

Charles Nathan Hancock

Assistant Professor

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AWARDS

USC Breakthrough Star	2017
USCA Scholarly Activity	2017

EDUCATION

Ph.D. Biochemistry	2005
University of Missouri-Columbia	
• NIH Training Grant, Molecular Biology Fellowship, Monsanto Fellowship	
B.S. Plant Science	1999
University of Arizona-Tucson	
• Magna Cum Laude (3.744 GPA), Honors, Plant Science Outstanding Senior	

RESEARCH EXPERIENCE

Post-Doctoral Research	2009 – 2011
Transposon Tagging, Soybean	
<i>Accomplishments:</i> Produced stable soybean transformants, characterized transposon activity, analyzed transposon insertion sites in the soybean genome, and phenotyped ~2,000 transgenic plants in the field	
<i>Development:</i> Prepared NSF grant application and reports and trained and directed technicians and undergraduate students	
Post-Doctoral Research	2005 – 2008
Transposable Elements, Rice	
<i>Accomplishments:</i> Optimized the <i>mPing</i> yeast transposition assay, characterized transposase proteins by electrophoretic mobility shift, immunoprecipitation, and yeast two-hybrid assays, and identified a nuclear export signal that regulates transposase activity	
<i>Development:</i> Designed and taught a research based laboratory class and coordinated an undergraduate research project	
Graduate Research	1999 – 2005
Self-incompatibility, <i>Nicotiana</i>	
<i>Accomplishments:</i> Showed the 120 kD protein is required for self-incompatibility, identified S-RNase oligomers, and cloned cDNAs from multiple <i>Nicotiana</i> species	
<i>Development:</i> Coordinated an undergraduate research project, learned protein purification (chromatography), peptide antibody design, immunoblot, binding assays, analytical ultracentrifugation	

PUBLICATIONS

Payero L, Outten G, Burckhalter CE, Hancock CN: **Alteration of the *Ping* and *Pong* ORF1 proteins allows for hyperactive transposition of *mPing***. *Journal of the South Carolina Academy of Science* 2016, **14** (2):1-6.

Gilbert, DM, Bridges MC, Strother, AE, Burckhalter CE, Burnette JM, Hancock, CN: **Precise repair of *mPing* excision sites is facilitated by target site duplication derived microhomology**. *Mobile DNA* 2015, **6**:15.

Kanizay L, Jacobs T, Hancock CN: **A transgenic, visual screenable marker for soybean seeds**. *Transgenic Research* 2015, **25**(2):187-193.

Cui Y, Barampuram S, Stacey MG, Hancock CN, Findley S, Mathieu M, Zhang Z, Parrott WA, Stacey G: ***Tnt1* retrotransposon mutagenesis: a tool for soybean functional genomics**. *Plant Physiology* 2013, **161**:36-47.

Hancock CN, Zhang F, Floyd K, Richardson AO, LaFayette P, Tucker D, Wessler SR, Parrott WA: **The rice MITE *mPing* is an effective insertional mutagen in soybean (*Glycine max*)**. *Plant Physiology* 2011, **157**:552–562.

Hancock CN, Zhang F, Wessler SR: **Transposition of the *Tourist*-MITE *mPing* in yeast: an assay that retains key features of catalysis by the Class 2 *PIF/Harbinger* superfamily**. *Mobile DNA* 2010, **1**:5.

Naito K, Zhang F, Tsukiyama T, Saito H, Hancock CN, Richardson AO, Okumoto Y, Tanisaka T, Wessler SR: **Unexpected consequences of a sudden and massive transposon amplification on rice gene expression**. *Nature* 2009, **461**:1130-1134.

Yang GJ, Holligan-Nagel D, Feschotte C, Hancock CN, Wessler SR: **Tuned for transposition: molecular determinants underlying the hyperactivity of a *Stowaway* MITE**. *Science* 2009, **325**:1391-1394.

Yang GJ, Zhang F, Hancock CN, Wessler SR: **Transposition of the rice miniature inverted repeat transposable element *mPing* in *Arabidopsis thaliana***. *Proceedings of the National Academy of Sciences of the United States of America* 2007, **104**:10962-10967.

