

KAREN STRUNK RILEY, PH.D.

FACULTY POSITIONS

Teaching Associate Professor, June 2024-present

Department of Molecular, Cellular, and Developmental Biology, University of Colorado-Boulder

Adjunct lecturer, January 2024-May 2024

Department of Molecular, Cellular, and Developmental Biology, University of Colorado-Boulder

Full-time 2-term Biology Instructor, August 2013-August 2023

Department of Math, Science and Engineering, Central New Mexico Community College

Adjunct Biology Lecturer, January 2010-August 2013

Department of Math, Science and Engineering, Central New Mexico Community College

Adjunct Biology Lecturer, August 2007- May 2008

Department of Biology, University of North Carolina-Pembroke

POSTDOCTORAL TRAINING

Postdoctoral Fellow, January 2005- December 2009

Lineberger Comprehensive Cancer Center, University of North Carolina-Chapel Hill

Advisor: H. Shelton Earp 3rd, M.D.-Director Lineberger Comprehensive Cancer Center

Seeding Postdoctoral Innovators in Research and Education (SPIRE) Postdoctoral Fellow, 2005-2008. The SPIRE program is a three-year program through the University of North Carolina-Chapel Hill that combines independent research training with teaching.

Postdoctoral Fellow, September 2003- December 2004

Department of Genetics, University of North Carolina-Chapel Hill

Advisor: Beverly H. Koller, Ph.D.

EDUCATION

Ph.D. in Cell and Developmental Biology (Dec. 2002), Vanderbilt University, Nashville, TN

Dissertation: *Genetic Background Modifiers of the Epidermal Growth Factor Null Phenotype*.

Advisor: David W. Threadgill, Ph.D.

B.A. in Biology with Honors (May 1993), Lehigh University, Bethlehem, PA

Research Advisor: Agnes Ayme-Southgate, Ph.D.

TEACHING EXPERIENCE

I view teaching as a bit of an art, or maybe a juggling act, as one has to find a way to communicate to students who not only enter at various educational levels, but also have a variety of different learning styles. It is my role to guide students through the learning process, using techniques that will reach the majority of the class throughout the semester. In my classroom, the lectures are interspersed with techniques that will help actively engage the student, such as case studies, classroom 'clickers'/student response systems, smart boards or peer-based learning. I work to create an environment in the class room where the students feel comfortable enough to ask me questions because science is an active on-going process that requires formulating questions and testing ideas.

I. Courses Taught:

University of Colorado-Boulder:

Introduction to Cellular and Molecular Biology (MCDB 1150)-face-to-face-two semesters

From Dirt to DNA: Phage Genomics Lab I (MCDB 1161)-face-to-face-one semester

Central New Mexico Community College:

Biology for Non-Majors (Biology 1110) - face-to-face

Biology for Non-Majors Lab (Biology 1110L) -face-to-face and online

Human Biology (Biology 1125) -online

Non-Majors Anatomy and Physiology (Biology 1130) - face-to-face

Non-Majors Anatomy and Physiology Lab (Biology 1130L) - face-to-face

Biology for Health Science Majors (Biology 1140) - face-to-face and online

Introductory Biology Lab for Majors (Biology 1140L) - face-to-face and online

Microbiology (Biology 2310) - face-to-face and online

Microbiology Lab (Biology 2310L) - face-to-face

Anatomy and Physiology I Lecture (Biology 2210) - face-to-face and online

Anatomy and Physiology I Lab (Biology 2210L) – face-to-face and online

Anatomy and Physiology II (Biology 2225) - face-to-face and online

Anatomy and Physiology II Lab (Biology 2225L)-online

Pathophysiology I (Biology 2510) -face-to-face and online

Pathophysiology II (Biology 2520) - face-to-face

University of North Carolina-Pembroke:

Principles of Biology (Biology 1000)- face-to-face. Class included both majors and non-majors.

Principles of Genetics (Biology 3180)- face-to-face.

II. Teaching Assistant

Introduction to Cell and Developmental Biology (Biology 52): Summer 2001 and 2002,
University of North Carolina-Chapel Hill. Faculty instructor: Albert Harris Ph.D.

