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**Clemson University • Department of Genetics & Biochemistry**  
**Biosystems Research Complex Rm 302C • 105 Collings St. • Clemson, SC 29634**  
**(864)656-3231 (office) • (864) 654-5403 (home) • Skype: alex.feltus • [ffeltus@clemson.edu](mailto:ffeltus@clemson.edu)**  
**<https://www.clemson.edu/science/departments/genetics-biochemistry/people/profiles/ffeltus>**  
**<https://orcid.org/0000-0002-2123-6114>**  
**<https://www.linkedin.com/in/alex-feltus-86a0073a>**

Ph.D. Cell Biology (2000) Vanderbilt University (Nashville, TN)

B.Sc. Biochemistry (1992) Auburn University (Auburn, AL)

2018- **Professor**, Clemson University Department of Genetics and Biochemistry

2017- **Core Faculty**, Biomedical Data Science and Informatics (BDSI) PhD Program

2020- **Faculty Scholar**, Clemson University School of Health Research (CUSHR)

2012-2020	<b>CEO</b> , Allele Systems, LLC
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2009-2014 **Member**, Clemson Plant & Environmental Sciences Interdepartmental Graduate Program  
2009-2014 **Faculty**, Clemson University, Clemson, SC

2007-2013 **Assistant Professor**, Clemson University Department of Genetics and Biochemistry  
2005-2007 **IT Director (Bioinformatics)**, UGA Plant Genome Mapping Lab; **Associate Member**, UGA Institute of

**2002-2003** *Assistant Research Scientist*, UGA Center for Applied Genetic Technologies, **India Shullie Research Associate**, Rockefeller Foundation

1995-2000 **Ph.D. Student** (NIH Fellowship), Dept. Cell Biology, Vanderbilt University School of Medicine. *Advisor*

1992-1994      **High School Science Teacher**, U.S. Peace Corps, Fiji Islands

1989-1992      ***Undergraduate Research Assistant***, Microbiology Department, Auburn AL

**Research Experience:**  
 1005 Performed research in fundamental biology, biomedical, and agriculture domains; bioinformatics

1995- Performed research in fundamental biology, biomedical, and agriculture domains: bioinformatics,

	9%	8%	7%	6%	5%	4%	3%
1	0.9174	0.9238	0.9306	0.9377	0.9450	0.9526	0.9605
2	0.8339	0.8508	0.8677	0.8847	0.9017	0.9188	0.9359
3	0.7692	0.7971	0.8254	0.8541	0.8831	0.9124	0.9420
4	0.7130	0.7458	0.7789	0.8123	0.8461	0.8803	0.9149
5	0.6636	0.6990	0.7348	0.7710	0.8076	0.8446	0.8820
6	0.6209	0.6586	0.6967	0.7352	0.7741	0.8134	0.8531
7	0.5837	0.6237	0.6641	0.7050	0.7463	0.7880	0.8301
8	0.5513	0.5936	0.6363	0.6795	0.7231	0.7671	0.8115
9	0.5227	0.5672	0.6119	0.6570	0.7025	0.7484	0.7947
10	0.4979	0.5446	0.5915	0.6388	0.6864	0.7344	0.7827
11	0.4752	0.5241	0.5722	0.6207	0.6695	0.7186	0.7680
12	0.4543	0.5054	0.5537	0.6024	0.6515	0.7009	0.7506
13	0.4350	0.4874	0.5369	0.5868	0.6371	0.6877	0.7385
14	0.4171	0.4708	0.5215	0.5726	0.6241	0.6759	0.7279
15	0.4005	0.4555	0.5074	0.5598	0.6126	0.6657	0.7190
16	0.3852	0.4415	0.4946	0.5482	0.6022	0.6565	0.7110
17	0.3710	0.4285	0.4828	0.5376	0.5927	0.6481	0.7037
18	0.3578	0.4166	0.4720	0.5277	0.5837	0.6399	0.6963
19	0.3455	0.4056	0.4621	0.5186	0.5754	0.6324	0.6896
20	0.3340	0.3954	0.4530	0.5103	0.5680	0.6259	0.6839
21	0.3232	0.3859	0.4446	0.5026	0.5612	0.6193	0.6774
22	0.3131	0.3770	0.4368	0.4955	0.5550	0.6132	0.6714
23	0.3036	0.3687	0.4296	0.4881	0.5484	0.6067	0.6650
24	0.2947	0.3610	0.4229	0.4813	0.5424	0.6008	0.6592
25	0.2863	0.3538	0.4167	0.4748	0.5367	0.5953	0.6538
26	0.2784	0.3469	0.4108	0.4688	0.5315	0.5903	0.6489
27	0.2710	0.3405	0.4054	0.4634	0.5269	0.5860	0.6447
28	0.2640	0.3345	0.4004	0.4580	0.5223	0.5817	0.6405
29	0.2574	0.3290	0.3959	0.4535	0.5185	0.5782	0.6368
30	0.2512	0.3240	0.3919	0.4496	0.5152	0.5752	0.6336
31	0.2453	0.3194	0.3882	0.4462	0.5123	0.5726	0.6308
32	0.2397	0.3152	0.3849	0.4432	0.5097	0.5703	0.6283
33	0.2344	0.3113	0.3819	0.4406	0.5074	0.5683	0.6260
34	0.2293	0.3077	0.3791	0.4383	0.5053	0.5665	0.6239
35	0.2244	0.3043	0.3765	0.4362	0.5034	0.5649	0.6220
36	0.2197	0.3012	0.3741	0.4343	0.5017	0.5634	0.6202
37	0.2152	0.2983	0.3718	0.4326	0.5001	0.5620	0.6186
38	0.2109	0.2956	0.3696	0.4310	0.4986	0.5607	0.6171
39	0.2067	0.2931	0.3675	0.4296	0.4972	0.5595	0.6157
40	0.2027	0.2907	0.3655	0.4283	0.4959	0.5584	0.6144
41	0.1988	0.2885	0.3636	0.4271	0.4947</		

1992- Bioinformatics, Python/Perl Programming, Genetics, Genomics, Biochemistry, General Biology+

2007- *Lab Director*: Directed the projects of 11 PhD students (5 graduated), 2 MS student (graduated), 26

2002-2007 *Assistant Research Scientist*: Oversaw the research projects of 2 post-docs and 1 software engineer

2007- *Freelance Consultant:* Fee for service consulting for various entities.

2009-2014      *Bioinformatics Consultant:* Clemson University Genomics Institute

# Teaching & Training Activities

## Classroom Experience:

2021 Instructor, Clemson University, GEN4900 – Biomedical Informatics  
2008-20 (13) *Instructor*, Clemson University, GEN4400 – Bioinformatics  
2008-20 (13) *Instructor*, Clemson University, GEN6400 – Computational Genomics  
2019 *Guest Lecturer*, Clemson University, GEN8050– Issues in Research  
2019 *Instructor*, Clemson University, GEN4900 – Biomedical Informatics  
2018 *Team Lecturer*, Clemson University GEN8140 – Advanced Genetics  
2017 *Guest Lecturer*, Clemson University, GEN8050– Issues in Research  
2017 *Instructor*, Clemson University, BIOCH4930– Senior Seminar  
2016 *Team Lecturer*, Clemson University GEN8190 – Advanced Genetics  
2015 *Guest Lecturer*, Clemson University, GEN805 – Issues in Research  
2015 *Instructor*, Clemson University, GEN4900 – Biomedical Informatics  
2013 *Instructor*, Intro. to Next-Generation Sequence Analysis Workflows Workshop  
2011-13 (3) *Team Lecturer*, Clemson University, BIOCH/GEN 890 - Special Topics in Advanced Biochemistry and Genetics (Network and Systems Genetics)  
2013 *Guest Lecturer*, Clemson University, GEN805 – Issues in Research  
2013 *Guest Lecturer*, Clemson U., BIOSCI871 - Advanced Cell and Functional Biology  
2013 *Instructor*, Clemson U., BIOCH305 - Essential Elements of Biochemistry  
2011 *Guest Lecturer*, Clemson University, GEN805 – Issues in Research  
2011 *Instructor*, Clemson University, BIOCH493– Senior Seminar  
2010 *Instructor*, Clemson University, GEN640 –Perl for Bioinformatics  
2009 *Instructor*, Clemson University, BIOCH890 – Computational Genomics  
2008 *Guest Lecturer*, Clemson University, GEN103 - Careers in Gen. & Biochem.  
2008-09 (2) *Guest Lecturer*, Clemson University, ECE495 – ECE Senior Design  
2007-08 (2) *Instructor*, Clemson University, BIOCH491 - Special Prob. in Biochemistry  
2007 *Instructor*, University of Georgia, GENE8940 - Genome Analysis  
2007 (2) *Instructor*, Gainesville State College, BIOL1101L – Biology Lab  
2007 (2) *Instructor*, Gainesville State College, BIOL1101 - Biology A Human Persp.  
2006 *Instructor*, Gainesville State College, BIOL1107L - Biology Lab  
2006 *Instructor*, Gainesville State College, BIOL1107 - Principles of Biology I  
2005-06 (2) *Instructor*, University of Georgia, IOB Summer Bioinformatics Course  
2001 *Instructor*, Georgia State U., Saturday School, Molecular Biology  
1996-00 (5) *Guest Lecturer*, Vanderbilt University, Endocrinology  
1992-94 *Head of Department*, Shreedhar Maharaj Sec. School - Fiji, Bio.& Chem.  
(sections taught in parentheses)