Goldraij A, Kondo K, Lee CB, Hancock CN, Sivaguru M, Vazquez-Santana S, Kim S, Phillips TE, Cruz-Garcia F, McClure B: **Compartmentalization of S-RNase and HT-B degradation in self-incompatible *Nicotiana***. *Nature* 2006, **439**:805-810.

Hancock CN, Kent L, McClure BA: **The stylar 120 kDa glycoprotein is required for S-specific pollen rejection in *Nicotiana***. *Plant Journal* 2005, **43**:716-723.

Cruz-Garcia F, Hancock CN, Kim D, McClure B: **Stylar glycoproteins bind to S-RNase in vitro**. *Plant Journal* 2005, **42**:295-304.

Cruz-Garcia F, Hancock CN, McClure B: **S-RNase complexes and pollen rejection**. *Journal of Experimental Botany* 2003, **54**:123-130.

Hancock CN, Kondo K, Beecher B, McClure B: **The S-locus and unilateral incompatibility** *Philosophical Transactions of the Royal Society of London Series B-Biological Sciences* 2003, **358**:1133-1140.

Hancock CN, McClure B: **S-RNase-based self-incompatibility**. *Recent Research Developments in Plant Molecular Biology* (Pandalai SG ed., vol. 1. Trivandrum, India: Research Signpost; 2003.

FUNDED RESEARCH

ASPIRE III, USC Internal (2017) \$100,000
Acquisition of a Liquid Chromatography-Mass Spectrometer (LC-MS) for Materials Science and Biochemical Applications

NSF Genetic Mechanisms CAREER (2017 - 2023) \$695,696
Revealing the mechanisms that determine how an active DNA TE impacts the genome.

NSF Plant Genome Research Program, CoPI (2016 - 2018) \$364,464
A resource for functional genomics to support soybean genetics and breeding.

South Carolina INBRE (NIH), CoPI (2016-2020) \$99,418
Expansion of Biomedical Research at the University of South Carolina Aiken

NSF Plant Genome Research Program, Subaward (2015) \$79,305
A genetic resource for gene discovery in soybean.

ASPIRE III, USC Internal (2015) \$100,000
Request for funds for a fluorescent confocal laser scanning microscope to advance research activities at USC Aiken.

ASPIRE III, USC Internal (2015) \$31,062
Purchase of a CFX96 Touch Real-Time PCR Detection System

NSF Plant Genome Research Program, Research Opportunity Award (2014) \$38,000
A genetic resource for gene discovery in soybean.

ASPIRE I, USC Internal (2014-2015) \$15,000
Developing a *Phaseolus acutifolius* mutagenesis resource for discovery of drought related genes.

RISE, USC Internal (2013-2014) \$5,000
Development of *mPing*-based transposon tagging plasmids for tomato and wheat transformation.

ASPIRE III, USC Internal (2012-2015) \$100,000
The promotion of transgenic and controlled-environment greenhouse research at USC Aiken.

STUDENT FUNDING

Allison Swiecki, USCA INBRE Extension Grant, Co-mentor (2017) \$5,000
Developing and using *Tol2*-based activation tag constructs for zebrafish mutagenesis

Alec Jones, USC Magellan Grant, Co-mentor (2017) \$3,000
Developing a tool for transposon mutagenesis of *D. rerio*

