David G. Meckes, Jr.
Department of Biomedical Sciences
College of Medicine
Florida State University
1115 W. Call Street
Tallahassee, FL. 32306-4300
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Research Interests:

Virus-host interactions
Extracellular vesicles (exosomes and microvesicles)
Cancer cell biology, signal transduction, vesicular trafficking
Proteomics and protein-protein interactions
Mechanisms of protein transport and targeting

Education:

2003-2008 **The Pennsylvania State University**
College of Medicine
Hershey, PA
Doctor of Philosophy
Microbiology and Immunology

1999-2003 **University of the Sciences in Philadelphia**
Philadelphia, PA
Bachelor of Science (*cum laude*)
Major: Microbiology

Positions:

2013-present Assistant Professor
Florida State University College of Medicine
Department of Biomedical Sciences

2009-2013 Postdoctoral Fellow
University of North Carolina at Chapel Hill
Lineberger Comprehensive Cancer Center

Selected Academic Awards and Honors:

2015	Outstanding Junior Faculty Investigator, FSU College of Medicine
2012	Priscilla Schaffer Award for top oral presentation by a postdoctoral fellow at the International Herpesvirus Workshop
2011	Joseph S. Pagano Award for top paper by a postdoctoral fellow
2011-2013	American Cancer Society Postdoctoral Fellowship (PF-11-158-01-MPC)
2011	NCI F32 Postdoctoral Fellowship– Awarded (declined)
2009-2011	UNC Cancer Center T32 Postdoctoral Training Fellowship from the NCI
2009	Enders' Award for Scholarly Research Achievement
2008	The 33rd International Herpesvirus Workshop Travel Award (for top oral presentation)
2006-2008	NCI T32 Predoctoral Training Fellowship: Viruses and Cancer
2003	Dr. Louis Gershenfeld Memorial Prize for Excellence in Microbiology
2001-2003	NETS Science Scholarship
1999-2003	Dean's List (7 semesters)
1999-2003	L. N. P. Rudolph Academic Scholarship
1999	Alpha Lambda Delta National Academic Honor Society

Research Experience:

May 2009-April 2013 **University of North Carolina at Chapel Hill**
Lineberger Comprehensive Cancer Center
Chapel Hill, NC
Postdoctoral Scholar
Laboratory of Nancy Raab-Traub, Ph.D.
Study of the content and function of exosomes released from Epstein-Barr virus infected cancer cells

2008- May 2009 **The Pennsylvania State University College of Medicine**
Hershey, PA
Postdoctoral Fellow
Laboratory of John W. Wills, Ph.D.
Mechanisms of UL16 Packaging into Herpes Simplex Virus

2004-2008 **The Pennsylvania State University College of Medicine**
Hershey, PA
Doctoral Thesis Research
Laboratory of John W. Wills, Ph.D.
The Dynamic Herpesvirus Tegument: Receptor Binding Induced Release of UL16 from the Capsid of Herpes Simplex Virus

2001-2003 **The University of the Sciences in Philadelphia**
Philadelphia, PA
Undergraduate Research
Laboratory of James R. Johnson, Ph.D.
Mutagenesis and Penicillin Selection for Methionine Auxatrophs of Staphylococcus Aureus to Study its Methionine Biosynthesis

Teaching Experience:

2015-present **Co-Course Director**
The Immune Response to Infection and Cancer
Delivered lectures and facilitated small group discussions of primary research articles
Florida State University College of Medicine

2014-present **Assistant Course Director**
Medical Microbiology
Delivered lectures and facilitated small group clinical case studies for medical students
Florida State University College of Medicine

2013-2014 **Content Expert and Small Group Facilitator**
Medical Microbiology
Delivered lectures and facilitated small group clinical case studies for medical students
Florida State University College of Medicine

2014-present **Content Expert**
Chromatin Structure, Epigenetics & Human Health
Delivered lectures on cancer epigenetics and facilitated group discussions
Florida State University College of Medicine

2013-present **Directed Independent Studies – Cancer Biology**
Trained undergraduate students in laboratory science and directed their research studies
Florida State University College of Medicine

2009-2013 **Graduate and Undergraduate Research Advisor**
Trained undergraduate students in laboratory science and managed their projects and experiments
Supervised and trained graduate students
University of North Carolina

2005-2009 **Graduate Research Assistant**
Trained and supervised junior graduate students in laboratory science
The Pennsylvania State University College of Medicine

2005-2007 **Graduate Teaching Assistant**
Medical Microbiology Laboratory for Medical Students
The Pennsylvania State University College of Medicine