III. Mentoring

UNM ASERT postdoctoral fellow, Stephanie Jerman, Ph.D., 2017-2018

Full-time faculty CNM, Megan Hancock, M.S., Fall 2017

Full-time faculty CNM, Greg Broussard, M.S., Fall 2016

UNM ASERT postdoctoral fellow, Danielle (Protas) Taylor Ph.D., 2015-2016

Part-time faculty CNM, Shaimaa Elzamly M.D., Spring 2015

Part-time faculty CNM (former UNM ASERT fellow), Sergio DeHaro, Ph.D., Spring 2015

Undergraduate student-UNC-CH, Gali Hashmonay, 2009

Undergraduate student-UNC-CH, Rose Guo, 2008-2009

Undergraduate student-UNC-CH, Angela Sarnie, 2008-2009

Undergraduate student-UNC-CH, Charles Queen, 2007-2009

Biology Honors undergraduate student-UNC-CH, Meggan M. (Hovick) Wehmeyer 2001-2003

Thesis: *Molecular and Histological Characterization of Murine Epidermal Growth Factor Null Placentae.*

RESEARCH EXPERIENCE

University of North Carolina-Chapel Hill, Lineberger Comprehensive Cancer Center (January 2006- December 2009). Postdoctoral Fellow

Supervisor: H. Shelton Earp 3rd, M.D.-Professor & Director of Lineberger Comprehensive Cancer Center

Project: Role of Her4 in growth inhibition of breast cancer cell lines. Biological outcomes of HER4 mutants were assessed by FACS, growth assays, adhesion assays and immunohistochemistry to determine the role of Her4 in growth inhibition.

Lab animal coordinator: Involves training lab members in mouse techniques, managing and writing IACUC protocols.

University of North Carolina-Chapel Hill, Department of Genetics (September 2003- December 2005). Postdoctoral Fellow

Supervisor: Beverly H. Koller, Ph.D.-Associate Professor

Project: Analysis of a targeted mutation of the ion channel, TrpM4. A hypomorphic mutation resulted in a blunted Ca²⁺ response to ATP in primary mammary epithelial cells.

Vanderbilt University, Department of Cell & Developmental Biology (March 1995- August 2003). Graduate Student

Supervisor: David W. Threadgill, Ph.D. –Professor

Project: Demonstrated a complex genetic heterogeneity underlying the epidermal growth factor receptor (Egfr) null placental phenotype using inbred strains of mice. Using microarray technology, the placentas of *Egfr* null embryos are significantly more variable than those of their wildtype littermates. Discovered the primary defect in the *Egfr* null placenta is due to a block in the cell cycle. (Project initiated at Vanderbilt and completed at University of North Carolina).

University of Pennsylvania, Department of Cell & Developmental Biology (August 1994- August 1995). Research Specialist Jr.

Supervisor: Charles P. Emerson Jr., Ph.D.-Professor and Chair

Project: Used *in situ* hybridization and quail embryo surgeries, to demonstrate that expression of *MyoD* is regulated by signals from the notochord. Managed purchasing, radioactive waste disposal, and chemical waste disposal.

Fox Chase Cancer Center (August 1993- August 1994). Scientific Technician I

Supervisor: Charles P. Emerson Jr., Ph.D.

TECHNIQUES AND SKILLS

Scientist with basic research experience working with cell lines, primary cells, mice, quail, *C.elegans* and *D. melanogaster* model systems to address questions related to cellular, Developmental, and cancer biology. Trained in DNA/RNA/protein isolation, *in situ* hybridization, microarray, Southern/northern/western blotting, immunohistochemistry,

tissue culture (cancer cell lines, mouse embryonic stem cells, primary cells), retroviral infection of cancer cell lines (BSL-2), PCR, FACS analysis, mouse husbandry, mouse colony management, mouse surgeries, histology (paraffin and cryo), microscopy, proficiency in basic computer programs (word, excel, powerpoint, photoshop).

PROFESSIONAL DEVELOPMENT

Completed the LA Model Foundations Workshops. A series of three workshops to orient new faculty working with learning assistants: *Essential Elements of the LA Model*, *Transforming your course with LAs*, and *What is the Weekly Prep Meeting?*

Digital Pedagogy Lab: International gathering for educators committed to critical digital pedagogy.

Online Format August 2021. Topic focus: Sustainability and Critical Digital Pedagogy

Online Format July 2020. Topic focus: STEM-H and Critical Digital Pedagogy

Fredericksburg, VA August 2019. Topic focus: Inclusive Design

Human and Mammalian Genetics and Genomics: The 61st McKusick Short Course, The Jackson Laboratory, Online Format. July 20-30, 2020

Annual Institutional Research and Academic Career Development Award (IRACDA) Conference. Gathering of all programs associated with the IRACDA program to develop academic skills related to science pedagogy and research.

