Education & Research, June 2021; Virtual.

9) Hansen B., Mecum, N., and **Goode DJ**. Targeting neuroprotective CD4+ T cells in the Dorsal Root Ganglion of Females for the Treatment of Paclitaxel-induced Peripheral Neuropathy. Maine Osteopathic Association Mid-Winter Virtual Research & Scholarship Symposium, February 2021; Virtual.

10) Hansen B., Mecum, N., and **Goode DJ**. CD4+ T cell and DRG Neuron Communication: An Investigation of Sex-dependent Functional T cell Changes in the Setting of Paclitaxel-Induced Peripheral Neuropathy. 2020 Annual UNE COM Student Research and Scholarship Forum, December 2020; Virtual.

11) **Goode, DJ** and Molliver DC. A novel mechanism for regulation of mitochondrial function by Epac2 contributes to acute hyperalgesia evoked by prostaglandin E2. Society for Neuroscience Annual Meeting, October 2019; Chicago, IL.

12) **Goode, DJ**, Geguchadze, R, Molliver DC. Identification of pyruvate dehydrogenase as a target of prostaglandin E2-induced Epac signaling in mouse dorsal root ganglion neurons. Society for Neuroscience Annual Meeting, November 2018; San Diego, CA.

13) **Goode, DJ**, Geguchadze, R, Harrison BJ and Molliver DC. Analysis of Epac-dependent protein kinase C phospho-substrate profiling in a mouse model of hyperalgesic priming. The International Association for the Study of Pain (IASP), 15th World Congress on Pain, September 2018; Boston, MA.

14) **Goode, DJ**, Geguchadze, R, Molliver DC. Characterization of novel substrate proteins for Epac-dependent PKC signaling activated by Gs-coupled receptors. Gordon Research Conference: Phosphorylation and G-Protein Mediated Signaling Networks, June 2018; Biddeford, ME.

15) M. May, C.A. Rieder, **D. Goode**, R. Geguchadze, D.C. Molliver, R.F. Relich, J. Vaughn, T.E. King. Host Cell Binding Mechanism of the Zika Virus Envelope Protein. Society for Neuroscience Annual Meeting, November 2017; Washington, DC, USA.

16) C.A. Rieder, **D. Goode**, R. Geguchadze, D.C. Molliver, R.F. Relich, J. Vaughn, M. May. Host Cell Binding Mechanism of the Zika Virus Envelope Protein. American Society for Microbiology 'Microbe' Conference, June 2017; New Orleans, LA.

17) **D. Goode**, R. Truong, J. Blanchard, A. Gettie, M. Robbiani, and E. Martinelli. HSV-2 modulates the expression of adhesion molecules increasing susceptibility to SHIV vaginal infection. HIV Pathogenesis – Virus vs. Host, March 2014; Banff, Alberta Canada.

18) **Goode D**, Aravantinou M, Truong R, Derby N, Guerra-Perez N, Kenny J, Blanchard J, Gettie A, Robbiani M, and Martinelli E. Sex Hormones Selectively Impact the Endocervical Mucosal Microenvironment: Implications for HIV Transmission, HIV Pathogenesis – Virus vs. Host, March 2014; Banff, Alberta Canada.

PATENTS

James Arthos (NIAID); **Diana Goode (NIAID);** Claudia Cicala (NIAID); Anthony S Fauci (NIAID) Applications: Inhibiting HIV infection; Inhibiting HIV replication; Status: HHS, Reference No. E-055-2007/3, PCT; Application No. 60/873,884 filed 07 Dec 2006; Application No. 60/920,880 filed 03 Mar 2007; Application No. 60/957,140 filed 21 Aug 2007; Application No. PCT/US2007/ 086663 filed 06 Dec 2007; Application No. 12/518,035 filed 24 Nov 2015, Patent No. 9193790; Application No. 14/859,675 filed 21 Sep 2015, Patent No. 9441041; Application No. 15/227,879 filed 03 Aug 2016.