Lisette Payero, USC Magellan Grant, (2017) Understanding the replicative transposition mechanism of the transposable element <i>mPing</i>	\$3,000
Sarah Zamiela, USCA INBRE Primer Grant, (2017) Analysis of the zebrafish transposable element, <i>Harbinger3N_DR</i>, in yeast	\$2,000
Mary Roby, USC Magellan Mini-grant, (2017)	\$1,000
Amanda Askins, USCA CRE Connections Grant, (2017) Developing an activation tagging system for gene discovery in wheat	\$500
Tiana Chandler, USCA INBRE Extension Grant, Co-mentor (2016) Analyzing transposition of <i>mmPing20X</i> in zebrafish	\$5,500
Alec Jones, USCA INBRE Extension Grant, Co-mentor (2016) Creation of stable transgenic lines using <i>ORF1</i> and <i>Pong TPase</i> to mobilize <i>mPing</i>	\$5,500
Rachael Jackson, USC Magellan Mini-grant, (2016)	\$1,000
Allison Swiecki, USCA INBRE Primer Grant, (2016) Developing <i>Tol2</i>-based activation tag constructs	\$1,500
Stephanie Diaz, USCA CRE Connections Grant, (2016) <i>mPing</i>-based activation tagging in the model organism <i>Arabidopsis thaliana</i>	\$500
Stephanie Diaz, Support for Minority Advancement in Research Training (2015) Testing <i>mPing</i>-based activation tags in <i>Arabidopsis</i>	\$1,000
Tiana Chandler, Support for Minority Advancement in Research Training (2015) Development of an <i>mPing</i>-based activation tag for zebrafish	\$1,000
Daymond Parrilla, USC Magellan Grant, (2015) Identifying the sequences responsible for the high transposition rate of a MITE transposon	\$3,000
David Gilbert, USC Magellan Grant, (2015) Characterizing the mechanism of replicative transposition of the MITE <i>mPing</i>	\$3,000
David Gilbert, USCA CRE Connections Grant, (2014) Determining the role of target site duplication sequences on the excision and repair of <i>Tourist</i> and <i>Stowaway</i> miniature inverted repeat transposable elements	\$500
Ashley Strother, USC Magellan Grant, (2014) Targeted transposon mutagenesis using the <i>Cas9/CRISPR</i> system	\$3,000

ORAL PRESENTATIONS

Soybean Precision Genomics and Mutant Finder Day Workshop (2016), **Plant Gene Discovery by *mPing*-based Transposon Tagging**, Columbia, MO.

STEM Symposium (2016) **Preparing Students to Excel in College Biology and Chemistry**, Aiken Technical College.

University of West Georgia Department of Biology Seminar (2015) **Plant Functional Genomics by Transposon Mutagenesis**, Carrollton, GA.

Soybean Precision Genomics and Mutant Finder Day Workshop (2015), **Plant Gene Discovery by *mPing*-based Transposon Tagging**, St. Paul, MN.

Southeast Developmental Biology Meeting (2015), **Plant Functional Genomics by Transposon Mutagenesis**, Clemson, SC.

Clemson University Department of Genetics and Biochemistry Seminar (2014), **Development of a Miniature Inverted Repeat Transposable Element-based Gene Discovery Tool**, Clemson, SC.

Department of Biology and Geology Seminar (2014), **Development of a Miniature Inverted Repeat Transposable Element-based Gene Discovery Tool**, University of South Carolina Aiken, SC.

Soybean Precision Genomics and Mutant Finder Day Workshop (2014), **Plant Gene Discovery by *mPing*-based Transposon Tagging**, Lincoln, NE.

American Society of Plant Biologists Southern Section Meeting (2014), **Plant Gene Discovery by *mPing*-based Transposon Tagging**, Lexington, KY.

Plant & Animal Genome Conference (2013), ***mPing*-based Transposon Tagging: Soybean Gene Discovery**, San Diego, CA.

Biennial Molecular & Cellular Biology of the Soybean Conference (2012), ***max* Mutation: *mPing*-based gene discovery**, Des Moines, IA.

Plant Biology Department Seminar, University of Georgia (2011), **Transposon Tagging for Gene Identification with the *mPing* Element from Rice**, Athens, GA.

Department of Biology and Geology Seminar, University of South Carolina Aiken (2011), **Transposon Tagging for Gene Identification with the *mPing* Element from Rice**, Aiken, SC.

Department of Agronomy Seminar, Kansas State University (2011), **Transposon Tagging for Gene Identification with the *mPing* Element from Rice**, Manhattan, KS.

College of Agriculture and Life Sciences Seminar, Cornell University (2010), **Transposon Tagging for Gene Identification with the *mPing* Element from Rice**, Ithaca, NY.

Plant Biology Symposium, The Plant Center/University of Georgia (2010), **Development of *mPing* based transposon tagging tools**, Athens, GA.

Plant & Animal Genome Conference (2010), **Transposon Tagging and Fast Neutron Mutagenesis in Soybean**, San Diego, CA.