July 2021: Online (Rutgers)

July 2019: University of Michigan, Ann Arbor, Michigan.

July 2018: Emory University, Atlanta, Georgia

June 2016: University of Arizona, Tucson, Arizona

June 2015: University of San Diego, San Diego, California

June 2008: University of Chapel Hill, Chapel Hill, North Carolina

June 2006: University of Kansas, Kansas City, Missouri

Annual Conference on Teaching and Learning hosted by CNM's Cooperative for Teaching and Learning center, Albuquerque, NM. This was a one day local conference for CNM faculty to focus on new teaching strategies and self-reflect on current teaching practices.

Topic January 2022: Finding direction through reflective practice.

Topic January 2021: The evolution of community college teaching & learning: crisis, care and re-creation.

Topic January 2020: 20/20 Evidence in focus.

Topic January 2019: Meeting student's needs (and ours too).

Topic January 2018: Teaching across cultural strengths.

Topic January 2017: Empowering learners to be critical thinkers.

Topic January 2015: Excellent Teaching through Action Research.

Topic January 2014: Reflective Practices in Teaching.

26th Annual Southwest Seminar for Great Teaching, Santa Fe, NM. October 30-November 1, 2014.

This was a 3 day conference organized by El Paso Community College.

Topic: Promoting Creative Thinking: Deconstructing the Box.

Mental Health First Aid Training, CNM, Albuquerque, NM August 21st, 2014

This was a one day intensive training course on recognizing signs of mental illness and gaining skills to assist someone who is experiencing a mental health crisis. Certificate awarded.

New Faculty Institute-Central New Mexico Community College, Fall 2013-Spring 2014

A one year professional development workshop that met once a week designed to enhance the teaching skills of first year full-time faculty. Topics focused on orientation and understanding by design.

Society for Developmental Biology-Outreach Workshop-Albuquerque, New Mexico. 2010

This was a half day workshop that emphasized bringing science to the community.

SPIRE Teaching Workshops, 2007

Presented by Dr. Ed Neal, Director of Faculty Development, UNC-CH Center for Teaching and Learning. A set of 10 workshops designed to prepare SPIRE fellows for their teaching year.

Teaching with Technology, 2007

This was a one day workshop on strategies to incorporate technology into teaching.

Workshop on Laboratory Module “Same Genes, Different Fates”, 2006

Presented by DESTINY, UNC-CH Traveling Science Learning Program.

An inquiry based approach to teaching Developmental Biology.

Workshop on Laboratory Module “BioBuisness”, 2006

Presented by DESTINY, UNC-CH Traveling Science Learning Program.

How businesses use recombinant DNA technology to tailor products to meet customer’s needs.

Leadership Symposium, 2006

A one day workshop focusing on leadership styles. Sponsored by the office of postdoctoral services at UNC.

Effective University Teaching, 2006

Presented by Richard M. Felder, Ph.D. and Rebecca Brent, Ed.D

A two day workshop emphasizing instructional methods involving active learning in the classroom.

Experimental Genetics of the Laboratory Mouse in Cancer Research, 2001

Team taught two week course covering mouse genetics and mouse models of cancer, Jackson Laboratories, Bar Harbor, ME.

Molecular Biology and Pathology of Neoplasia workshop, 1998

Team taught one week workshop sponsored by the American Association for Cancer Research, Keystone, CO.

SERVICE

Honors Committee: (Fall 2024-present)

A&S Fall Welcome Orientation Fair – MCDB Department table - August 23, 2024

Co-chaired Pathophysiology textbook selection committee: (Spring 2023)

MSE FT Faculty Senate representative: (Fall 2018-August 2023) Served as Treasurer and Secretary, in addition to being a member.

ASERT partner school coordinator and PI for the sub-award: (August 2015-August 2021)
Coordinated placement of mentor-mentee partnerships, administered distribution of subaward grant funds, mentored post-doctoral fellows.

MSE SAAC representative: (Fall 2021-Summer 2023) Wrote yearly assessment reports for Biology programs 2020, 2021, 2022. Communicated with faculty assessment reporters for MSE and coordinated submission of yearly assessment reports.

Accreditation Committee: (Spring 2019-Fall 2021) Faculty Senate Representative.

Chaired Microbiology textbook selection committee: (Spring 2018)

Central New Mexico Community College: Math, Science and Engineering Departmental College Curricular Committee (Member-full-time representative, Spring 2015-Fall 2017)

Course Coordinator for Biology Department: Distribute assessment questions, coordinate new faculty teaching either the lecture or lab, share teaching materials as needed to new or veteran faculty.