## Research Mentorship:

### (Active)

2020- *Research Mentor*, Clemson COVID Challenge, Victoria DeBrock (UG), Allison Wijntjes (UG)  
2020- *Research Advisor*, Kaitlyn Gmitro (UG)  
2020- *Research Advisor*, Meghan Mobley (UG); <https://www.linkedin.com/in/megan-mobley-006770198/>  
2020- *Research Advisor*, Brad Selee (UG); <https://www.linkedin.com/in/bradley-selee/>  
2020- *Research Advisor*, Nicole Nelligan (UG)  
2020- *Rotation Advisor*, Rini Pauly (G); <https://www.linkedin.com/in/rini-pauly-407663b/>  
2019- *MSc Co-Advisor*, Cole Younginer (G) Thesis; <https://www.linkedin.com/in/cole-younginer-927307145/>  
2018- *PhD Co-Advisor*, Yueyao Gao (G) Dissertation:  
2018- *Research Advisor*, M. Reed Bender (G); <https://www.linkedin.com/in/reed-bender/>  
2018- *Research Advisor*, Ethan Bensman (UG); <https://www.linkedin.com/in/ethan-bensman/>  
2017- *PhD Co-Advisor*, Ben Shealy (G) Dissertation; <https://www.linkedin.com/in/ben-shealy/>

2017- *PhD Advisor*, Allison Hickman (G) Dissertation:

2017- *PhD Adviser*, Yuqing Hang (G) Dissertation:

### (Historical)

2019-20 *Research Advisor*, Cameron Ogle (UG); <https://www.linkedin.com/in/cameronogle/>

2017-20 *Research Advisor*, Melissa Judge (UG); <https://www.linkedin.com/in/melissa-judge/>

2016-20 *UGSP NIH Student Mentor*, Diana Nguyen NIH (UG); <https://www.linkedin.com/in/dn2/>

2017-20 *PhD Advisor*, Benafsh Husain (G) Dissertation: *EdgeCrafting: Mining embedded,latent,non-linear patterns to construct Gene Relationship Networks*; <https://www.linkedin.com/in/benafsh-husain-421370188/>

2019 *Rotation Advisor*, Mohammed Aburidi (G)

2017-19 *Research Advisor*, Jordan Little (UG); <https://www.linkedin.com/in/jordan-little-411070139/>

2017-19 *Research Advisor*, Rachel Eimen (UG); <https://www.linkedin.com/in/rachel-eimen-869bb3123/>

2017-19 *Research Advisor*, Cole Mcknight (UG); <https://www.linkedin.com/in/cole-mcknight/>

2017-19 *MS Co-Advisor*, Colin Targonski (G); <https://www.linkedin.com/in/colin-targonski-9018bb134/>

2016-19 *Research Advisor*, Courtney Shearer (UG); <https://www.linkedin.com/in/courtney-shearer/>

2019 *Rotation Advisor*, Yueyao Gao (G)

2018 *Rotation Advisor*, Oly Ahmed (G)

2018 *NIH K99 Advisor*, Chad Highfill (PD); <https://www.linkedin.com/in/chad-highfill-57ba5432/>

2015-18 *PhD Advisor*, Dr. William Poehlman (G) Dissertation: *High Throughput Polygenic Biomarker Discovery Using Condition-Specific Gene Co-expression Networks*. <https://www.linkedin.com/in/william-poehlman-51b7b4131/>

2017-18 *Research Advisor*, Keerti Kosana (UG)

2016-18 *Research Advisor*, Henry Randall (UG); <https://www.linkedin.com/in/henry-randall-4b7809110/>

2015-18 *Research Advisor*, Leland Dunwoodie (UG); <https://www.linkedin.com/in/leland-dunwoodie-369369ba/>

2017-18 *Research Advisor*, Michael Summers (UG); <https://www.linkedin.com/in/michaelrsummers/>

2017 *Rotation Advisor*, Matt Angel (G)

2017 *REU Research Advisor*, Jack Fletcher (UG)

2016 *Rotation Adviser*, Chenyan Chang (G)

2016-17 *Research Advisor*, Kaitlyn Grier (UG); <https://www.linkedin.com/in/kaitlyn-grier-339b2236/>

2016-17 *Research Advisor*, Brittany Rosener (UG); <https://www.linkedin.com/in/brittany-rosener-b6817647/>

2016-17 *Research Advisor*, Kim Roche (UG); . <https://genome.duke.edu/directory/cbb-phd-student/kimberly-roche>

2015-17 *Research Advisor*, Zachary Gerstner (UG); <https://www.linkedin.com/in/zachary-gerstner-3a52628a/>

2015-17 *Software Design Lead*, Nick Watts (G)

2014-17 *Research Advisor*, Calvin Cox (UG); <https://www.linkedin.com/in/cdciii/>

2016 *Rotation Adviser*, Yuqing Hang (G)

2015 *REU Research Advisor*, Katie Kyle (UG)

2015 *REU Research Advisor*, Amari Lewis (UG)

2015 *Rotation Advisor*, William Poehlman (G)

2014 *REU Research Advisor*, Asher Sampong (UG)

2014 *Research Advisor*, Devin Lehmacher (HS)

2009-13 *PhD Advisor*, Dr. Stephen Ficklin (G); Dissertation: *Predicting Complex Phenotype-Genotype Relationships in Grasses: A Systems Genetics Approach*.

2009-13 *PhD Advisor*, Dr. Jacob Spangler (G); Dissertation: *Conserved noncoding sequences regulate steady-state mRNA levels in Arabidopsis thaliana*.

2009-12 *PhD Advisor*, Dr. Josh Vandenbrink (G); Dissertation: *Characterization of Sorghum bicolor genotypes and their potential for biofuel production*.

2013 *Research Advisor*, Yueli Zheng (G)

2013 *Rotation Advisor*, Steven Cogill (G)

2011 *Rotation Advisor*, Vibhor Agrawal (G)

2011 *Rotation Advisor*, Kimberly Kanapeckas Metris(G)

2011 *Rotation Advisor*, Congyue Peng (G)

2009-10 *Research Advisor*, Brittany Rosengartner (UG)

2008 *Research Advisor*, Warren Kirk Fowler (UG)

2010 *Rotation Advisor*, Rooksana Noorai (G)

2008 *Rotation Advisor*, Sara Sarasua (G)

2008 *Rotation Advisor*, Amanda Land Say (G)

PD=Postdoc; G=Graduate; UG=Undergraduate; HS=High School

# Service Activities

## Scientific Journal Editor:

- *Academic Editor, Scientific Reports* 2019-  
2020: Manuscripts handled (6)  
2019: Manuscripts handled (15)
- *Academic Editor, PLOS ONE* 2014-  
2020: Manuscripts handled (5)  
2019: Manuscripts handled (7)  
2018: Manuscripts handled (7)  
2017: Manuscripts handled (8)  
2016: Manuscripts handled (9)  
2015: Manuscripts handled (7)  
2014: Manuscripts handled (2)
- *Guest Editor, PLOS Computational Biology* 2018  
2018: Manuscripts handled (1)