2001-2003 **Teaching Assistant**
Microbiology Laboratory
University of the Sciences in Philadelphia

Publications (17) h-index (13)

http://scholar.google.com/citations?user=n9llb6AAAAAJ&hl=en&oi=ao
https://www.researchgate.net/profile/David_Meckes

Hurwitz, S.N., M.M. Conlon, M.A. Rider, **D.G. Meckes, Jr.** 2016. Nanoparticle analysis sheds budding insights into genetic drives of extracellular vesicle biogenesis. *J. Extracell. Vesicles.* **5**:31295

Rider, M.A., S.N. Hurwitz, **D.G. Meckes, Jr.** 2016. ExtraPEG: A Polyethylene Glycol-Based Method for Enrichment of Extracellular Vesicles. *Sci. Rep.* **6**:2397.

Meckes, D.G., Jr. 2015. Exosomal Communication Goes Viral. J Virol. **10**:5200-3. Epub 2015 March 4
(Listed on JV most read articles for March and April)

Meckes, D.G., Jr. 2014. Affinity purification combined with mass spectrometry to identify herpes simplex virus protein-protein interactions. *Methods Mol. Biol. 1144:209-22.*

Meckes, D.G., Jr., H. P. Gunawardena, R.M. Dekroon, P.R. Heaton, R. Hood Edwards, S. Ozgur, J.D. Griffith, B. Damania, N. Raab-Traub. 2013. Modulation of B-cell exosome proteins by gamma herpesvirus infection. *Proc Natl Acad Sci USA.* **31**:2925-33. Cited 61 times
Special Commentary: Pegtel, D.M., Oncogenic Herpesviruses sending mixed signals. *Proc Natl Acad Sci U S A.* 31:12503-4

Meckes, D. G., Jr., N.F. Menaker, and N. Raab-Traub. 2013. Epstein-Barr Virus LMP1 Modulates Lipid Raft Microdomains and the Vimentin Cytoskeleton for Signal Transduction and Transformation. *J Virol.* 3:1201-11. Epub 2012 Nov 14

Meckes, D.G., Jr. and N. Raab-Traub. 2011. Mining Epstein-Barr Virus LMP1 Signaling Networks. *J Carcinogene Mutagene.*

Meckes, D.G., Jr. and N. Raab-Traub. 2011. Microvesicles and Viral Infection. *J Virol.* **24**:12844-54. Epub 2011 Oct 5. Cited 148 times
(Listed on JV most read articles for October through April)

P.C. Yeh, J. Han, P. Chadha, **D.G. Meckes, Jr.,** M.D. Ward, O.J. Semmes, J.W. Wills. 2011. Direct and Specific Binding of the UL16 Tegument Protein of Herpes Simplex Virus to the Cytoplasmic Tail of Glycoprotein E. *J Virol.* **18**:9425-36. Epub 2011 Jul 6.

Han, J., P. Chadha, **D.G., Meckes, Jr.,** N.L. Baird, J.W. Wills. 2011. Interaction and Interdependent Packaging of Tegument Protein UL11 and Glycoprotein E of Herpes Simplex Virus. *JVirol.* **18**:9437-46. Epub 2011 Jul 6.

*Kung, C.P., ***D.G. Meckes, Jr.,** and N. Raab-Traub. 2011. EBV Latent Membrane Protein 1 (LMP1) Activates STAT3 and ERK through effects on EGFR and PKCδ. *JVirol.* **9**:4399-408. Epub 2011 Feb 9.***These authors contributed equally to the work.**
(Journal of Virology Spotlight Article)

Meckes, D.G., Jr., A.R. Marquitz, K.H. Shair, R.H. Edwards, C.P. Kung, and N. Raab-Traub. 2010. A Human Tumor Virus Utilizes Exosomes for Intercellular Communication. *Proc Natl Acad Sci U S A.* **47**:20370-5. Epub 2010 Nov 8. Cited 219 times
Cited in: *Nature* Research Highlights. "Communicators key for cancer virus." Vol. 468, Page:349. 2010 Nov 18.
Science Daily, "Cellular Communicators for Cancer Virus Identified." (Nov 9, 2010); also featured in 10 other science/medical news outlets.
Priority Paper Evaluation: Middeldorp J.M., D.M. Pegtel. 2011. A human tumor virus extends its reach. *Future Virol.* **4**:413-415.

Meckes, D.G., Jr., J.A. Marsh and J.W. Wills. 2010. Complex Mechanisms for the Packaging of the UL16 Tegument Protein into Herpes Simplex Virus. *Virology.* **2**:208-213. Epub 2010 Jan 3.