Pathophysiology-online (Spring 2022-Summer 2023)

Microbiology (Fall 2015, Spring 2016, Fall 2018)

Microbiology Lab (Fall 2014, Fall 2021)

Anatomy and Physiology I Lab (Spring 2015)

Non-majors Biology Lab (Fall 2016-2018)

Central New Mexico Community College: Hiring Committee Member (Spring 2014, Spring 2015, Spring 2018).

Central New Mexico Community College: Classroom Observations, faculty peer observations that create opportunities for reflection and sharing of ideas between instructors. Fall 2013-Spring 2020

New Mexico Science and Engineering Fair: Held at the New Mexico Institute of Mining and Technology on April 2, 2011; judged medicine and health sciences-junior division.

Central New Mexico Community College: Math, Science and Engineering Departmental College Curricular Committee (Member-part-time representative, Fall 2010-Spring 2012)

SCHOLARSHIP

I. Publications

Cook RS, Jacobsen KM, Wofford AM, DeRyckere D, Stanford J, Prieto AL, Redente E, Sandahl M, Hunter DM, **Strunk KE**, Graham DK, Earp HS 3rd. (2013) MerTK inhibition in tumor leukocytes decreases tumor growth and metastasis. *J Clin Invest*. Aug;123(8):3231-42.

Sandahl M., Hunter D.M., **Strunk K.E.**, Earp H.S. 3rd, Cook R.S. (2010) Epithelial cell-directed efferocytosis in the post-partum mammary gland is necessary for tissue homeostasis and future lactation. *BMC Dev Biol* Dec 30;10:122.

- Muraoka-Cook, R.S., Sandahl, M.A., **Strunk, K.E.**, Miraglia, L.C., Husted, C., Hunter, D.M., Elenius, K., Chodosh, L.A., and Earp, H.S. 3rd (2009) ErbB4 splice variants Cyt1 and Cyt2 differ by sixteen amino acids and exert opposing effects on the mammary epithelium *in vivo*. *Mol Cell Biol* Sep;29(18):4935-48.
- Muraoka-Cook R.S., Feng S.M., **Strunk K.E.**, Earp H.S. 3rd (2008) ErbB4/HER4: Role in Mammary Gland Development, Differentiation and Growth Inhibition. *J Mammary Gland Biol Neoplasia* Jun;13(2):235-46.
- Dackor J*, **Strunk K.E.***, Wehmeyer M. M., and Threadgill D.W. (2007) Altered trophoblast proliferation and differentiation underlies the genetic background-dependent placental abnormalities of *Egfr* null embryos. *Placenta* Nov-Dec 28 (11-12):1211-1218.
*Authors contributed equally.
- Strunk K.E.**, Husted C., Miraglia L.C., Sandahl M.A., Rearick W.A., Hunter D.M., Earp H.S. 3rd. Muraoka-Cook R.S. (2007) HER4 D-box sequences regulate mitotic progression and degradation of the nuclear HER4 cleavage product s80HER4. *Cancer Res* Jul 15; 67(14):6582-90.
- Muraoka-Cook R.S., Caskey L.S., Sandahl M.A., Hunter D.M., Husted C, **Strunk K.E.**, Sartor C.I., Rearick W.A. Jr, McCall W., Sgagias M.K., Cowan K.H., Earp H.S. 3rd. (2006) Heregulin-dependent delay in mitotic progression requires HER4 and BRCA1. *Mol Cell Biol* 26(17):6412-24.
- Strunk, K.E.**, Amann, V., and Threadgill, D.W. (2004) Phenotypic variation resulting from a deficiency of epidermal growth factor receptor in mice is caused by extensive genetic heterogeneity that can be genetically and molecularly partitioned. *Genetics* 167:1821-1832
- Lee, D., Cross, S.H., **Strunk, K.E.**, Jackson, I. J., and Threadgill, D.W. (2004) *Waved5* (*Wa5*), an ENU-Induced Anti-morphic Allele of *Egfr* has Novel Functional Characteristics. *Mammalian Genome* 15(7): 525-36.
- Strunk, K.E.**, and Roberts, R.B. (2001) The 14th Annual International Mammalian Genomic Society Conference: A Glimpse into the Future of Murine Functional Genomics. *genesis* 29,153-155.
- Reiter, J.L. Threadgill, D.W., Eley, G., Danielsen, A.J., **Strunk, K.E.**, Pearsall, R.S., Schehl, C.M., Green, P., Yee, D., Lanpland, A.L., Balasubramanian, S., Crossley, T.O., Magnuson, T.R., James, C.D., and Maihle, N.J. (2001) Complete *Egfr* genomic sequence and isolation of human and mouse alternative transcripts encoding truncated forms of the receptor. *Genomics* 71, 1-20.
- Borycki, A.G., **Strunk, K.E.**, and Emerson C.P. (1997) Distinct Signal/Response Mechanisms Regulate Pax1 and QmyoD Activation in Sclerotomal and Myotomal Lineages of Quail Somites. *Developmental Biology* 185, 185-200.
- Pownall, M.E., **Strunk, K.E.**, and Emerson C.P. (1996) Notochord Signals Control of the Transcriptional Cascade of Myogenic bHLH Genes in Somites of Quail Embryos. *Development* 122, 1475-1488.