## Grant Peer Review:

- *Ad Hoc reviewer, Genome Canada Genomic Applications Partnership Program* (6/2020)
- *Ad hoc reviewer, NSF* (5/18/2020)
- *Ad hoc reviewer, Clemson/MUSC Artificial Intelligence Pilot Project Initiative* (4/2020)
- *Ad hoc reviewer, NSF* (3/2020)
- *Review panel member, DOE-BER* (3/2020)
- *Ad hoc reviewer, The French National Research Agency* (5/2019)
- *Review panel member, National Science Foundation* (4/2019)
- *Ad hoc reviewer, NSF DIBBS Site Visit* (4/8/2019)
- *Ad hoc reviewer, NSF DIBBS Site Visit* (3/19/2019)
- *Ad hoc reviewer, Internet2-NSF E-CAS* (2/2019)
- *Ad hoc reviewer, BBSRC* (12/2018)
- *Review panel member, National Science Foundation* (9/2018)
- *Ad hoc reviewer, National Science Foundation* (3/2018)
- *Ad hoc reviewer, Wellcome Trust Fellowship* (12/2017)
- *Ad hoc reviewer, The French National Research Agency* (05/2017)
- *Panel reviewer, National Science Foundation* (2016)
- *Ad hoc reviewer, CURF Technology Maturation Fund* (07/2016)
- *Primary reviewer, DataStart selection committee - South Big Data Hub* (05/2016)
- *Ad hoc reviewer, NSF Plant Genome Research Program* (8/2015)
- *Primary reviewer, GGC-CU Self Regional Healthcare Human Genetics Research Program* (5/2014)
- *Ad hoc reviewer, Agropolis Foundation* (10/2012)
- *Ad hoc reviewer, Internal Review of USDA-ARS Project* (8/2012)
- *Review panel member, USDA-DOE Plant Feedstock for Bioenergy* (4/25/2012-4/26/2012)
- *Ad hoc reviewer, Agropolis Foundation* (4/2012)
- *Ad hoc reviewer, National Science Foundation - OISE IRFP* (12/2011)
- *Ad hoc reviewer, United States – Israel Bi-national Agricultural Research and Development Fund (BARD): Proposal IS-4447-11* (10/2010).
- *Ad hoc reviewer, National Science Foundation Division of Molecular and Cellular Biosciences, Genes and Genomes Systems Program* (9/2009).
- *Review panel member, Genetic Mechanisms in Cancer Study Section American Cancer Society; Atlanta, GA;* (1/29/2008-1/30/2008).

**Journal Peer Review (Often multiple assignments for each journal):**

*American Journal of Botany, Annals of Applied Biology, Annals of Translational Medicine, Biofuels, Bioinformatics, Biomedicine & Pharmacotherapy, Biotechnology for Biofuels, Briefings in Bioinformatics, BMC Bioinformatics, BMC Genomics, BMC Evolutionary Biology, BMC Plant Biology, Cancer Biomarkers, Computational Biology and Chemistry, Computer Communications, Crop Science, Endocrinology, Epigenomics, Field Crops Research, G3: Genes|Genomes|Genetics, Gene, Genes, Genetics, Genome Biology, Genome Biology and Evolution, Genome Research, GigaScience, Heredity, Horticulture Research, IEEE Transactions on Biomedical Engineering, IEEE/ACM Transactions on Computational Biology and Bioinformatics, IEEE/ACM Transactions on Networking, Industrial Crops And Products, Journal of Biotechnology, Journal of King Saud University - Computer and Information Sciences, Journal of Microbial & Biochemical Technology, Journal of Molecular Biology, Mathematical Biosciences, Molecular Biology and Evolution, Molecular Biosystems, Nature, Nature Biotechnology, New Phytologist, Oncotarget, Plant Cell Reports, Physiologia Plantarum, Plant Physiology, Plant Breeding, Plant Cell, Plant Science, Planta, PLOS Computational Biology, PLOS ONE, Scientific Reports, Software: Practice and Experience, Theoretical and Applied Genetics, The Plant Genome, The Plant Journal.*

**Miscellaneous Peer Review:**

• Boyce Thompson External Tenure Review	2019
• Clemson internal competition for the 2020 NSF AISL submission	2019
• Clemson Experiment Station Hatch Project	2015
• NSF Data Science Workshop	2015
• USDA pre-submission internal review (D. Kuhn)	2014
• Fulbright Academic Symposium Poster Judge	2014
• Michigan Technological University External Tenure Review	2013
• CAFLS Scientific Poster Competition	2013
• SACNAS National Meeting Abstract Review	2011
• SACNAS National Meeting Abstract Review	2010

**Committees/Panels/etc:***(National)*

• Internet2 Board of Trustees Member	2017-
• Internet2 Program and Priorities Committee	2018-
• Member, Internet2 Research Engagement Working Group	2018-19
• NRP Steering Committee	2017-18
• IEEE BIBM 2017 Program Committee	2017
• NRP Bozeman Meeting Program Committee	2017
• Member, Internet2 Chief Innovation Officer Program Advisory Group	2016-18
• Co-Leader, Internet2 Distributed Big Data & Analytics Working Group	2015-18

*(Departmental)*

• Member, Executive Committee	2019-
• Chair, Rajan Sekhon TPR subcommittee	2015-
• Member, Grad Committee Curriculum Exploratory Committee	2018
• Member, Graduate Advisory Committee	2009-19
• Member, Miriam Konkel TPR subcommittee	2018-19
• Member, Allison Starr TPR subcommittee	2013-18
• Member, Human Genetics Search Committee	2015-16
• Organizer, G&B Research in Progress Seminar Series	2015-16
• Member, Executive Committee	2012-15
• Chair, Faculty search committee ( <i>Plant Genetics</i> )	2013-14
• Member, Faculty search committee ( <i>Functional Genomicist</i> )	2008

*(College)*

• Member, Faculty Awards Selection Committee	2020
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• Member, Center for Human Genetics Cluster Hire Search Committee	2019-20
• Member, Center for Human Genetics Cluster Hire Search Committee	2018-19
• Member, Science Genomics Faculty Advisory Board	2018
<i>(University)</i>	
• BDSI Faculty Member: interviewed PhD/faculty candidates	2019
• Member, CCIT informal research advisory group lunch	2019
• Member, STEM IT Advisory Committee	2016-18
• Chair, Computational Advisory Team (CAT)	2014-18
• Member, Clemson CIO Search Committee	2016-17
• Member, Student Leadership Development Task Force	2015
• CUGI Faculty Advisory Committee	2013-14
• Member, Computational Advisory Team (CAT)	2009-14
• Faculty advisor, Clemson SACNAS chapter	2008-12
• Member, Alumni Distinguished Professor Committee	2008-09
<i>(Dissertation/Thesis)</i>	
<b>(Active)</b>	
• Chair, Rini Pauly Ph.D. ( <i>Clemson, Biomed. Data Sc. Inform.</i> )	2020-
• Member, Arnab Mutsuddy – M.Sc. ( <i>Clemson, Chemical Engineering</i> )	2019-
• Member, Cole Younginer – M.Sc. ( <i>Clemson, Elec. &amp; Comp. Engineering</i> )	2019-
• Co-Chair, Yueyao Gao – Ph.D. ( <i>Clemson, Genetics &amp; Biochemistry</i> )	2019-
• Member, Stephen McGee – Ph.D. ( <i>Clemson, Biomed. Data Sc. Inform.</i> )	2019-
• Member, Brandon Baker – Ph.D. ( <i>Clemson, Genetics &amp; Biochemistry</i> )	2018-
• Member, Rebecca Jones – Ph.D. ( <i>Clemson, Genetics &amp; Biochemistry</i> )	2018-
• Member, Matt Angel – Ph.D. ( <i>Clemson, Gen. &amp; Biochem</i> )	2018-
• Chair, Allison Hickman – Ph.D. ( <i>Clemson, Gen. &amp; Biochem</i> )	2018-
• Member, Ben Shealy – Ph.D. ( <i>Clemson, Elec. &amp; Comp. Engineering</i> )	2018-
• Member, Chenyan Chang – Ph.D. ( <i>Clemson, Gen. &amp; Biochem</i> )	2018-
• Chair, Yuqing Hang – Ph.D. ( <i>Clemson, Gen. &amp; Biochem</i> )	2017-
<b>(Historical)</b>	
• Chair, Benafsh Husain – Ph.D. ( <i>Clemson, Biomed. Data Sc. Inform.</i> )	2018-20
• Member, Mark Jasinski – MS ( <i>Clemson Plant &amp; Env. Sciences</i> )	2018-19
• Member, Jessie Westfall – MS ( <i>Clemson, Chemical Engineering</i> )	2018-19
• Member, Colin Targonski – MS ( <i>Clemson, Elec. &amp; Comp. Engineering</i> )	2018-19
• Chair, William Poehlman – Ph.D. ( <i>Clemson, Gen. &amp; Biochem</i> )	2015-18
• Member, Karan Sapra – Ph.D. ( <i>Clemson, Elec. &amp; Comp. Engineering</i> )	2012-18
• Member, Brian Atkinson – Ph.D. ( <i>Clemson, Elec. &amp; Comp. Engineering</i> )	2015-18
• Member, Nick Mills – Ph.D. ( <i>Clemson, Elec. &amp; Comp. Engineering</i> )	2016-18
• Member, Zach Brenton – Ph.D. ( <i>Clemson, Plant &amp; Env. Sciences</i> )	2015-18
• Member, Jing Li – Ph.D. ( <i>Clemson, Gen. &amp; Biochem</i> )	2012-17
• Member, Rebecca Garcia– Ph.D. ( <i>Clemson, Healthcare Genetics</i> )	2013-14
• Member, Sandra Bediako – Ph.D. ( <i>Clemson, Biological Sciences</i> )	2010-14
• Member, Leanna Ledford - Ph.D. ( <i>Clemson, Gen. &amp; Biochem.</i> )	2008-14
• Member, Rooksana Noorai – Ph.D. ( <i>Clemson, Gen. &amp; Biochem</i> )	2010-14
• Member, Kristin Beard - Ph.D. ( <i>Clemson, Gen. &amp; Biochem.</i> )	2009-13
• Member, Xinfu Zhang – MS ( <i>Clemson, Genetics &amp; Biochemistry</i> )	2012-13
• Member, Xinfu Zhang – Ph.D. ( <i>Clemson, Gen. &amp; Biochem</i> )	2012-13
• Member, Amrita Koushik - Ph.D. ( <i>Clemson, Gen. &amp; Biochem</i> )	2009-13
• Chair, Stephen Ficklin - Ph.D. ( <i>Clemson, PES</i> )	2009-13
• Chair, Jacob Spangler - Ph.D. ( <i>Clemson, Gen. &amp; Biochem.</i> )	2009-13
• Member, Sara Sarasua - Ph.D. ( <i>Clemson, Gen. &amp; Biochem.</i> )	2008-12
• Chair, Josh Vandenbrink - Ph.D. ( <i>Clemson, Gen. &amp; Biochem.</i> )	2009-12
• Member, Elspeth Murday - Ph.D. ( <i>Clemson, PES</i> )	2009-12
• Member, April Coley Joice - Ph.D. ( <i>Clemson, Gen. &amp; Biochem.</i> )	2008-12
• Member, Daniel Stein - Ph.D. ( <i>Clemson, Gen. &amp; Biochem</i> )	2009-10
• Member, Erin Curry - Ph.D. ( <i>Clemson, AVS</i> )	2010-10