In Vitro Biology Meeting (2009), **Transposon Mutagenesis of Soybean (*Glycine max*) Using the Rice MITE *mPing***, Charleston, SC. **(Oral Presentation Competition, 1st Place Award)**

Department of Biochemistry and Physical Sciences Seminar, Brigham Young University Hawaii (2008), **The In's and Out's of *Pong*-like Transposable Elements**, Laie, HI.

International Symposium on Plant Self-incompatibility (2003), **S-RNase Forms Oligomers *in vitro* and *in vivo***, Nara, Japan.

American Society of Plant Biologists Conference (2002), **The Components and Function of the S-RNase Complex**. Denver, CO.

POSTER PRESENTATIONS

Edward McAssey, C. Nathan Hancock, and Wayne Parrott (2016) **Strategies for generating germinal *mPing* insertions in soybean**, Biennial Molecular & Cellular Biology of the Soybean Conference (Columbus, OH).

C. Nathan Hancock, Kristian Pickrel, Daymond Parrilla, Giselle Outten, Ashley Strother, Courtney Burckhalter, Tiana Chandler (2014), **Characterization of *mPing* transposition to facilitate development of functional genomics Tools**. Biennial Molecular & Cellular Biology of the Soybean Conference (Minneapolis, MN).

C. Nathan Hancock, Kristian Pickrel, Giselle Outten, Ashley Strother (2013), **Characterization of a *Tourist*-like MITE to facilitate development of a plant gene discovery tool**. Regional Meeting on Mobile Genetic Elements (Cold Spring Harbor, NY).

C. Nathan Hancock and Wayne Parrott (2010), **Improving the *mPing*-Based Transposon Tagging System**, Biennial Molecular & Cellular Biology of the Soybean Conference (Durham, NC).

C. Nathan Hancock and Wayne Parrott (2010), ***mPing* Transposition in Soybean**, Institute of Plant Breeding, Genetics, and Genomics Retreat Athens, GA. **(1st Place Award)**

C. Nathan Hancock and Susan Wessler (2008), **Regulation of the *Ping* Transposase Proteins**, Maize Genetics Conference (Washington, D.C).

C. Nathan Hancock, Guojun Yang, and Susan Wessler (2007), ***mPing* Transposition Requires Two Proteins**, Maize Genetics Conference (St. Charles, IL).

STUDENT ORAL PRESENTATIONS

Jazmine Benjamin, Cayla Odom, Gabe Paradise, Daymond Parilla, and C. Nathan Hancock (2017) **Determining the Sequences Involved in *mPing* Transposition**, USCA Scholar Showcase, SC Academy of Sciences Meeting [Conway] (**1st Place**), and Discover USC (**2nd Place**).

Mary Roby, Ashley Strother, and C. Nathan Hancock (2017) **Testing Strategies to Produce Targeted Insertion of *mPing***, USCA Scholar Showcase, SC Academy of Sciences Meeting (Conway), and Discover USC.

Tiana Chandler and C. Nathan Hancock (2017) **Development of an *mPing*-based Activation Tag for Zebrafish Mutagenesis**, USCA Scholar Showcase, SC Academy of Sciences Meeting (Conway), and Discover USC (**2nd Place**).

David Gilbert and C. Nathan Hancock (2016) **Characterizing the replicative transposition mechanism of the MITE *mPing***, SC Academy of Sciences Meeting [Rock Hill] (**Dwight Camper Award**), USCA Research Day, and USC Discovery Day (**STEM Honorable Mention**).

Stephanie Diaz, Tiana Chandler, and C. Nathan Hancock (2016) **Developing *mPing*-based activation tags**, SC Academy of Sciences Meeting (Rock Hill), USCA Research Day, and USC Discovery Day.

Daymond Parrilla and C. Nathan Hancock (2016) **Determining the sequences that induce hyperactive transposition of *mPing***, SC Academy of Sciences Meeting (Rock Hill), USCA Research Day, and USC Discovery Day (**STEM 1st Place**).

Cayla Odom and C. Nathan Hancock (2016) ***mPing* transposition requires nucleotide specific interactions with the terminal inverted repeats**, SC Junior Academy of Sciences Meeting [Rock Hill](**Oral 1st Place**), Governor's School for Science and Mathematics Research Colloquium, Hartsville, SC.