INVITED TALKS

2022 "*Ovariectomy Reduces Anti-inflammatory CD4+ T Cells in the Dorsal Root Ganglion of NaïVe and Paclitaxel-treated Female Mice"*. USASP Sex Differences SIG. USASP Annual Scientific Meeting. Cincinnati, OH. 05/18/2022

2022 "Neuron – CD4+ T cell communication in the dorsal root ganglion in healthy and paclitaxel-treated mice. "49th Maine Biological and Medical Sciences Symposium (MBMSS). MDI Biological Laboratory. Bar Harbor, ME. 04/22/2022

2019 "A novel regulatory mechanism of mitochondrial function by Epac2 in acute inflammatory hyperalgesia," NorthEast Regional IDeA Conference (NERIC). Mount Washington Resort, Bretton Woods, New Hampshire, 08/16/2019

2016 HIV/AIDS Guest Lecturer at Lewiston Auburn College (USM) for Medical Microbiology summer course

2013 "HSV-2 Infection of the Vaginal Mucosa *Ex Vivo* Increases the Frequency of $\alpha_4\beta_7^+$ T cells." Immune Activation in HIV Infection: Basic Mechanisms and Clinical Implications, Keystone Symposia, Breckenridge, Colorado, 04/07/13

TEACHING

Courses

UNIVERSITY OF NEW ENGLAND, College of Osteopathic Medicine

2017-2021 Osteopathic Medical Knowledge 1A Fall, DOM-503

2017-2021 Osteopathic Medical Knowledge 1B Spring, DOM-510

Teach immunology and microbiology to first year medical students. Includes preparation of pre- and weekly- learning objectives, assessment questions (RAT, PT, CE, CAP), review sessions, co-teaching Team Case Challenges and On Doctoring Sessions. Contributed to case base learning maps (CBL) including both microbiology and immunology content.

SOUTHERN MAINE COMMUNITY COLLEGE

2016-2017 Microbiology with Laboratory, BIOL-250 (4 semesters)

Designed to provide the student with an introduction to the principles and techniques of microbiology. Consideration will be given to microbial structure, growth, physiology, and the reaction of the microorganisms to their physical and chemical environments. The laboratory will emphasize the development of proper laboratory technique and the identification of microorganisms.

UNIVERSITY OF SOUTHERN MAINE

Fall 2016 Emerging Infectious Diseases, SCI 399, designed 300-level elective course

Infectious diseases have taken center stage in our society over the past decade due to the emergent rates. These diseases include SARS, MERS, Ebola, chikungunya, avian flu, AIDS and, most recently, Zika. The emergence of these diseases is multifactorial in nature. Our approach in confronting these diseases needs to be dynamic, systemic, and critical, which must include the collaboration of basic scientists, clinicians, and the social scientists and epidemiologists. This course will encompass molecular scientific phenomena, public health and social policy issues encountered by individuals, families, and society. This course is particularly relevant for NAS, SBS, and Public Health Students.

JOHNS HOPKINS UNIVERSITY, School of Medicine

2009-2010 Graduate Immunology, ME-205-703

Teaching assistant for Graduate Immunology for first-year graduate and medical students. Prepared power point slides and led discussion on primary journal articles that reinforced the content learned that week in lecture. Prepared and graded exam questions.

UNIVERSITY OF NEW HAMPSHIRE

Spring 2004 Pathogenic Microbiology Lab, BMS 603

Teaching Assistant under Dr. Frank Rogers. Helped prepared reagents for weekly labs, helped students perform the labs, and graded exams.

Trainee Mentoring

Current

2021-present	Emily Whitaker, Ph.D. Project: Mass spectrometry analysis of CD4+ T cell-DRG neuron communication in naïve and PTX-treated mice	Post-doctoral fellow
2022-present	Valeriya Pozdnyakova, B.S.	UNECOM student

Project: Correlation of MHCII haplotype and CD4+ T cell cytokine response with chemotherapy-induced peripheral neuropathy in breast cancer patients.

2022-present Gia DeRose, B.S. UNECOM student
Project: Correlation of MHCII haplotype and CD4+ T cell cytokine response with chemotherapy-induced peripheral neuropathy in breast cancer patients.

Previous

2021-2023 Riley Cott, B.S. Student Volunteer
Project: MHCII expression in DRG neuron subpopulations

2019- 2022 Neal Mecum, Ph.D. Post-doctoral fellow
Project: Regulation of neuronal MHCII after nerve injury

2021 Siobhan Fennel UNECOM student
Project: DRG neuron dependent activation of CD4+ T cells in naïve and PTX-treated mice
Award: Maine Osteopathic Association
Midwinter Virtual Research & Scholarship Symposium February 12, 2022; 2nd place in Medical Student Original Research