- Member, Archana Rangabashya - Ph.D. (*Clemson, Gen. & Biochem.*) 2009-10
- Member, Sandra Bediako – MS (*Clemson, Biological Sciences*) 2008-10

#### **Professional Society Membership:**

- AAAS 2018-
- Bioinformatics.org 2012-18
- American Society of Plant Biologists (ASPB) 2010-18
- Society for Adv. of Chicanos and Native Americans in Sci. (SACNAS) 2008-14
- SCBIO.org 2012-14
- National Sweet Sorghum Producers and Processors Assoc. (NSSPPA) 2009-11
- International Society for Computational Biology (ISCB) 2008-11

#### **Science/Workforce Development Outreach:**

- Youth Learning Academy Career Day. "I am a scientist." April 1 2020. (made online video due t pandemic)
- Judge @ CU Fifth Annual Chemistry Research Symposium. March 14, 2020.
- Judge @ Clemson CU-HackIT hackathon. January 26, 2020.
- Sponsor and presenter, CU-HACK-IT hackathon. "Data-intensive Biology: Datasets, Systems, and Emerging Technologies." January 26, 2020.
- Judge @ Clemson HelloWorld Freshman hackathon. October 19, 2019.
- Youth Learning Academy Career Day. "I am a scientist." April 1 2019.
- Judged RC Edwards Middle School Science Projects. Jan. 30, 2019.
- Sponsor and presenter, CU-HACK-IT hackathon. "Data-intensive Biology: Datasets, Systems, and Emerging Technologies." January 26, 2019.
- GRAD 360°. "How to get an industry job. A life science perspective." October 5, 2018. Clemson, SC.
- NSF Sponsored Workshop. "Laser Capture Microdissection." May 21-25, 2018, Clemson, SC.
- Sponsor and presenter, CU-HACK-IT hackathon. "SciDAS and high dimensional biology." March 10, 2018.
- Youth Learning Academy Career Day. "I am a genetics and biochemistry professor." March 9, 2018.
- Clemson Storage Group "What am I storing on "Enterprise Disks?" October 27, 2017
- NSF Sponsored Workshop. "Laser Capture Microdissection." June 12-16, 2017, Clemson, SC.
- Clemson Networking Group "Why research networks should be production networks." March 2, 2017, WFIC, 10.50am.
- Weebly Presentation 29 Nov 2016, Clemson University Cooper Library
- NEXT High School. Using Supercomputers to Improve Agriculture, Fight Disease, and Model the Universe. " 8 Jan, 2016
- Judged RC Edwards Middle School Science Projects (Feb. 27, 2014)
- Biology Merit Exam G&B Booth (April 19, 2012)
- Participant in Berea High School Hispanic students visit to Clemson (Feb. 20, 2012)
- Job shadowed RC Edwards Middle School student (Feb. 17, 2012)
- Lectured at RC Edwards Middle School/ DNA Learning Center field-trip event (Jan 24-25, 2012)
- Tutored Greenville area high school students in Furman University's Bridges to a Brighter Future Program (Oct. 7, 2011)
- Participated in tour of Clemson campus for 59 at-risk high school students from Furman University's Bridges to a Brighter Future Program (June 22, 2011)
- Tutored H.S. students in Furman University's Bridges to a Brighter Future Program (Apr. 4, 2011)
- Invited speakers to SACNAS public chapter meeting (4 in 2009)
- James Brown Elem. Sch. Hispanic Girl Scouts SACNAS science outreach (Jan. 20, 2009)
- Led Clemson undergraduate G&B club field trip to CDC in Atlanta (April 17, 2009).
- Clemson Elementary School Young Engineers SACNAS science outreach (May 6, 2009)
- Berea Middle School future STEM scholars outreach (May 8, 2009)
- Berea High School Hispanic university recruitment outreach (Sep. 29, 2009)

#### **Undergraduate Advising:**

- Summer Orientation 2015: Advised incoming G&B freshman: June 25, 2015
- Summer Orientation 2012: Advised incoming G&B freshman: June 23, 2012
- Summer Orientation 2011: Advised incoming G&B freshman: June (16,20), 2011
- Spring 2009: 12 G&B majors
- Fall 2008: 7 G&B majors

