## Thomas B. Lentz, Ph.D.

## **Biotechnology Program**

North Carolina State University 6105 Jordan Hall 2800 Faucette Drive Raleigh, NC 27695-7512 Work Phone: (919) 513-7685 Cell Phone: (608) 209-3654 Email: <u>tblentz@ncsu.edu</u> LinkedIn: <u>www.linkedin.com/in/thomasblentz</u> Website: www.lentzlab.com

## **CURRENT POSITION**

**PREVIOUS POSITION** 

**Postdoctoral Research Associate** 

Gene Therapy Center - Dr. R. Jude Samulski

Teaching Postdoctoral Fellow

Biotechnology Program – Dr. Robert M. Kelly North Carolina State University in Raleigh, North Carolina

Scholarship of Teaching and Learning Projects

- 'Unique down to our microbes...' a classroom metagenomics activity
- Development of the course Virus Biotechnology: Pathogens to Therapeutics

Research Program: Ecology and Molecular Biology of Ranaviruses

- Prevalence of Ranavirus in herp populations of the US and abroad
- Molecular mechanisms of Ranavirus DNA replication

University of North Carolina in Chapel Hill, North Carolina		
<ul> <li>Development and engineering of adeno-associated virus (AAV) as a vehicle for therapeutic gene delivery</li> <li>Mechanisms of interaction between AAV and host cell defenses</li> <li>Engineering tissue-specific enhancement of a liver tropic vector for AAT deficiency</li> </ul>		
<b>Ph.D.</b> in Cellular and Molecular Biology – Dr. Daniel D. Loeb <b>University of Wisconsin</b> in Madison, Wisconsin	2004 - 2010	
<ul> <li>B.S. [cum laude] in Molecular and Cellular Biology</li> <li>Texas A&amp;M University in College Station, Texas</li> </ul>	2000 - 2004	
Select Coursework Virginia Tech in Blacksburg, Virginia	2002 - 2003	

2014 – present

2011 – 2014

<b>Triangle Center for Evolutionary Medicine seed research grant</b> (\$18,840) Emerging human-mediated pathogens in North Carolina amphibians and reptiles	2016	
First Year Inquiry teacher grant (\$1000) Faculty development program for inquiry-based teaching	2016	
NCSU Office of Faculty Development Summer Institute teaching grant (\$1000) Development and presentation of Virus Biotechnology course	2015	
NCSU Office of Postdoctoral Affairs Professional Development Award (\$1000) CAST Faculty training courses in Universal Design for Learing	2015	
NCSU Delta Captioning Grant (\$2200) Closed captioning of Virus Biotechnology course lectures	2015	
Alpha-1 Foundation Postdoctoral Research Fellowship	2013 – 2014	
NC Biotechnology Center – Event Sponsorship Grant	2013	
American Society of Virology Travel Award	2012	
Lineberger Cancer Center Postdoctoral Training Grant Appointment	2012 - 2013	
NGEC Workshop Travel Award	2010	
R. L. Kirschstein Training Grant Appointment	2008 - 2010	
Vilas Travel Grant - Univ. of Wisconsin	2007 & 2008	
Dr. Ilse L. Riegel Travel Award - Univ. of Wisconsin	2007	
Hepatitis B Foundation Travel Award	2007	
TEACHING EXPERIENCE		
<b>Instructor of Record</b> – BIT 495/595 Virus Biotechnology: Pathogens to Therapeutics Developed course curriculum and assessed as SoTL research project Taught for 2 semesters	2015-2016	
<b>Instructor of Record</b> – BIT 410/510 Manipulation of Recombinant DNA Taught for 3 semesters, 2 summer sessions	2014-2016	
<b>Instructor or Record</b> – BIT 100 Current Topics in Biotechnology Taught for 4 semesters	2014-2016	
Certificate in Reflective Teaching - NCSU Office of Faculty Development	2016	
Faculty Training - NCSU First Year Inquiry Program	2016	
SoTL Summer Institute - NCSU Office of Faculty Development	2015	
Course Assistant – GreenLabs Environmental Capstone Course, University of North Carolina	2013	
Guest Lecturer - Introductory Biology 100, University of North Carolina	2013	
Teaching Certificate - Training Initiatives in Biomedical and Biological Sciences (TIBBS), University of North Carolina	2011	
Development of new student orientation curriculum Cellular and Molecular Biology program - University of Wisconsin	2008	