2021 Catrina Cattaneo UNECOM Student
Project: MHCII on DRG neuron subpopulations in naïve and PTX-treated mice

2021 Conor Devoe UNECOM Student
Project: CELF-4 dyanmics. Co-mentored with Dr. Ben Harrison

2021 Stephen Cheng UNECOM Student
Project: Rat Sex Dependent Immune Cells Differences in Synovial Fluid of Monosodium Iodoacetate-Induced Knee Osteoarthritis. Co-mentored with Dr. Tamara King

2020 Bryar Hansen UNECOM Student
Project: Soluble and cell-cell communication between CD4+ T cells and DRG neurons

2020 David Pastruna UNECOM Student
Project: Evaluating T cells in mouse spinal cord during homeostasis and CIPN

Dissertation Committee

Current

2021-present Audrie Langlais (GSBSE doctoral program; advisor: Katherine Motyl)

GRANT SUPPORT

Ongoing Research Support

1. **1R01CA267554-01A1**: 08/15/2022 – 07/31/2027; $1,710,945
NIH/NCI/NIGMS
Title: Novel expression of MHC class II on DRG neurons and its role in promoting anti-nociceptive CD4+ T cells in females during chemotherapy-induced peripheral neuropathy.
***Major Goals:** The major goal for this project is to investigate the extent estrogen-dependent CD4+ T cells and neuronal MHCII reduce CIPN.
Role: Principal Investigator

2. **17076**: 01/01/2022- 08/31/2023; $19,119
University of New England, Office of Sponsored Programs and College of Osteopathic Medicine, Department of Biomedical Sciences
Title: Investigating CD6-ALCAM signaling in T cells and dorsal root ganglion neurons in chemotherapy-induced peripheral neuropathy
***Major Goals:** The major goal of this project is to determine the extent to which CD6-Alcam signaling reduces hypersensitivity and promotes axonal regeneration in paclitaxel-induced peripheral neuropathy.
Role: Principal Investigator

Completed Research Support

1. **5P20GM103643-10** COBRE (PI: Ian Meng): 01/01/22 - 08/15/22; $69,120
NIH/NIGMS
Title: Novel expression of MHC class II on DRG neurons can directly activate CD4+ T cells contributing to the resolution of neuropathic pain.
***Major Goals:** The major goal for this project is demonstrate the expression and role of neuronal MHCII in promoting anti-inflammatory CD4+ T cell cytokine production to reduce CIPN.
Role: COBRE Project Leader

2. **P20GM103643** Pilot Project: 01/01/20 - 01/01/21; $102,000
NIH/NIGMS
Title: Novel expression of MHC class II on DRG neurons can directly activate CD4+ T cells contributing to the resolution of neuropathic pain
***Major Goals:** The overall goal of this COBRE award is to establish a group devoted to the study of pain. The major goal of my Pilot Project is to generate preliminary data for an R01 grant submission.
Role: Pilot Project Leader

SERVICE

University and College Service

University of New England

2023 MS in Biomedical Sciences Working Group

2022-2023	UNECOM Faculty Search Committee: BMS Microbiology Position
2023	*ad hoc* Reviewer of Peter Morgane Research Fellowship proposals
2023	UNE Mini Grant Reviewer
2023	UNE COBRE Pilot Project Grant Reviewer
2022	UNE COM Fall Research & Scholarship Forum Poster Judge
2022	UNE COM Student Doctor of the Year Selection Committee
2022	MOA Virtual Presentation Judge
2022	UNE COBRE Pilot Project Grant Reviewer
2021-2022	Member of UNECOM Faculty Search Committee: COBRE Faculty Position
2021-present	Member of Committee on Faculty Affairs and Development Meeting
2021-present	Member of UNE COBRE Steering Committee
2020-present	Member of UNE Curriculum Advisory Committee Subcommittee on Intrinsic and Extrinsic Health Disparities
2020-present	Member of UNE Equity Diversity Advancement Committee (EDAC)
2018-present	Advisor for the UNE organization Dancin' Docs
2018	UNE COM Fall Research & Scholarship Forum Poster Judge

External Service

Committees

2022-present	Sex Differences in Pain and Analgesia Special Interest Group

Grant Reviewer

2022	National Institutes of Health, NV-14 Small Business Panel: Drug Discovery Involving the Nervous System (June 2023)
2020	Grant Reviewer for the Kansas University Medical Center (KUMC) Kansas IDeA Network of Biomedical Research Excellence (K-INBRE) Bridging Grant Program.

Manuscript Reviewer

Ad hoc reviewer for Pain and Pharmacology Research & Perspectives