# Research & Scholarship Activities

## Invited Speaker, Panels, Workshops: (external)

- Workshop Leader, “Alabama A&M Genomics Workshop: Building, Accessing, and Using Kubernetes Clusters to Do Data-Intensive Genomics.” Huntsville, AL. February 17-18<sup>th</sup>, 2020.
- Workshop Co-organizer, “PAG 2020: Machine Learning and Artificial Intelligence in Genomics and Phenomics”. PAG2020. San Diego, CA. January 11, 2020.
- Invited Speaker, New Frontiers seminar series. “Looking at today and the future of democratized scientific computing.” Louisiana Tech, LA. December 16, 2019.
- Workshop Leader, Internet2 Technology Exchange Conference. “Scaling Genomics Workflows with Kubernetes Hybrid Cloud Solutions.” New Orleans, LA. December 9, 2019.
- Invited Speaker, PRP Researcher Engagement Webinar “Running Genomics Workflows on the Pacific Research Platform’s Nautilus Kubernetes Cluster.” Online. October 25, 2019.
- Invited Speaker, Training Workshop for Network Engineers and Educators on Tools and Protocols for High-Speed Networks. “Scaling out Life Science research.” Columbia, SC. July 22, 2019.
- Panel Member, Training Workshop for Network Engineers and Educators on Tools and Protocols for High-Speed Networks. “Best practices, DTNs, research networks, perfSONAR.” Columbia, SC. July 22, 2019.
- Workshop Participant, O’Reilly Sci Foo Conference. Google X, Palo Alto, CA. July 2019.
- Workshop Participant, NSF Rethinking NSF’s Computational Ecosystem for 21st Century Science and Engineering. Alexandria, VA June 27-28, 2019.
- Panel member, Cyberinfrastructure (CI) Leadership Academy, Feb 27, 2019.
- Workshop Participant, I2 CI Maturity Model Workshop. Denver CO. December 10-11, 2018.
- Invited Speaker, Supercomputing 2018 Clemson Booth. “How 21st century life science researchers can leverage national cyberinfrastructure to analyze petabytes of genomics data.” Dallas, TX. November 11-14, 2018.
- Invited Speaker, eResearch @ Otago Day. “Named Data Networking (NDN).” (remote). November 11, 2018.
- NRP Workshop. “Cloud Successes & Failures - Public/Private”. Bozeman, MT. August 6, 2018.
- Panel Member, DIBBS Workshop. “Future DIBBS Challenges/Sustainability”. Washington, DC. July 19, 2018.
- Team Leader, SV-AI Hackathon for Type 2 Papillary Renal Cell Carcinoma. “Clemson’s p1RCC Discoveries From the Alzheng Team” San Francisco, CA. May 18-20, 2018.
- Invited Speaker, Internet2 Research Engagement Workshop. “How to engage new users of Internet2.” May 14-15, 2018. Washington, DC.
- Invited Speaker, Rutgers University ARC Group. “Preparing Biological Research Labs for Petascale Computing (aka What happens if RNAseq is cheaper than qPCR?).” New Brunswick, NJ. April 26, 2018.
- Invited Speaker, South Carolina Smart State Symposium “Building Democratized Cyberinfrastructure that Moves & Analyzes Petabytes of Measurements from Complex Biological Systems.” Greenville, SC. April 12, 2017.
- Invited Speaker, Open Science Grid All-Hands Meeting. “Mining Huge Collections of Genomics Datasets for Genes Controlling Complex Traits from Humans to Legumes.” March 21, 2018. Salt Lake City, UT.
- Invited Speaker, Open Science Grid All-Hands Meeting. “CC\*Data: National Cyberinfrastructure for Scientific Data Analysis at Scale (SciDAS) NSF-CC\* [Award#1659300].” March 20, 2018. Salt Lake City, UT.
- Invited Speaker, Purdue University Purdue Research Symposium. “Prepping Your Lab For Petascale Computing In Case DNA Sequencers Replace the PCR Machine.” West Lafayette, IN. March 1, 2018.
- Invited Speaker, C-Light Workshop “How is IT Critical to Research”, Watt Family Innovation Center, Clemson, SC. December 1, 2017.
- Panel Moderator and Presenter, NSF CC\*/CICI/QUILT “Researcher Access to Data – Anytime, Anywhere.” Albuquerque, NM. October 4, 2017.
- Invited Speaker, University of North Carolina – Greensboro Department of Biology. “Finding Novel Genetic Patterns in Mixed Condition Gene Expression Datasets Using Contemporary Algorithms & Cyberinfrastructure.” Greensboro, NC. September 13, 2017.
- Invited Speaker, National Research Platform NSF Workshop. “Necessity is the Mother of Invention: An End User’s Quest to Scale up The Cyberinfrastructure Needed to Move & Process Exabytes of Complex Genetic Systems Data”. Bozeman, MT. August 27, 2017.
- Invited Speaker, American Society of Plant Biologists Annual Meeting. “CS-12-3 - Leveraging Advanced Cyberinfrastructure for High Dimensional Biological Discovery.” Honolulu, HI. June 26, 2017.
- Invited Speaker, UHCC Sullivan Center. “Finding Novel Genetic Patterns in The Cancer Genome Atlas Using Contemporary Cyberinfrastructure”. Honolulu, HI. June 30, 2017.
- Workshop Participant, Internet2 Global Summit ICN Workshop, Washington DC. (remote) April 24, 2017.



- Workshop Participant, Open Science Grid All Hands Meeting, San Diego, CA (remote) March 7, 2017.
- Invited Speaker, UNC-Charlotte Department of Genomics & Bioinformatics “Constructing Gene Interaction Networks From Petabytes of Data So One Can Ask Complex Biological Questions.”, Charlotte, NC. February 8, 2017.
- Invited Speaker, North Carolina Research Campus “Leveraging Advanced Cyberinfrastructure for High Dimensional Biological Discovery.” Kannapolis, NC. February 10, 2017.
- Workshop Member, ACIREF Face 2 Face. Miami, FL February 2-3, 2017.
- Invited Speaker, University of Michigan Department of Computational Medicine and Bioinformatics. “Mining The Cancer Genome Atlas for Polygenic Biomarker Packages: Biology, Gene Networks and Cyberinfrastructure.” Ann Arbor Michigan, November 7 2016.
- Invited Speaker, University of Michigan Biomedical Research Core Facilities “Prepping for the Biomedical Data Apocalypse: How to Ensure Researchers Maximize Discovery in a Big Data World.” Ann Arbor Michigan, Nov. 8 2016.
- Invited Speaker, Nobel Foundation Bioinformatics Workshop. “Mining Gene Interactions at the Petascale.” Ardmore, OK. April 28-29, 2016.
- Invited Speaker, Open Science Grid All Hands Meeting. “Making Gene Dependency Graphs by Whatever Means Necessary ...or ... I want to bite off more than I can chew!”. Clemson, SC. March 13, 2016
- Invited Speaker, NC-State Biochemistry Department. “Mining Gene Interactions at the Petascale.” Raleigh, NC. January 28, 2016
- Invited Speaker, nVidia Theater Talk, Supercomputing 2015, November 16, 2015.
- Workshop Participant, NSF Big Data Regional Innovation Hubs National Charrette, Nov 3-5, 2015.
- Invited Speaker, Healthcare Genetics Society of Clemson University Healthcare Genetics Seminar. “Bioinformatics in the Clinic.” Greenville, SC. August 28, 2015.
- Invited Speaker, Internet2 Global Summit. “From CC-NIE/IIIE/DNI to Building a Cohesive Platform for Collaboration over Advanced Cyberinfrastructure.” Washington, DC. April 28, 2015.
- Workshop Participant, BD Hub Workshop Durham, NC. April 2015.
- Invited Speaker, Supercomputing 2014 Conference. “GPU-Enabled Global Gene Network Alignment (G3NA)”. Presentation and Demo. New Orleans, LA. November 18, 2014.
- Panel Member, Supercomputing 2014 Conference. “Advanced Cyberinfrastructure - Research and Education Facilitator Program” panel. New Orleans, LA. November 19, 2014.
- Invited Speaker, Internet2 Technology Exchange Conference. “Advanced Cyberinfrastructure Research and Education Facilitators (ACI-REFs)”. Indianapolis, IN. (Remote presenter). October 28, 2014.
- Invited Speaker, 2014 Advanced Cyberinfrastructure Research and Education Facilitator Face-To-Face. “Optimizing AL2S Connectivity NCBI.” Madison, WI. July 8-10, 2014.
- Invited Speaker, 2014 Advanced Cyberinfrastructure Research and Education Facilitator Face-To-Face. “Researcher Perspective on the ACI-REF Project.” Salt Lake City, UT. June 2-3, 2014.
- Invited Speaker, Smithsonian Institution Bioinformatics Group. “Maximizing capture of gene co-expression relationships through pre-clustering of input expression samples: an Arabidopsis case study.” Remote seminar. April 30, 2014.
- Invited Speaker, Cornell Plant Biology Department. “Converting Big Data To Big Gene Networks: A Systems Genetics Application.” Ithaca, NY. March 14, 2014.
- Invited Speaker, Advancing Research Computing on Campuses: Best Practices Workshop. “A Genomics Perspective on Advancing Research Computing on Campuses”. Urbana, IL. Jan 16-17, 2014.
- Invited Speaker, Daughters of American Revolution, Walhalla Chapter. “It’s 2013 and your individual DNA sequence can be determined with amazing medical and genealogical implications.” Walhalla, SC. November 5, 2013.
- Workshop Participant, Internet2 Focused Technical Workshop: Network Issues in Life Sciences. Berkeley, CA. July 17-18, 2013.
- Invited Speaker, Healthcare Genetics Society of Clemson University Healthcare Genetics Seminar. “IT Infrastructure Realities of Clinical Genomics.” Greenville, SC. May 24, 2013.
- Invited Speaker, Virginia Tech Genetics, Bioinformatics and Computational Biology (GBCB). “Maximizing Gene Space Capture in Co-Expression Networks.” March 28, 2013
- Invited Speaker, Presbyterian College Department of Biology. “Systems Genetics: A New Way to Discover Genes Underlying Complex Traits”. Clinton, SC. Jan 15, 2013.
- Panel Member, 2012 International Sorghum Genome Conference. Atlanta GA. Nov 15-16, 2014.
- Panel Member, What Next? SCBIO Annual Conference. November 14, 2012. Greenville, SC.
- Invited Speaker, College of Charleston Dept. of Biology. “Gene co-expression networks: A tool to find relevant needles in the biological haystack.” Charleston, SC. March 12, 2012.
- Invited Speaker, UNC-Charlotte Genomics and Bioinformatics Department. “Building a Translational Systems Genetics Framework to Accelerate Plant Breeding.” Charlotte, NC. November 11, 2011.

