

DANIEL F. GADDY, PH.D.

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Objectives

To work in a challenging and intellectually stimulating environment that allows me the opportunity to utilize my expertise in virology, molecular biology, cell biology and immunology for the design and development of therapies for various diseases.

Major areas of expertise

Molecular biology, gene therapy, virus vectors, autoimmunity, oncolytic viruses, host-pathogen interactions

Education

Ph.D. (Microbiology and Immunology) – 2006
Department of Microbiology and Immunology
Wake Forest University School of Medicine, Winston-Salem, NC

B.S. (Microbiology) – 2001
Magna Cum Laude
North Carolina State University, Raleigh, NC

Work Experience

Academic Research

- 2006-Present Postdoctoral Fellow (Gene Therapy/Paul Robbins, Ph.D.)
Department of Molecular Genetics & Biochemistry
University of Pittsburgh School of Medicine, Pittsburgh, PA 15261
Projects:
1) Design of Adeno-associated virus vectors for gene therapy of type-1 and type-2 diabetes.
2) Improvement of AAV-mediated gene transfer to pancreatic beta cells.
3) Design of AAV and retrovirus vectors for gene therapy of aging.
This research is supported by a Postdoctoral Fellowship from the Juvenile Diabetes Research Foundation, Fellowship number 3-2007-728 (Gaddy, PI).
- 2001-2006 Graduate Student (Microbiology & Immunology/Douglas Lyles, Ph.D.)
Department of Microbiology and Immunology
Wake Forest University School of Medicine, Winston-Salem, NC
Dissertation title: Analysis of Host Gene Products that Contribute to the Induction of Apoptosis by Oncolytic Vesicular Stomatitis Virus
- 2000-2001 Undergraduate Laboratory Assistant (Bacteriology/Hosni Hassan, Ph.D.)
Department of Microbiology
North Carolina State University, Raleigh, NC
- 1999-2000 Undergraduate Research Assistant (Immunology/Scott Laster, Ph.D.)
Department of Microbiology
North Carolina State University, Raleigh, NC
- 1998-1999 Research Assistant (Virology/Barbara Sherry, Ph.D.)
Department of Molecular Biology

North Carolina State University
Pylon Research Laboratories, Raleigh, NC

Industry Research

2000-2001 Research Assistant (Neurobiology/Vic Wei, Ph.D.)
Department of Molecular Biology
Ardent Pharmaceuticals, Inc., Research Triangle Park, NC

Consulting

2008-Present Technical Advisor and Blog Contributor
Fundscience.org
Pittsburgh, PA

Teaching Experience

Fundamentals of Virology, Wake Forest University School of Medicine
Advanced Topics in Microbiology and Immunology, Wake Forest University School of Medicine

Research Expertise

- 1) Virology techniques:
include preparation and propagation of adeno-associated virus, adenovirus, lentiviruses, and vesicular stomatitis virus; virus titration via plaque assay and dot blot genomic DNA analysis
- 2) Molecular biology techniques:
include Western blotting, PCR, quantitative RT-PCR, microarrays, cloning techniques, plasmid preparation and purification, stable and transient transfection of cell cultures with plasmid DNA or siRNA
- 3) Immunology techniques:
include flow cytometry, ELISA, ELISPOT, intracellular cytokine staining, operation of BD FACSCaliber™ and BD™ LSR II cytometers, as well as CellQuest Pro and FACSDiva analysis software
- 4) Microscopy:
includes laser-scanning confocal microscopy, live-cell imaging, time-lapse microscopy
- 5) Sterile tissue culture work with murine primary cells and transformed cells/cell lines
- 6) Small animal anatomy, handling, and experimentation

Honors and Awards

2007-Present Juvenile Diabetes Research Foundation Postdoctoral Fellowship
2007 Travel Award, 10th Annual Meeting of the American Society of Gene Therapy
2005 Travel Award, 24th Annual Meeting of the American Society for Virology
2003-2005 WFU Dept. of Microbiology and Immunology Ruth L. Kirschstein National Research Service Award
1998-Present Golden Key National Honor Society
1998-1999 Gamma Sigma Delta Sophomore Scholarship

Professional Memberships

American Association for the Advancement of Science
American Society of Gene Therapy
American Society for Microbiology
American Society for Virology

Publications

Research Articles

- 1) **Gaddy, D.F.**, M.J. Riedel, T.J. Kieffer, and P.D. Robbins. (**in preparation**) *In vivo* expression of HGF/NK1 and GLP1 from dsAAV vectors enhances pancreatic beta cell proliferation and improves pathology of Type-2 diabetes.