Ashley Strother and C. Nathan Hancock (2015) **Targeted insertion of the transposable element, *mPing***, USCA Research Day (**Oral 1st Place**), SC Academy of Sciences Meeting [Greenville] (**Molecular Biology Oral 1st Place, Outstanding Female Scientist**), and USC Discovery Day.

Courtney Burckhalter and C. Nathan Hancock (2015) **Optimizing germinal transposition of *mPing* in *Arabidopsis thaliana***, USCA Research Day (**Oral 1st Place**), SC Academy of Sciences Meeting (Greenville), and USC Discovery Day (**STEM 1st Place**).

David Gilbert, M. Catherine Bridges, Ashley E. Strother, Courtney E. Burckhalter, and C. Nathan Hancock (2015) **Precise repair of *mPing* excision sites is facilitated by target site duplication derived microhomology**, USCA Research Day (**Oral 3rd Place**), SC Academy of Sciences Meeting [Greenville] (**Molecular Biology Oral 2nd Place**), and USC Discovery Day.

Daymond Parrilla, Kristian Pickrel, and C. Nathan Hancock (2014) **Identifying sequences responsible for the high transposition rate of a *Tourist* MITE**, Southeastern Association of Educational Opportunity Program Personnel, Atlanta, GA (**3rd Place**).

Ashley Strother and C. Nathan Hancock (2014) **Targeted insertion of the transposable element, *mPing*, by manipulation of transposase proteins**, SC Academy of Sciences Meeting (Charleston), USCA Research Day, and USC Discovery Day.

Kristian Pickrel and C. Nathan Hancock (2013) **Determining the transposition promoting regions based on recombinant *mPing* and *mPong* constructs**, USCA Research Day and USC Discovery Day (**2nd Place**).

Keifer Richardson and C. Nathan Hancock (2013) **The effects of various promoters on *mPing* transposition in *Arabidopsis***, USCA Research Day (**2nd Place**) and USC Discovery Day.

Giselle Outten and C. Nathan Hancock (2013) ***Ping* and *Pong* ORF1 domain swapping to determine the role of DNA binding and nuclear localization in *mPing* transposition**, USCA Research Day and USC Discovery Day.

STUDENT POSTER PRESENTATIONS

Lisette Payero, David Gilbert, and C. Nathan Hancock (2017) **Determining the Role of Homologous Recombination in Replicative Transposition of *mPing***, UWA Undergraduate Research Symposium, ASPB Southern Section Meeting [Orlando, FL] (**Poster 1st Place**), USCA Scholar Showcase, SC Academy of Sciences Meeting (Conway), and Discover USC (**2nd Place**).

Allison Swiecki, April DeLaurier, and C. Nathan Hancock (2017) **Application of *Tol2*-based Activation Tag Constructs for Zebrafish Mutagenesis**, UWA Undergraduate Research Symposium, USCA Scholar Showcase, SC Academy of Sciences Meeting (Conway), Discover USC and Southeast Developmental Biology Meeting (Kennesaw, GA).

Jazmine Benjamin, Cayla Odom, Gabe Paradise, Daymond Parilla, and C. Nathan Hancock (2017) **Determining the Sequences Involved in *mPing* Transposition**, ASPB Southern Section Meeting (Orlando, FL).

Mary Roby, Ashley Strother, and C. Nathan Hancock (2017) **Testing Strategies to Produce Targeted Insertion of *mPing***, ASPB Southern Section Meeting (Orlando, FL).

Reese King, Carmen Czerwinski, and C. Nathan Hancock (2017) **Determining the Optimal Ratio of ORF1 to Transposase for *mPing* Transposition**, USCA Scholar Showcase and Discover USC.

Sarah Zamiela and C. Nathan Hancock (2017) **Analysis of the Zebrafish Transposable Element, *Harbinger3N_DR*, in Yeast**, USCA Scholar Showcase and Discover USC.

Amanda Askins and C. Nathan Hancock (2017) **Developing an Activation Tagging System for Wheat Mutagenesis**, UWA Undergraduate Research Symposium, ASPB Southern Section Meeting (Orlando, FL), USCA Scholar Showcase, SC Academy of Sciences Meeting (Conway), and Discover USC.