- Invited Speaker, Plant and Animal Genome XIX Conference, San Diego, California. "Finding candidate genes underlying QTLs through targeted pooled-BAC de novo sequencing and assembly of a partial FPC minimum tiling path." January 16, 2011.
- Invited Speaker, USC Plant Biology Seminar Series, Columbia, SC. "Systems Genetics Approaches Toward Complex Trait Candidate Gene Discovery: A Rice Example." November 10, 2010.
- Invited Speaker, Plant and Animal Genome XVI Conference, San Diego, California, "Deciphering Drought Genomics: Integrating Rice and Maize Phenotype Data on the Rice Genome Backbone", January 2008.
- Invited Speaker, Cornell University Department of Plant Breeding and Genetics, Ithaca, New York, "Deciphering Drought Genomics: Integrating Rice and Maize Phenotype Data on the Rice Genome Backbone", May 2006.
- Invited Speaker, Plant and Animal Genome XIII Conference, San Diego, California, "Leveraging Musa EST Data: Conserved PCR Primers Designed From Banana-Rice Genome Alignments", January 2005.
- Invited Speaker, Plant and Animal Genome XII Conference, San Diego, California, "Scanning for DNA polymorphisms in grasses: Intron-scans & DOP-PCR", January 2004.
- Invited Speaker, "Large Scale Mapping of DNMT1-Induced Hypermethylated CpG Island Loci." Epigenetics in Development and Disease Keystone Symposium. Taos, New Mexico, February 2002.
- Invited Speaker, "Autocrine stimulation of adrenal 3  $\beta$ -hydroxysteroid dehydrogenase gene expression by glucocorticoids: Functional requirement for Stat5 and glucocorticoid receptor interactions." 82nd Annual Meeting of the Endocrine Society, Toronto, Canada, June 21 2000.

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- Clemson G&B Club Meeting, "Computational Biology is Dope." September 19, 2019. Clemson, SC.
- BDSI Seminar. "Two New Deep Learning Approaches to Biomarker Discovery." September 5, 2019. Clemson, SC.
- VPR Research Day. "Scientific Data Analysis at Scale." May 9, 2018. Clemson, SC.
- Clemson G&B Club Meeting, "Computational Tumor Biology." February 20, 2018. Clemson, SC.
- BDSI Seminar. "Finding Biomarker Packages Using Contemporary Algorithms & Cyberinfrastructure." April 25, 2018. Clemson, SC.
- Clemson VPR Research Symposium. May 10, 2017. Clemson, SC.
- Clemson WFIC Innovation Day. April 12, 2017. Clemson, SC.
- Clemson VPR Research Symposium. "Bioinformatics at the terascale and beyond." May 4, 2016. Clemson, SC.
- Clemson G&B Club Meeting, "Systems Genetics." February 2, 2016. Clemson, SC.
- Clemson Mathematical Sciences "Big Data Genomics: Accelerating the crop development cycle in a shrinking world and the cyberinfrastructure required to do it." October 15, 2015.
- Clemson G&B Club Meeting, "Systems Genetics." November 13, 2014. Clemson, SC.
- Cyberinfrastructure Expo 2014, "Taking advantage of Palmetto and CITI personnel to further their research." September 23, 2014. Clemson, SC.
- Distinguished Researcher Seminar, Clemson University School of Nursing. "Predicting Specific Underlying Genotype-Phenotype relationships." November 11, 2013.
- Clemson G&B Club Meeting, "Systems Genetics." October 4, 2013.
- Clemson Biophysics and Bioinformatics Research Seminar. "Comparing Gene Interaction Networks Between Two Organisms." December 9, 2011
- Clemson SACNAS Chapter Meeting, "How not to give a presentation." Sep 22, 2010.
- Clemson University Horticulture Dept. Seminar Series, "An adaptable gene network method to identify novel candidate gene sets driving complex traits." March 5, 2010.
- Clemson G&B Club Meeting, "Systems Biology Applied to Biofuel Production." September 2009.
- Clemson SACNAS Chapter Meeting, "Grant Writing Workshop." February 2009.

**Honors and Awards:**

- Clemson University Research, Scholarship and Artistic Achievement Award, 2018
- Blue Key Society Honorary Member, 2017
- Role Model Chapter Award, SACNAS, 2011
- Role Model Chapter Award, SACNAS, 2010
- Outstanding New Chapter Award, SACNAS, 2009
- Travel Award, Keystone Conference Scholarship, 2002
- Travel Award, 81<sup>st</sup> Annual Meeting of the Endocrine Society, 1999
- NIH NICHD Pre-doctoral Training Grant, 1996-2000
- Honors Graduate, Biochemistry, Auburn University, 1992

## PUBLICATIONS (105 total)

Peer-Reviewed Articles=90; Conference Proceedings=8; Technical papers=2; Book Chapters=4; Preprint=1

**Total citation count: [85587]; i10-index= 62; h-index = 35** (Source: Google Scholar; July 2020).

1. Shawna Spoor, Connor Wytke, Brian Soto, Ming Chen, Abdullah Almsaeed, Bradford Condon, Nic Herndon, Heidi Hough, Meg Staton, Jill Wegrzyn, Dorrie Main, Alex Feltus, Stephen Ficklin. "Tripal and Galaxy: Supporting Reproducible Scientific Workflows for Community Biological Databases." Database (in press), 2020.
2. Colin Targonski, M. Reed Bender, Benjamin T. Shealy, Benafsh Husain, Melissa C. Smith, Bill Paseman, F. Alex Feltus\*. "Cellular state transformations using deep learning for precision medicine applications." Cell Patterns (in press), 2020.
3. Benafsh Husain, Allison Hickman, Yuqing Hang, Ben Shealy, Karan Sapra, F. Alex Feltus\*. "NetExtractor: Extracting a Cerebellar Tissue Gene Regulatory Network Using Differentially Expressed High Mutual Information Binary RNA Profiles" G3: Genes|Genomes|Genetics, (in press), 2020.
4. Andrew H Paterson, Wenqian Kong, Robyn M Johnston, Pheonah Nabukalu, Guohong Wu, William L Poehlman, Valorie H Goff, Krista Isaacs, Tae-Ho Lee, Hui Guo, Dong Zhang, Uzay U Sezen, Megan Kennedy, Diane Bauer, Frank Alex Feltus, Eva Weltzien, Henry Rattunde, Jacob Barney, Kerrie Barry, T Stan Cox, Michael J. Scanlon Manuscript ID: 511040 Edited by: Vijay Kumar Tiwari. "The evolution of an invasive plant, *Sorghum halepense* L. ('Johnsongrass')." Frontiers in Genetics (in press), 2020.
5. Raúl Herranz, Joshua P Vandenbrink, Alicia Villacampa, Aranzazu Manzano, William Poehlman, Frank Alex Feltus, John Z Kiss, Francisco Javier Medina. "RNAseq analysis of *Arabidopsis thaliana* gradual response to fractional gravity under positive blue-light stimulation during spaceflight." Frontiers in Plant Science. DOI: <https://doi.org/10.3389/fpls.2019.01529> , 2019
6. Benjamin T. Shealy, Josh J.R. Burns, Melissa C. Smith, F. Alex Feltus, and Stephen P. Ficklin. "GPU Implementation of Pairwise Gaussian Mixture Models for Multi-Modal Gene Co-Expression Networks" IEEE Access. 7:160845-160857, 2019.
7. (Conference Proceedings) Colin Targonski, Benjamin T. Shealy, Melissa C. Smith, F. Alex Feltus. "Cellular State Transformations Using Generative Adversarial Networks" NeurIPS ML4H 2019. (in press), 2019.
8. William Poehlman, Elise Schnabel, Suchitra Chavan, Julia Alice Frugoli, Frank Alex Feltus\*. "Identifying Temporally Regulated Root Nodulation Biomarkers Using Time Series Gene Co-expression Network Analysis". Frontiers in Plant Science 10:1409, 2019.
9. (Conference Proceedings) Coleman McKnight, Alexandra L. Poulos, M. Reed Bender, F. Alex Feltus, Jon C. Calhoun. "Exploring Lossy Compression of Gene Expression Matrices." The 5th International Workshop on Data Analysis and Reduction for Big Scientific Data (DRBSD-5) at SC19.(SC19) 23-24, 2019.
10. Joshua P. Vandenbrink, Raul Herranz, William Poehlman, F. Alex Feltus, Alicia Villacampa, Malgorzata Ciska, F. Javier Medina, and John Z. Kiss\*. "RNAseq analyses of *Arabidopsis* seedlings after exposure to blue-light phototropic stimuli in microgravity." American Journal of Botany (in press), 2019.
11. Spoor S, Cheng CH, Sanderson LA, Condon B, Almsaeed A, Chen M, Bretaudeau A, Rasche H, Jung S, Main D, Bett K, Staton M, Wegrzyn JL, Feltus FA, Ficklin SP. "Tripal v3: an ontology-based toolkit for construction of FAIR biological community databases." Database (Oxford). pii: baz077. doi: 10.1093/database/baz077, 2019.
12. C Targonski, BT Shealy, MC Smith, FA Feltus\* "Cellular State Transformations using Generative Adversarial Networks." arXiv preprint arXiv:1907.00118, 2019.
13. Benafsh Husain and F. Alex Feltus\* "EdgeScaping: Mapping the spatial distribution of gene edge expression levels." PLOS ONE 14 (8), e0220279. <https://doi.org/10.1371/journal.pone.0220279> , 2019.
14. Colin A. Targonski, Courtney A. Shearer, Ben T. Shealy, Melissa C. Smith, and F. Alex Feltus\*. "Uncovering biomarker genes with enriched classification potential from Hallmark gene sets." Scientific Reports. Scientific reports 9 (1), 9747, 2019.
15. (Conference Proceedings) Susmit Shannigrahi, Chengyu Fan, Christos Papadopoulos, and Alex Feltus. "NDN-SCI for Managing Large Scale Genomics Data." ICN '18. pp 204-205. <https://doi.org/10.1145/3267955.3269022>, 2018.
16. Nicholas Mills, Ethan M. Bensman, William L. Poehlman, Walter B. Ligon III, and F. Alex Feltus\*. "Moving Just Enough Deep Sequencing Data to Get the Job Done." Bioinformatics and Biology Insights. <https://doi.org/10.1177/1177932219856359>, 2019.
17. (Conference Proceedings) Mats Rynge, Karan Vahi, Anirban Mandal, Omkar Bhide, Randy Heiland, Von Welch, Raquel Hill, Ilya Baldin, Ewa Deelman, William L. Poehlman and F. Alex Feltus. "Integrity Protection for Scientific Workflow Data: Motivation and Initial Experiences." PEARC2019. v17. <https://doi.org/10.1145/3332186.3332222>, 2019.
18. M. A. Greene, J. L. Britt, R. Reigers Powell, F. A. Feltus, W. C. Bridges Jr., T. Bruce, J. L. Klot, M. F. Miller Jr., and S. K. Duckett. "Ergot Alkaloid Exposure During Gestation Alters: 3. Fetal Growth, Muscle Fiber Development and miRNA Transcriptome." Journal of Animal Science. <https://doi.org/10.1093/jas/skz15> (2019).