*Harper, A.L., ***D.G. Meckes, Jr., ***J.A. Marsh, N.L. Baird, P.C. Yeh, C.B. Wilson, and J.W. Wills. 2009. Interaction Domains of the UL16 and UL21 Tegument Proteins of Herpes Simplex Virus. *J Virol.* **6**:2963-71 Epub 2009 Dec 30.
***These authors contributed equally to the work.**

Meckes, D.G., Jr. and J.W. Wills. 2008. Structural Rearrangement within an Enveloped Virus upon Binding to the Host Cell. *J Virol.* **21**:10429-35. Epub 2008 Aug 20.
(Journal of Virology Spotlight Article) (Selected for Faculty of 1000 Biology, must read)

Yeh, P.C., **D.G. Meckes, Jr.,** and J.W. Wills. 2008. Analysis of the Interaction between the UL11 and UL16 Tegument Proteins of Herpes Simplex Virus. *J Virol.* **21**:10693-700. Epub 2008 Aug 20.

Meckes, D.G., Jr. and J.W. Wills. 2007. Dynamic Interactions of the UL16 Tegument Protein with the Capsid of Herpes Simplex Virus. *J Virol.* **23**:13028-36. Epub 2007 Sep 12.

Service:

Ad Hoc Reviewer
Journal of Virology
Journal of General Virology
Proceedings of the National Academy of Sciences (PNAS)
PLOS One
Methods
BMC Cancer
BioMed Research International
NIH Study Section ZDA1 JXR-G (13) – Special Emphasis Panel, "Extracellular Vesicles in HIV/AIDS and Substance Abuse" (R01, R21)
Danish Council for Independent Research
Medical Research Council, United Kingdom
Ghent University
Alzheimer's Association

University Committees

2015-present	Fulbright Faculty Committee

Departmental and College Committees

2016	Faculty Council Outstanding Junior Investigator Award Committee
2016	Faculty Council Outstanding Junior Educator Award Committee
2016	Curriculum Committee Review of Pre-clerkship Course
2015-present	Curriculum Committee Year 1 and 2
2015-presnet	By-Laws and Policy Committee
2015-present	Faculty Recruitment Committee
2015	Graduate Program Committee
2015	Promotion and Tenure Committee
2013-present	Curriculum Redesign Committees - Medicine 2, Host Defense, and Hematology teams
2014-present	Speaker and organizer for BMS Public Information Session "Current Health Issues"
2014	Faculty Development and Mentoring Committee

Volunteering

2015-present	"Science Night" Gilchrist Elementary School – organized science experiments and educational activities for students
2014-present	First Friday's at Railroad Square "Ask a Scientist" – A monthly event organized by FSU Professors to promote science in the community
2013	Fundraising for the Muscular Dystrophy Association
2013	Panel Speaker for FSU Postdoc Symposium session "Challenges Facing Junior Scientists in the 21st century."

Society Memberships:

International Society for Extracellular Vesicles
American Society for Exosomes and Microvesicles
American Society for Microbiology
International Association for Research on Epstein-Barr virus and Associated Diseases

Extramural Funding:

Current

1RO1CA204621- National Institutes of Health 4/1/2016 – 3/31/2021
National Cancer Institute Total Award: $1,704,214
Title: Modulation of Host Cell Exosome Content and Function by EBV LMP1
Role: PI

The overall goal of these studies is to determine the mechanisms that LMP1 drives exosome content reorganization and alters the functions of exosomes. We hypothesize that LMP1 exosomal trafficking modulates the components and biological properties of exosomes by altering

endocytic routes and membrane microdomains. To test this, we aim to: 1.) investigate the mechanism through which LMP1 alters exosome components; 2.) determine the functions of LMP1-modified exosomes in intracellular communication and cellular transformation.

1R15CA188941- National Institutes of Health 5/1/2015 – 4/30/2018
National Cancer Institute Total Award: $414,462
Title: Exosome-Dependent Trafficking of Epstein-Barr Virus LMP1
Role: PI

The overall goal of this project is to uncover the molecular basis controlling LMP1 exosome trafficking and release from the cell. We hypothesize that LMP1 traffics from the Golgi to the site of exosome formation (mutltivesicular bodies, MVBs) in Rab31/VAMP4 containing vesicles in complex with CD63. To test this hypothesis, we have proposed two focused specific aims that are appropriately tailored for the funding period and total award amount for the R15 funding mechanism. Using dominant negative constructs and siRNAs directed against Rab31 and VAMP4 we will monitor the localization of LMP1 to MVBs and exosomes using western blot and fluorescence-based assays. In this study, we will also further investigate the CD63-LMP1 interactions important for exosomal trafficking.