Alec Jones, C. Nathan Hancock, and April DeLaurier (2017) ***mPing* as a Tool for Activation Tagging in *Danio rerio***, USCA Scholar Showcase, SC Academy of Sciences Meeting (Conway), Discover USC and Southeast Developmental Biology Meeting (Kennesaw, GA).

Stephanie Diaz, Lisette Payero, Edward McAssey, and C. Nathan Hancock (2016) **The *mPing* Mutagenesis Project: Mutant Analysis and Activation Tagging**, Biennial Molecular & Cellular Biology of the Soybean Conference [Columbus, OH] (**Undergraduate 1st Place**).

David Gilbert and C. Nathan Hancock (2016) **Investigating the transposition mechanism of the MITE *mPing***, Maize Genetics Meeting (Jacksonville, FL).

Daymond Parrilla and C. Nathan Hancock (2016) **Determining the sequences that induce hyperactive transposition of *mPing***, Maize Genetics Meeting (Jacksonville, FL).

Stephanie Diaz, Tiana Chandler, and C. Nathan Hancock (2016) **Developing *mPing*-based activation tags**, Maize Genetics Meeting (Jacksonville, FL).

Mary Beth Roby, Ashley Strother, and C. Nathan Hancock (2016) **Testing a dCas9 Transposase fusion protein in *Arabidopsis thaliana* for targeted insertion of *mPing***, SC Academy of Sciences Meeting (Rock Hill), USCA Research Day, and USC Discovery Day.

Rachael N. Jackson and C. Nathan Hancock (2016) **A strategy to produce pollen-specific transposition using the *Arabidopsis thaliana* DLL promoter**, SC Academy of Sciences Meeting (Rock Hill), USCA Research Day, and USC Discovery Day.

Jazmine Benjamin, Cayla Odom, and C. Nathan Hancock (2016) **Determining the role of terminal inverted repeats in transposition of *mPing***, SC Academy of Sciences Meeting (Rock Hill), USCA Research Day, and USC Discovery Day (**Biology 2nd Place**).

Lisette Payero and C. Nathan Hancock (2016) **The role of *Ping*'s ORF1 repetitive sequence on *mPing* transposition**, SC Academy of Sciences Meeting [Rock Hill] (**Molecular Biology 1st Place**), USCA Research Day, and USC Discovery Day (**Biology 2nd Place**).

Allison Swiecki and C. Nathan Hancock (2016) **Developing *Tol2*-based activation tag constructs**, SC Academy of Sciences Meeting (Rock Hill), USCA Research Day, USC Discovery Day and SC INBRE Symposium (**Commendation Award**).

Alec Jones, Tiana Chandler, C. Nathan Hancock, and April DeLaurier (2016) ***mPing* as a tool for transposon mutagenesis in *D. rerio***, SC Academy of Sciences Meeting [Rock Hill] (**Molecular Biology 2nd Place**), USCA Research Day, USC Discovery Day, SC INBRE Symposium, and Southeast Developmental Biology (St. Augustine, FL).

Tiana Chandler, Stephanie Diaz, and C. Nathan Hancock (2015) **Developing *mPing*-based activation tags**, USC Summer Research Symposium.

Ashley Strother and C. Nathan Hancock (2015) **Targeted insertion of the transposable element, *mPing***, ASPB Southern Section Meeting [Dauphin Island, AL] (**Poster 2nd Place**).

David Gilbert, M. Catherine Bridges, Ashley E. Strother, Courtney E. Burckhalter, and C. Nathan Hancock (2015) **Precise repair of *mPing* excision sites is facilitated by target site duplication derived microhomology**, ASPB Southern Section Meeting (Dauphin Island, AL) and Southeast Developmental Biology Meeting [Clemson, SC] (**Undergraduate Poster 2nd Place**).

Daymond Parrilla, Kristian Pickrel and C. Nathan Hancock(2015) **Identifying sequences responsible for the high transposition rate of a *Tourist* MITE**, ASPB Southern Section Meeting, (Dauphin Island, AL), USCA Research Day, SC Academy of Sciences Meeting (Greenville), and USC Discovery Day.