19. Emily L. Casanova, Allison Hickman, Andrew E. Switala, Srini Dandamudi, Joshua Vandenbrink, Julia L. Sharp, F. Alex Feltus, Manuel F. Casanova. "Autism Risk Genes Are Evolutionarily Ancient and Maintain a Unique Feature Landscape that Echoes Their Function." *Autism Research*. <https://doi.org/10.1002/aur.2112> (2019).
20. William L. Poehlman, James J. Hsieh, F. Alex Feltus\*. "Linking Binary Gene Relationships to Drivers of Renal Cell Carcinoma Reveals Convergent Function in Alternate Tumor Progression Paths." *Scientific Reports*. 9(1):2899. <https://doi.org/10.1038/s41598-019-39875-y>, 2019.
21. Emily L. Casanova, Zachary Gerstner, Julia L. Sharp, Manuel F. Casanova, F. Alex Feltus. "Widespread Genotype-Phenotype Correlations in Intellectual Disability." *Frontiers in Psychiatry*. 29;9:535. <https://doi.org/10.3389/fpsy.2018.00535>, 2018.
22. Falk, T., Herndon, N., Grau E., Buehler S., Richter P., Zaman S., Baker E.M., Ramnath R., Ficklin S., Staton M., Feltus F.A., Jung S., Main D., Wegrzyn J.L. "Growing and cultivating the forest genomics database, TreeGenes" *Database*. 1: bay084. <https://doi.org/10.1093/database/bay084>, 2018.
23. Kimberly E. Roche, Marvin Weinstein, Leland Dunwoodie, William L. Poehlman, and Frank A. Feltus\*. "Sorting Five Human Tumor Types Reveals Specific Biomarkers and Background Classification Genes" *Scientific Reports*,. 8(1):8180. <https://doi.org/10.1038/s41598-018-26310-x>, 2018.
24. Nicholas Mills, F. Alex Feltus\*, Walter B. Ligon III. "Maximizing the Performance of Scientific Data Transfer by Optimizing the Interface Between Parallel File Systems and Advanced Research Networks." *Future Generation Computer Systems*. 79: 190-198. <https://doi.org/10.1016/j.future.2017.04.030>, 2018.
25. Leland J. Dunwoodie, William L. Poehlman, Stephen P. Ficklin, F. Alex Feltus\*. "Discovery and Validation of a Glioblastoma Co-expressed Gene Module." *Oncotarget* 9(13):10995-11008. doi:10.18632/oncotarget.24228, 2018.
26. (Conference Proceedings) Terrell Russell, Michael Stealey, Jason Coposky, Ben Keller, Claris Castillo, Ray Idaszak, Alex Feltus. "Distributing the iRODS Catalog: A Way Forward." *iRODS UGM 2017 Proceedings*. Page 35, 2017.
27. Donald Livingstone III, Conrad Stack, Guiliana Mustiga, Dayana Rodezno, Carmen Suarez, Freddy Amores, F. Alex Feltus, Keithanne Mockaitis, Omar Cornejo, Juan Carlos Motamayor. "A Larger Chocolate Chip - Development of a 15K Theobroma cacao L. SNP Array to create high density linkage maps." *Frontiers Plant Science*. 8:2008, 2017.
28. (Conference Proceedings) William Poehlman, Mats Rynge, Balamurugan Desinghu, Nicholas Mills, and Frank Feltus\*. OSG-KINC: High-Throughput Gene Co-Expression Network Construction Using the Open Science Grid. *IEEE BIBM 2017 Proceedings*. Pages 1827-1831, 2017.
29. Stephen P. Ficklin, Leland J. Dunwoodie, William L. Poehlman, Christopher Watson, Kimberly Roche, F. Alex Feltus. Discovering Condition-Specific Gene Co-Expression Patterns Using Gaussian Mixture Models: A Cancer Case Study. *Scientific Reports* 7: 8617. doi: 10.1038/s41598-017-09094-42017, Published online 17 Aug, 2017.
30. Kimberly Roche, F. Alex Feltus, Jang Pyo Park, Marie-May Coissieux, Chenyan Chang, Vera B.S. Chan, Mohamed Bentires-Alj, and Brian W. Booth. Cancer Cell Redirection Biomarker Discovery Using a Mutual Information Approach. *PLOS ONE* 12(6):e0179265. doi: 10.1371/journal.pone.0179265, 2017.
31. Hannah Schmucker, Jang Pyo Park, Marie-May Coissieux, Kerri Kwist, Mohamed Bentires-Alj, F. Alex Feltus, and Brian W. Booth. *RNA expression profiling reveal differentially regulated growth factor and receptor expression in redirected cancer cells*. *Stem Cells and Development* May 1;26(9):646-655. doi: 10.1089/scd.2016.0340, 2017.
32. Nick A. Watts and Frank A. Feltus. *Big Data Smart Socket (BDSS): A Tool that Abstracts Data Transfer Habits from End Users*. *Bioinformatics* 33(4):627-628. doi: 10.1093/bioinformatics/btw679, 2017.
33. William L. Poehlman, Mats Rynge, Chris Branton, D. Balamurugan, and Frank A. Feltus. "OSG-GEM: Gene Expression Matrix Construction Using the Open Science Grid." *Bioinformatics and Biology Insights* 10:133, 2016. TC#6455.
34. Yupeng Wang, Stephen P. Ficklin, Xiyin Wang, Frank A. Feltus, Andrew H. Paterson. *Large-scale gene relocations following an ancient genome triplication associated with the diversification of core eudicots*. *PLOS ONE*. 11(5):e0155637. doi: 10.1371/journal.pone.0155637, 2016.
35. Frank A. Feltus, Joe Breen, Juan Deng, Ryan Izard, Christopher A Konger, Walt Ligon, Don Preuss, Kuangching Wang. *The Widening Gulf Between Genomics Data Generation and Consumption- A Practical Guide To Big Data Transfer Technology*. *Bioinformatics and Biology Insights* Suppl. 1 9-19, 2015.
36. Clyde Phelix and F. Alex Feltus. *Plant Stress Biomarkers from Biosimulations: The Transcriptome-To-Metabolome™ (TTM™) Technology. Effects of drought stress on rice*. *Plant Biology* 17 (1), 63-73, 2015.
37. (Book Chapter) Saski CA, Feltus FA, Parida L, Haiminen N. "BAC Sequencing Using Pooled Methods." *Methods in Molecular Biology*. 1227:55-67. doi: 10.1007/978-1-4939-1652-8\_3, 2015.
38. (Technical paper) Feltus FA *Big Data Inventory at Clemson University*. Presented to the CIO and VPR (October 2015)
39. Feltus FA *Systems Genetics: A Paradigm to Improve Discovery of Candidate Genes and Mechanisms Underlying Complex Traits*. *Plant Science* 223, 45-48, 2014.
40. Roger N. Hiltten, Joshua P. Vandenbrink, Andrew H. Paterson, F. Alex Feltus, and Keshav C. Das. *Linking isoconversional pyrolysis kinetics to compositional characteristics for multiple Sorghum bicolor genotypes*. *Thermochimica Acta* 577, 46-52, 2014. TC#6176.