6AZ11 – Alzheimer's Research Program 1/1/2016 – 1/31/2018
Florida Department of Health Total Award: $81,499
Title: Blood Exosomes and Neurodegenerative Disease
Role: PI

Our overall hypothesis is that pathological factors that contribute to the course of AD and can be used for early detection of the disease are resident in brain derived exosomes of the circulation. Therefore, our objects for this research proposal are twofold - 1) to develop techniques for identifying the tissue origins of circulating exosomes; and 2) to characterize specifically the neuronal exosomes present in human blood samples the blood from mouse models of AD.

Completed

4BB05 - Bankhead-Coley Program 12/1/2013 – 11/30/2015
Florida Department of Health Total Award: $396,328
Title: Proteomic Analysis of Cancer Exosomes for Diagnostic and Therapeutic Targets
Role: PI

The major goal of this project is to utilize exosome purification strategies that we have developed together with advanced quantitative proteomics techniques to define the protein composition of exosomes secreted from a diverse set of human cancer cell lines (the National Cancer Institute, NCI-60). The completion of this project will reveal a common set of proteins found in cancer exosomes that are likely important for their formation and function. Exosomal proteins expressed only in specific cancer types (e.g., breast, prostate and colon) may represent potential diagnostic biomarkers that will be further explored with patient samples. Overall, this project aims to understand the composition and function of exosomes secreted from cancer cells with the goal of discovering novel therapeutic and diagnostic targets.

2011-2013: American Cancer Society Fellowship
Title: "Molecular Properties of Exosomes Secreted from Cancer Cells Expressing LMP1"
Total Award: $150,000

Intramural Funding:

1/9/15-1/8/16: FSU Equipment and Infrastructure Enhancement Grant
Title: "Enhancing Biomedical Research by Confocal Microscopy with Quantitative Capability"
Total: $85,000 (Co-PI)

6/01/14-5/30/15: FSU Equipment and Infrastructure Enhancement Grant
Title: "Enhancing Cell Biology Research Through Automated Cell Counting and Fluorescent-Based Assays"
Total: $29,618 (PI)

Abstracts:

Hurwitz, S.N., Nkosi, D., Conlon, M.M., **Meckes, Jr., D.G.** 2016 Tetraspanin protein CD63 mediates exosomal packaging of Epstein Barr virus LMP1. Keystone Symposia Exosomes/Microvesicles: Novel Mechanisms of Cell-Cell Communication. Keystone, CO. Poster Presentation

Hurwitz, S.N., Conlon, M.M., Rider, M.A., Brownstein, N.C., **Meckes, Jr., D.G.** 2016. Nanoparticle tracking analysis of cancer cell vesicles sheds budding insights into exosome and microvesicle biogenesis. Keystone Symposia Exosomes/Microvesicles: Novel Mechanisms of Cell-Cell Communication. Keystone, CO. Poster Presentation

Hurwitz, S.N., Nkosi, D., Conlon, M.M., **Meckes, Jr., D.G.** 2016 Tetraspanin protein CD63 mediates exosomal packaging of Epstein Barr virus LMP1. 41st International Herpesvirus Workshop. Madison, WI. Poster Presentation

Nkosi, D., Howell, L.A., Conlon, M.M., Tremblay, D. C., **Meckes, Jr., D.G.** 2015. Transmembrane Domains Mediate Intra- and Extra-cellular Trafficking of Epstein-Barr Virus LMP1. 40th Annual International Herpesvirus Workshop. Boise, ID. Oral Presentation

Rider, M.A. and **Meckes, D.G., Jr.** The Interactome of the Epstein-Barr Virus Oncoprotein Evaluated by the Proximity-Based BioID Approach. 40th Annual International Herpesvirus Workshop. Boise, ID. Poster Presentation

Meckes, D.G., Jr., H.P. Gunawardena, R.M., Dekroon, P.R. Heaton, R.H. Edwards, S. Ozgur, J.D. Griffith, B. Damania, and N. Raab-Truab. 2013. Modulation of B-Cell Exosome Proteins by Gammaherpesvirus Infection. 38rd Annual International Herpesvirus Workshop. Grand Rapids, MI. Oral Presentation