- 2) **Gaddy, D.F.**, M.J. Riedel, S. Pejawar-Gaddy, T.J. Kieffer, and P.D. Robbins. (**in preparation**) Beta cell-specific expression of IL-4 and GLP-1 improves pathology of Type-1 diabetes.
- 3) **Gaddy, D.F.**, Z.W. Whitlow, M.O. McKenzie and D.S. Lyles. (**in preparation**) P protein contributes to the induction of apoptosis by wild-type vesicular stomatitis virus.
- 4) Pejawar-Gaddy, S., I. Bossis, J. Xue., **D.F. Gaddy**, R. Viscidi, and O.J. Finn. (**in preparation**) VLP(BPV)-MUC1 vaccine slows down the progression of tumors in a tolerogenic environment.
- 5) Riedel, M.J., **D.F. Gaddy**, A. Asaidi, P.D. Robbins, and T.J. Kieffer. (**submitted**) DsAAV8-Mediated Expression of GLP-1 in Pancreatic Beta-Cells Prevents Streptozotocin-Induced Diabetes.
- 6) **Gaddy, D.F.** and D.S. Lyles. 2007. Oncolytic vesicular stomatitis virus induces apoptosis via a novel mechanism that is dependent on signaling through PKR, Fas, and Daxx. *J Virol.* 81(6): 2792-2804.
- 7) **Gaddy, D.F.** and D.S. Lyles. 2005. Vesicular stomatitis viruses expressing wild-type or mutant M proteins activate apoptosis through distinct pathways. *J Virol.* 79(7): 4170-4179.

Reviews

- 1) **Gaddy, D.F.** and P.D. Robbins. (**submitted**, invited review) Approaches for musculoskeletal gene therapy: an overview.
- 2) **Gaddy, D.F.** and P.D. Robbins. 2008. Current status of gene therapy for rheumatoid arthritis. *Curr Rheumatol Rep.* 10(5): 398-404.

Book Chapters

- 1) **Gaddy, D.F.**, M.A. Ruffner, and P.D. Robbins. (**submitted**, invited textbook chapter) Autoimmune disorders. *A Guide to Human Gene Therapy*. New Jersey: World Scientific.

Abstracts

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| 2008 | “DsAAV8-mediated expression of GLP-1 in pancreatic beta-cells prevents streptozotocin-induced diabetes.” Oral presentation. Annual Meeting of the Canadian Diabetes Association, Montreal, QC. |
| 2008 | “DsAAV8-mediated expression of IL-4 and β cell growth factors modulates diabetes in NOD mice.” Oral presentation. 11 th Annual Meeting of the American Society of Gene Therapy, Boston, MA. |
| 2007 | “Comparison of rAAV serotypes for therapeutic gene transfer to islets for abrogation of autoimmunity in diabetes.” Oral presentation. 10 th Annual Meeting of the American Society of Gene Therapy, Seattle, WA. |
| 2006 | “Oncolytic vesicular stomatitis virus induces apoptosis via signaling through PKR, Fas and Daxx.” Poster presentation. 9 th Annual Meeting of the American Society of Gene Therapy, Baltimore, MD. |
| 2005 | “Analysis of host gene products that contribute to the induction of apoptosis by vesicular stomatitis virus.” Oral presentation. 24 th Annual Meeting of the American Society for Virology, State College, PA. |
| 2004 | “Analysis of host gene products that contribute to the induction of apoptosis by vesicular stomatitis virus.” Oral presentation. 23 rd Annual Meeting of the American Society for Virology, Montreal, QC. |
| 2004 | “Analysis of host gene products that contribute to the induction of apoptosis by vesicular stomatitis virus.” Oral presentation. 8 th Southeastern Regional Virology Conference, Atlanta, GA. |
| 2000 | “Can phosphatase inhibitors be used to enhance apoptosis induced by chemotherapeutic agents?” Poster presentation. NCSU Undergraduate Research Symposium, Raleigh, NC. |

Research Support

Current

3-2007-728 (Gaddy, PI)

Juvenile Diabetes Research Foundation

A Gene Therapy-based Approach for Abrogation of Autoimmunity in Diabetes

09/1/2007-Present

Role: Postdoctoral Fellow

Goal: To enhance local delivery specifically to pancreatic β cells in mouse and non-human primate models of Type 1 Diabetes (T1D). Furthermore, experiments proposed in this grant will utilize rAAV vectors for the delivery of therapeutic transgenes encoding GLP-1 and HGF. These proteins have been shown to have a variety of anti-diabetic properties, including the promotion of β cell growth and insulin secretion. Therefore, delivery of these genes to β cells via rAAV vectors has the potential to prevent T1D progression when administered early. Moreover, rAAV delivery of these therapeutic genes, in combination with immunomodulatory therapy, has the potential to promote regression of T1D when administered after T1D onset by promoting β cell regeneration. The successful completion of the proposed studies should result in the development of rAAV-based therapies for T1D.