Autumn Busbee, Yaowu Yuan and C. Nathan Hancock (2015) **Evaluating *mPing* transposition in *Mimulus lewisii***, ASPB Southern Section Meeting (Dauphin Island, AL), USCA Research Day (**Honorable Mention**), SC Academy of Sciences Meeting (Greenville), and USC Discovery Day.

Tiana Chandler, Mary Beth Roby, C. Nathan Hancock (2015) **Developing *mPing*-based activation tags**, USCA Research Day, SC Academy of Sciences Meeting (Greenville), and USC Discovery Day.

Autumn Busbee, David Gilbert and C. Nathan Hancock (2014) **Field analysis of soybean transposon tagging populations**, Biennial Molecular & Cellular Biology of the Soybean Conference, Minneapolis, MN.

Ashley Strother and C. Nathan Hancock (2014) **Targeted insertion of the transposable element, *mPing*, by manipulation of transposase proteins**, ASPB Southern Section Meeting, Lexington, KY. (**Poster 3rd Place**).

David Gilbert, Catherine Bridges, and C. Nathan Hancock (2014) **Determining the role of target site duplication sequences on the transposition of miniature inverted repeat transposable elements**, ASPB Southern Section Meeting (Lexington, KY), SC Academy of Sciences Meeting (Charleston), USCA Research Day (**Poster 2nd Place**), and USC Discovery Day (**Poster 1st Place**).

Courtney Burckhalter and C. Nathan Hancock (2014) **Optimizing germinal transposition Of *mPing* in *Arabidopsis Thaliana***, ASPB Southern Section Meeting (Lexington, KY), SC Academy of Sciences Meeting (Charleston), USCA Research Day (**Poster 1st Place**), and USC Discovery Day.

Daymond Parrilla, Kristian Pickrel, and C. Nathan Hancock (2014) **Identifying sequences responsible for the high transposition rate of a *Tourist* MITE**, ASPB Southern Section Meeting (Lexington, KY), SC Academy of Sciences Meeting (Charleston), USCA Research Day (**Poster Honorable Mention**), and USC Discovery Day.

Courtney Burckhalter and C. Nathan Hancock (2013) ***Phaseolus acutifolius* transformation**, USCA Research Day (**Poster 2nd Place**) and USC Discovery Day.

Ashley Strother and C. Nathan Hancock (2013) **Targeted insertion of the *mPing* transposable element**, USCA Research Day and USC Discovery Day (**Poster 1st Place**).

Ashley Strother, Courtney Burckhalter, Tyler Shealy, Wes Tindall, and C. Nathan Hancock (2012) **Improving the *mPing* yeast transposition assay**, SC Academy of Sciences Meeting, Aiken, SC.

TEACHING EXPERIENCE

Instructor 2011-Current	BIOL 121 Biological Science BIOL 541 Principles of Biochemistry I BIOL 542 Principles of Biochemistry II BIOL 325 Plant Physiology BIOL 490 Senior Seminar HONS 201 Genetically Modified Organisms
Co-Instructor Fall 2008	PBIO 3250L - The Dynamic Genome (HHMI) Designed and supervised in class yeast genetics experiments
Guest Lecturer Spring 2007	PBIO 8100 - Advanced Plant Genetics Guided students into the self-incompatibility literature
Substitute Lecturer Spring 2002	BCH 105 - Biotechnology in Society Used in class exercises to engage students
Teaching Assistant Fall 2001	BCH 374 - Molecular Biology Lab Taught basic laboratory techniques
Lab Assistant Fall 1999	PLS 330 - Plant Propagation Lab Prepared materials and maintained plants for exercises

TEACHING PREPARATION

Spring 2017	USCA Critical inquiry Workshop
Fall 2016	University of West Alabama CURE Workshop
Spring 2016	High-Impact Practices for Teaching and Learning Symposium
Spring 2014	USCA Critical Inquiry Workshop
Spring 2012	USCA Critical Inquiry Workshop
AGED 415 Fall 2003	College Teaching of Agriculture Developed syllabi, course plans, assessments, and portfolio
AGED 499 Spring 1998	Teaching at the College Level Explored teaching methods and philosophy
SWES 397A Fall 1997	Preceptor for Science Mentors Program Developed and presented laboratory experiments