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\*Corresponding Author



# Research Funding Activities

## Active Support:

- **“Root transcriptomes at the level of single cells.”**

Source: Clemson Succeeds (Frugoli PI, feltus co-PI)

Total Project Costs: \$12,215

Project Period: July 1 2020-June 30 2021.

- **“MRI: Acquisition of a Cyberinstrument for Interdisciplinary Computational Science and Engineering.”**

Source: NSF MRI #1725573 (A. Apon PI; Feltus SP)

Total project costs: ~\$1,000,000 (\$0 to Feltus)

Project Period: October 1 2017-September 30 2020.

- **“CC\*Data: National Cyberinfrastructure for Scientific Data Analysis at Scale (SciDAS).”**

Source: National Science Foundation [1659300] (Feltus PI)

Total project costs: \$2,952,217 (\$1,057,229 to Feltus)

Project Period: Feb. 7 2017 – Feb 6. 2020.

- **“PGRP: Spatial and Temporal Resolution of mRNA Profiles During Early Nodule Development”**

Source: National Science Foundation [1444461] (J Frugoli PI; Feltus co-PI)

Total project costs: \$1,280,749 (\$624,394 to Feltus)

Project period: 01/2015-12/2020

- **“RCN: Advancing Research and Education Through a National Network of Campus Research Computing Infrastructures - The CaRC Consortium”**

Source: National Science Foundation [1620695] (Feltus PI – Bottum Former PI)

Total project costs: \$748,490

Project period: 07/2016-12/2020

- **“Exposing the Potential of Information Centric Networks for the Life Sciences”**

Source: Cisco Research (Feltus PI)

Total project costs: \$99,974

Project period: 10/01/2019-9/30/2020

- **“CC\* NPEO: Toward the National Research Platform.” NSF#1826967 (Smarr PI, Feltus End User)**

- **“DIBBs: EI: SLATE and the Mobility of Capability” NSF#1724821 (Gardner PI, Feltus End User)**

## Historical Support:

- **“Tripal Gateway: Platform for Next-Generation Data Analysis and Sharing.”**

Source: NSF-DIBBS [1443040] (S. Ficklin PI; Feltus co-PI)

Total project costs: \$1,485,021 (\$214,176 to Feltus)

Proposed project period: 01/2015-7/2018

- **“An HPC-backed interactive visualization instrument enabling collaborative computational genomics and virtual reality research.”**

Source: CUSUCEEDS’17 (B. Ullmer PI; Feltus co-PI)

Total project costs: \$50,950

Project Period: May 15 2017-May 14 2018.

- **“BIGDATA: F: DKM: Collaborative Research: PXFS: ParalleX Based Transformative I/O System for Big Data”**

Source: National Science Foundation [1447771] (W. Ligon PI; Feltus co-PI)

Total project costs: \$720,000 (\$300,000 to Clemson)

Proposed project period: 01/2015-12/2017

- **“Big Data Visualization REU”.**

Source: National Science Foundation [1359223] (V Byrd, PI; Feltus SP)

Total project costs: \$265,988 (\$0 to Feltus)

Proposed project period: 07/01/2014-09/30/2016

- **“Big Data Analysis Tools for Agricultural Genomics.”**

Source: Clemson University Experiment Station (USDA Hatch Project) [SC-1700492] (Feltus, PI).

Annual direct costs: Salary  
Oct. 1, 2014 – Sep. 30, 2018. Effort: 1A month

- **“NSF Big Data Hub Phase I”**

Source: NSF-BDHUB

Total project costs to Feltus: \$0

Project period: 11/2015-10/2020

- **MRI: Acquisition of a High Performance Computing Instrument for Collaborative Data-Enabled Science.**

Source: National Science Foundation [1228312] (A Apon, PI)

Total project costs: \$994,060; Effort: 0 month

Proposed project period: 09/01/2012-08/31/2015

- **“CC-NIE Integration: Clemson-NextNet”**

Source: National Science Foundation [1245936] (KC Wang, PI)

Total project costs: \$996,875; To Feltus: \$26,261; Effort: .25 month

Proposed project period: 10/01/2012-09/30/2014

- **“Building non-model species genome curation communities.”**

Source: National Evolutionary Synthesis Center (NESCent) (A Papanicolaou, PI)

Total project costs to Feltus: \$0; Effort: 0.5 month

Proposed project period: 01/01/2013 – 12/31/2015

- **Genomic and Breeding Foundations for Bioenergy Sorghum Hybrids.**

Source: Plant Feedstock Genomics for Bioenergy [DE-FOA-000041] (S Kresovich, PI).

Total project costs: \$1,200,000; Feltus subcontract: \$284,360.

September 1, 2011-August 31, 2014. Effort: 1A month

- **Sorghum Feedstock for the Emerging South Carolina Biofuel Industry.** Source: Clemson University Experiment Station (USDA Hatch Project) (Feltus, PI).

Annual direct costs: \$47,320 (salary); Total direct costs: \$141,960 (salary); Total costs (direct + indirect): \$153,475.

July 1, 2008 – June 30, 2014. Effort: 1A month

- **Resources for study of diversity and divergence in Sorghum, a C4 cereal model.**

Source: Joint Genome Institute (Paterson, PI; Feltus, co-PI). Annual direct costs: \$0; Total direct costs: \$0; Total project costs: \$unknown.

July 1, 2009-June 30, 2011. Effort: 0.5A month

- **Mirrored Micro-Environments to Determine the Genetic Impact of Environmental Change on Marine Wildlife.** Source: Clemson University Creative Inquiry Project Grant (Feltus, PI; Burg, PI). Amount: \$2,500/semester; 1/2008-12/2008.

- **(Postdoctoral Fellowship) Identification of DNA sequences Targeting Aberrant CpG Island**

**Methylation.** Source: American Cancer Society, PF-GMC-102929 (Feltus, PI). Amount: \$118,000 (Total Costs); 1/1/2002-12/31/2003.

- **Gene Discovery in Rice: cDNA Microarrays for identification of candidate genes associated with abiotic stress response.** Source: Rockefeller Foundation Small Project Grant (Feltus, co-PI). Amount: \$30,000; 9/1/2003-3/30/2004

- **Comparative Analysis of Functional and Anonymous SNP Diversity in Pearl Millet and Sorghum.** Source: USAID/CCGI First Generation Project Grant (Feltus, Collaborating Scientist) Amount: \$150,000; 3/2004-9/2005.

- **Arabidopsis 2010: Collaborative Research: Evolution of gene position and function in Arabidopsis using outgroup genomes. Award # 0820345**

Source: National Science Foundation (Feltus, PI) NSF 07-591 (2010 Project). Annual direct costs: \$38,816; Total direct costs: \$113,449; Total project costs: \$158,508 (To Feltus).

February 11, 2009-October 31, 2012. Effort: 1S month

[http://www.nsf.gov/awardsearch/showAward?AWD\\_ID=0820345](http://www.nsf.gov/awardsearch/showAward?AWD_ID=0820345)