II. Oral Presentations

University of New Mexico (June 2015)-Albuquerque, NM

Invited speaker: Beyond the lab bench: A career path into teaching

University of New Mexico (February 2010)-Albuquerque, NM

Invited speaker: Seeding Postdoctoral Innovators in Research and Education (SPIRE)-Background and Personal Experiences.

University of North Carolina-Pembroke (March 2008)-Pembroke, NC

Invited speaker: Growth Inhibition of Breast Cancer Cell Lines-Biological Differences Between Cyt-1 and Cyt-2

Winston-Salem State University (April 2007)-Winston-Salem, NC

Invited SPIRE seminar: Role of HER4 in Growth Inhibition of Breast Cancer Cell Lines.

North Carolina Central University (March 2007)-Durham, NC

Invited SPIRE seminar: Role of HER4 in Growth Inhibition of Breast Cancer Cell Lines.

North Carolina A&T University (February 2007)-Greensboro, NC

Invited SPIRE seminar: Role of HER4 in Growth Inhibition of Breast Cancer Cell Lines.

University of North Carolina-Pembroke (February 2007)-Pembroke, NC

Invited SPIRE seminar: Role of HER4 in Growth Inhibition of Breast Cancer Cell Lines.

University of North Carolina-CH (March 2005)-Chapel Hill, NC

Departmental seminar: Genetic analysis of TrpM4 in epithelial tumors and ion exchange.

University of North Carolina-CH (October 2002)-Chapel Hill, NC

Departmental seminar: Genetic Background Modifiers of the Epidermal Growth Factor Receptor Null Phenotype.

Regional Society for Developmental Biology Meeting (May 2002)-Gatlinburg, TN.

Platform presentation: Genetic Analysis of the Epidermal Growth Factor Receptor in Murine Placental Development.

III. Poster Presentations

Institutional Research and Academic Career Development Award (IRACDA) Conference (June 2008)-Chapel Hill, NC. *Poster*: Role of HER4 in Growth Inhibition of Breast Cancer Cell Lines-Biological Differences Between Cyt1 and Cyt2.

Gordon Conference-Mammary Gland Biology (June 2007)-Newport, Rhode Island.

Poster: Nuclear Localization of the HER4 cleavage product, HER4^{s80}, Enhances HER4 Mediated Growth Inhibition in Breast Cancer Cell Lines.

Institutional Research and Academic Career Development Award (IRACDA) Conference (June 2006)-Kansas City, Missouri. *Poster*: Nuclear Localization of the HER4 cleavage product, HER4^{s80}, Enhances HER4 Mediated Growth Inhibition in Breast Cancer Cell Lines.

International Congress of Genetics Conference (July 2003)-Melbourne Australia.

Poster: Genetic and Molecular Characterization of Murine Epidermal Growth Factor Receptor Null Phenotypic Variation and Cell Cycle Defects.

International Mouse Genome Conference-San Antonio Texas (November 2002).

Poster: Complexity of Genetic Background Modifiers for the Epidermal Growth Factor Receptor.

International Mouse Genome Conference (November 2000)-Narita, Japan.

Poster: Molecular and Genetic Analysis of the Epidermal Growth Factor Receptor.

Society for Developmental Biology-South East Regional Meeting (1999)-Emory University, Atlanta Georgia. *Poster:* Characterization of the EGFR Null Placenta.

Society for Developmental Biology 57th Annual Meeting (June 1998)-Stanford University, California. *Poster:* Characterization of the EGFR Null Placenta.