Meckes, D.G., Jr., N. Menaker, R.H. Edwards, and N. Raab-Traub. 2012. Reorganization of Lipid Raft Microdomains by EBV Latent Membrane Protein 1 (LMP1) Contributes to its Signaling and Transformation Capabilities. 37rd Annual International Herpesvirus Workshop. Calgary, Canada. Oral Presentation

Meckes, D.G., Jr., N. Menaker, R.H. Edwards, and N. Raab-Traub. 2012. Reorganization of Lipid Raft Microdomains by EBV Latent Membrane Protein 1 (LMP1) Contributes to its Signaling and Transformation Capabilities. International Congress on Oncogenic Herpesviruses and Associated Diseases. Philadelphia, PA. Poster Presentation

Meckes, D.G., Jr., A.R. Marquitz, K.H. Shair, R.H. Edwards, C.P. Kung, and N. Raab-Traub. 2010. Epstein-Barr Virus Utilizes Exosomes for Intercellular Communication. International Association for Research on Epstein-Barr virus and Associated Diseases. Birmingham, England. Oral Presentation

Meckes, D.G., Jr. and J.W. Wills. 2008. Rearrangement of the Tegument upon Herpesviruses Binding to their Host Cells. 33rd Annual International Herpesvirus Workshop. Estoril, Portugal. Oral Presentation

Meckes, D.G., Jr. and J.W. Wills. 2008. Rearrangement of the Tegument upon Herpesviruses Binding to their Host Cells. 8th Annual Herpesvirus Symposium. Philadelphia, PA. Oral Presentation

Meckes, D.G., Jr. and J.W. Wills. 2007. Dynamic Interactions of the UL16 Tegument Protein with the Capsid of Herpes Simplex Virus. 32nd Annual International Herpesvirus Workshop. Asheville, NC. Poster Presentation

Meckes, D.G., Jr. and J.W. Wills. 2007. Dynamic Interactions of the UL16 Tegument Protein with the Capsid of Herpes Simplex Virus. 7th Annual Herpesvirus Symposium. Philadelphia, PA. Oral Presentation

Meckes, D.G., Jr., P.C. Yeh, R.J. Courtney, and J.W. Wills. 2005. Localization and Virion Incorporation of the Herpes Simplex Type 1 Tegument Protein, UL16. International Union of Microbiological Societies. XIII International Congress of Virology. San Francisco, CA. Poster Presentation

Invited Seminars:

Modulation of the Components and Functions of Exosomes by Tumor Viruses. Florida State University 4th Annual Life Sciences Symposium. Feb. 13, 2014

Oncogenic herpesviruses modify the cargo and functions of exosomes released from host cells. Florida State University Institute of Molecular Biophysics Structural Biology/Biochemistry Seminar. Nov. 12, 2013

The Far-Reaching Effects of Epstein-Barr Virus Oncoprotein LMP1. The Pennsylvania State University, Department of Biochemistry and Molecular Biology. February 23, 2012.

The Far-Reaching Effects of Epstein-Barr Virus Oncoprotein LMP1. The University of Iowa College of Medicine, Department of Microbiology. January 30, 2012.

Trainees (name, years, current position):

Undergraduate

Antonia Veltcheva, 2015-present
Marius Kostelic, 2015-present

Alexandra Dolan, 2015-present
Timothy Bobroskie, 2014-present
Natalie Marenghi, 2013-2014 (medical student, FSU College of Medicine)

Medical
Stephanie Hurwitz, 2014
Maria Raye Anne Ng, 2016

Graduate
Stephanie Hurwitz (MD/PhD), 2015-present
Meghan Conlon, 2014-2016
Lauren Howell, 2013- 2016
Sara York, 2016-present

Postdoctoral
Mark Rider, 2013-present
Dingani Nkosi, 2013-present
Mujeeburahiman Cheerathodi, 2016-present

Research Scientist
Xia Lui, 2014-present
Deanna Tremblay, 2013-2014 (Postdoctoral recruiter, St. Jude Children's Research Hospital)

Graduate Student Committees (name, years, program)

Alyssa Rolfe, 2016-present (Biomedical Sciences)
Brittany Brewers, 2015-present (Biology)
Stephanie Hurwitz, 2015-present (Biomedical Sciences)
Meghan Conlon, 2015-2016 (Biomedical Sciences)
Emily Lee, 2014-present (Biology)
Siming Ma, 2014-present (Biology)
Lauren Howell, 2014-2016 (Biomedical Sciences)

Undergraduate Honor Thesis Committees

Allaura Sherman 2015 (Biology)
Marius Kostelic 2016 (Chemistry)