MENTORING EXPERIENCE	
Undergraduate Research Advisor (North Carolina State University):	
Andrew Duncan, BS '16 – Biological Sciences	
Project: Elucidating Function of ORF95R in FV3 DNA Replication	
Adam Miranda BS '17 - Genetics	
Project: Investigation of the Bole of Frog Virus 3 Gene OBE60B in First Stage Viru	DNA Replication
Troject. Investigation of the Nole of Trog virus 5 delle on oon in this stage vire	
Ethan Fritch, BS '16 – Biological Sciences	
Project: Screening for Frog Virus 3 in Frog Genera from Gabon, Africa	
Gitaniali Talreia. BS '16 – Chemical Engineering	
Project: Variability in Ranavirus Infection in Cell Lines of Cold-Blooded Vertebrat	tes
Mentored students (University of North Carolina):	2011 – 2014
Graduate – K. Woodard, K. Liang	
Undergraduate – E. Huh	
Mentored students (University of Wisconsin - Madison):	2005 - 2010
Graduate - T. Jempridee, A. Robinson, A. Swick, B. Sibert, D. Primer	2000 2010
SERVICE AND OUTREACH	
Organizer - outreach education collaboration	2015-2016
North Carolina School for the Deaf	2014.15
Organizer – NCSU Biotechnology program table (public event)	2014-15
NCSU Open House, Raleign, NC	2012
Co-organizer - The Nexus of Gene Therapy and Regenerative Medicine	2013
Joint symposium, UNC Gene Therapy Center and WFU Institute for	
Regenerative Medicine	2012
Co-organizer – UNC Gene Therapy Center public table (public event)	2013
NC Museum of Nat. Sci. Innovations in Health Day, Raleigh, NC	2012
Volunteer Scientist – UNC Science Expo (public event)	2013
DNA Day organizing committee, Chapel Hill, NC	2011
Volunteer Teacher – Science class (primary school)	2011
El Centro Hispano, Durham, NC	
PROFESSIONAL INVOLVEMENT	
American Society for Microbiology	2016 - Procont
North Carolina Hernetological Society	2010 - Fresent 2013 - Present
NC Partners in Amphibian and Pontile Concernation (PAPC) member	2013 - Fresent
INC Partners in Amphibian and Repute Conservation (PARC) - member	2013 - Present
American Society of Virology	2012 - 2014
American Society of Virology	2012 - 2013
American Society of Gene and Cell Therapy – associate member	2009 - 2013
vilas Travel Grant Review Committee – Univ. of Wisconsin Graduate School	2009

<b>Graduate Training</b> - University of Wisconsin - Madison Envelope protein regulation of HBV DNA synthesi Development of a cell culture system to study HB	Dr. Dan Loeb s V replication	2004 - 2010
Undergraduate Training		
Texas A&M University - College Station		
Qde-2 dependent quelling in <i>N. crassa</i>	Dr. Aramayo	2003 - 2004
Targeted ribozyme cleavage of FMDV IRES	Dr. Dunne	2001 - 2003
Virginia Tech – Summer research projects		
Nicotine biosynthesis	Dr. Jelesko	2002 & 03
Crosstalk between malarial hosts	Dr. Luckhart	2001

Ling C., Wang Y., Lu Y., Wang L., Jayandharan G.R., Aslanidi G.V., Li B., Cheng B., Ma W., **Lentz T.**, Ling C., Xiao X., Samulski R.J., Muzyczka N., Srivastava A. (2015). Enhanced transgene expression from recombinant single-stranded d-sequence-substituted adeno-associated virus vectors in human cell lines in vitro and in murine hepatocytes in vivo. Journal of Virology 89(2):952-61.

Lentz, T.B., Samulski, R.J. (2015). Insight into the mechanism of inhibition of recombinant adeno-associated virus by the Mre11/Rad50/Nbs1 complex. Journal of Virology 89(1):181-94.

Wang, J.C., Nickens, D.G., **Lentz, T.B.**, Loeb, D.D., Zlotnick, A. (2014). Encapsidated hepatitis B virus reverse transcriptase is poised on an ordered RNA lattice. PNAS 111(31): 11329-34.

Xiao, P.J., Lentz, T.B., Samulski, R.J. (2012). Recombinant Adeno-Associated Virus: Clinical Application and Development as a Gene Therapy Vector. Therapeutic Delivery 3(7):835-56.

**Lentz, T.B.**, Gray, S.J., Samulski, R.J. (2011). Viral Vectors for Gene Delivery to the Central Nervous System. Neurobiology of Disease 48(2):179-88.

**Lentz, T.B.** and Loeb, D.D. (2011). Roles of the Envelope Proteins in the Amplification of cccDNA and Completion of Synthesis of the Plus-Strand DNA in Hepatitis B Virus. Journal of Virology 85(22):11916-27.

**Lentz, T.B.** and Loeb, D.D. (2010). Development of a Cell Cultures that Express HBV to High Levels and Accumulate cccDNA. Journal of Virological Methods 169:52-60.

MANUSCRIPTS IN PREPARATION

**Lentz, T.B.**, Ott, L.E., Robertson, S.D., Council, S.E., Kelley, J.B., Wollenberg, M.S., Dunn, R.R., Goller, C.C. Unique Down to Our Microbes – Assessment of an Inquiry-Based Metagenomics Activity. (In Preparation)

Fritch, E.J., Bell, R.C., Stuart, B.L., **Lentz, T.B.** Survey for Frog Virus 3-Like Ranavirus in Frog Species of Gabon, Africa. (In Preparation)

Lentz, T.B. – Curriculum Vitae page 4

## PRESENTED ABSTRACTS

"Modes of Inquiry-Based Learning in a Laboratory Virus Biotechnology Course." (Talk) **American Society of Microbiology Conference for Undergraduate Educators**, July 2016 – Bethesda, Maryland.

"Unique Down to Our Microbes – Assessment of an Inquiry-Based Metagenomics Activity." (Poster) **American Society of Microbiology Conference for Undergraduate Educators**, July 2016 – Bethesda, Maryland.

"Bench to Classroom: Exploration of Ranavirus as a Teaching Laboratory Model System." (Poster) International Symposium on Ranaviruses, May 2015 – Gainesville, Florida.

"Insight into the mechanism of enhancement of AAV vector transduction by adenovirus proteins E1B55k/E4orf6." (Poster) **Joint Symposium of UNC – Gene Therapy Center and WFU – Institute of Regenerative Medicine**, Feb. 2013 – Winston-Salem, North Carolina.

"Adenovirus proteins E1B55k/E4orf6 reveal novel insight into the role of the DNA damage response pathway in AAV transduction." (Talk) **American Society for Virology**, July 2012 – Madison, Wisconsin.

"Insight into the mechanism of increased transduction of AAV vectors with Ad proteins E1B55k/E4orf6 and generalization to other substrates of the cellular DNA damage response pathway." (Poster) **American Society for Gene and Cell Therapy Meeting,** May 2012 – Philadelphia, Pennsylvania.

"Generation of Novel Rep Proteins with Engineered Nicking Specificity: Implications toward Targeted Integration and Gene Correction." (Poster) **Northwest Genome Engineering Consortium Workshop**, Nov. 2010 – Seattle, Washington.

"The Envelope Proteins are Responsible for Heterogeneity in the 3' End of HBV Plus-Strand DNA." (Talk) **Molecular Biology of Hepatitis B Viruses** meeting, Sept. 2009 - Tours, France.

"Viral Envelope Proteins Regulate Accumulation of the Viral Genome during Human Hepatitis B Virus Replication." (Poster) **McArdle Symposium on Cancer**, June 2009 - Madison, Wisconsin.

"Human Hepatitis B Virus Envelope Proteins Contribute to Regulating Synthesis of the Nuclear Form of the Viral Genome." (Poster) **McArdle Symposium on Cancer**, Nov. 2008 - Madison, Wisconsin.

"HBV Envelope Proteins Prevent Complete Elongation of Plus-Strand DNA." (Poster) **Molecular Biology of Hepatitis B Viruses** meeting, Aug. 2008 - San Diego, California.

"The Contribution of Envelope Proteins to Regulation of HBV cccDNA Synthesis in Cell Culture." (Talk) **Molecular Biology of Hepatitis B Viruses** meeting, Sept. 2007 - Rome, Italy.

"A Cell Culture System to Study the Accumulation and Maintenance of cccDNA during HBV Replication." (Poster) **Molecular Biology of Hepatitis B Viruses** meeting, Sept. 2005 - Heidelberg, Germany.