Dreycey D. Albin

803 Marshall st.   albindreycey@gmail.com
Houston, TX 77006   720.448.9778
                                              website: https://dreycey.github.io

Education

Ph.D. (transferring)- Systems, Synthetic, and Physical Biology (SSPB) – Rice U.   2018-Current
    National Science Foundation Graduate Research Fellow

Postbaccalaureate - University of Washington (NIH-PREP)   2017-2018

B.S. Biology - University of Northern Colorado (GPA: 3.67)   2012-2017

B.S. Chemistry (ACS Certified) - University of Northern Colorado

    Honors Scholar (2016-2017**)**

      Thesis: *"Immunohistochemical Analysis of Colocalization Between the FP Receptor and Endothelial Cells in the Bovine Corpus Luteum"*

      Research Advisor(s): Dr. James Haughian and Dr. Patrick Burns

Publications

- *D. Albin**, D Nasko*, R. A. Elworth, J. Lu, A. Balaji, C. Diaz, N. Shah, J. Selengut, C. Hulme-Lowe, P. Muthu, G. Godbold, M. Lindvall, M. Diep, A. Porter, M. Pop, K. Ternus, T. J. Treangen **"SeqScreen: a biocuration platform for robust taxonomic and biological process characterization of nucleic acid sequences of interest"** International Conference on Bioinformatics and Biomedicine. (Extended to BMC Bioinformatics 2020) [*Published, 2019*]

- Jones, Alisha; Pisignano, Giuseppina ; Pavelitz, Thomas; White, Jessica; Kinisu, Martin; Forino, Nicolas; *Albin, Dreycey*; Varani, Gabriele **"An evolutionarily-conserved RNA structure in the functional core of the long non-coding RNA Cyrano"** Nucleic Acids Research. [*In Review, 2019*]

- Matthew J Walker; Matthew D Shortridge; *Dreycey D Albin*; Lauren Y Cominsky; Varani, Gabriele **"Structure of the RNA specialized translation initiation element that recruits eIF3 to the 5'-UTR of c-Jun"** Journal of Molecular Biology. [*Accepted, 2019*]

Research Experience

- **Postbaccalaureate Research Education Program (**NIH-PREP**) (**2017-2018**)**
  Research Advisor: Dr. Gabriele Varani
  Project: *"Computational Modeling the 3D structure of Cyrano"*
  Focused on elucidation of RNA structure using both computational and experimental approaches. In addition, I learned the basics of both protein purification and NMR-based RNA structure determination.

- **McNair Scholars Program (**Spring 2016**)**
  Research Advisor: Dr. James Haughian
  Thesis: *"Immunohistochemical Analysis of the FP receptor in Bovine Corpus Luteal Cells"*

Learned how to fix tissue with paraformaldehyde, use a cryostat to section tissue samples. How to use a fluorescence and confocal microscope. How to use ImageJ to do image processing.

- **Directed Study In Artificial Intelligence (**Spring-Summer 2016**)**
  Research Advisor: Professor Dean Zeller
  Learned how to self-teach concepts, made an automated pipetting instrument using a microcomputer and materials from a flea market.
  Video: https://youtu.be/TsJV2YoOwzo?t=417 (Play 6:56-8:32)
  Total cost: $100.00
- **NSF REU Summer Research Experience (**Program: SOYMAP, Summer 2015**)**
  Research Advisor(s): Dr. Jamie O'Rourke and Dr. Michelle Graham
  Iowa State University
  Project: *"Using Soybean VIGS as a functional Genomics Tool in Common Bean"*
  NSF sponsored summer internship at Iowa State University to study crop genetics in a USDA laboratory. Learned molecular genetics techniques, designed and created Virus-Induced Gene Silencing (VIGS) vectors to silence abiotic stress-response genes.
- **McNair Scholars Program (**2014-2015**)**
  Thesis: *"Global analysis of gene regulation in human myeloma cells: Understanding the role of the transcription factor Ikaros"*
  Research Advisor: Dr. Seth Frietze
  Using molecular biology techniques, I was able to utilize CRISPR/Cas9 as a functional genomics tool to investigate transcription factors through reverse genetics.

Training Experience

- **NCBI Structural Variant Hackathon** (Fall 2019)
  Individuals from labs all around the country came together to join the NCBI structural variant hackathon. This was aimed at creating new methods for structural variation in metagenomic samples.
- **Rice Data Science Boot Camp** (Summer 2019)
  The Data Science boot camp at Rice University consisted of 40 hours of instruction and labs that covered the basics of data science. This includes: modern regression, cross validation, AWS, unsupervised and supervised learning, and Spark.
- **UCLA Computational Genomics Summer Institute** (Summer 2019)
  Went through a training focused on various computational techniques used in bio-informatics. The techniques discussed include: Genomic Structural Variation Analysis, Markov Chain Monte Carlo (MCMC), utilizing databases for biological data, and best practices for statistical analysis.
- **Cold Spring Harbor Laboratory Annual Synthetic Biology Course (**Summer 2018**)**
  Gained a thorough introduction to lab techniques used synthetic biology through an immersive two-week summer course at CSHL. The techniques practiced include: TXTL, modeling using ordinary differential equations.

Mentoring Experience

- **Advisor for the University of Washington International Genetically Engineered Machines (iGEM) (**2018**)**
  Project: *"STRONGER TOGETHER: An efficient, generalizable approach to design biosensors for small molecules"*
  Role: I was the DryLab advisor for the team, helping direct the team on different avenues for modeling the chemically induced dimerization using nanobodies.
  PI Labs: Dr. Herbert Sauro's lab, Dr. Liangcai Gu's Lab,
  Associated Labs: Dr. David Baker's Lab
  Internet URL: http://2018.igem.org/Team:Washington/Model

Related Work Experience

Analytical Chemistry lab Tech Summer Intern
Pure Vision Technology, Ft. Lupton, Colorado

- Trained on fundamental analytical chemistry techniques including HPLC, efficiently following SOP protocols, hydrolyzation of oligomeric sugars (Lignan).

Supplemental Instructor for Organic Chemistry and Introductory Biology
University of Northern Colorado

- Focused on dicusssing concepts in organic chemistry and introductory biology in a group setting as an instructor.

Biology and Chemistry peer tutoring
University of Northern Colorado

- Gained experience in explaining scientific concepts of biology and chemistry in an interpersonal setting

Linear Algebra Homework Grader
University of Northern Colorado

- Advanced mathematical thought by effectively communicating to students how they may improve reasoning in linear algebra.

Oral Presentations

D. Albin, D Nasko, R. A. Elworth, J. Lu, A. Balaji, C. Diaz, N. Shah, J. Selengut, C. Hulme-Lowe, P. Muthu, G. Godbold, M. Lindvall, M. Diep, A. Porter, M. Pop, K. Ternus, T. J. Treangen **"SeqScreen: a biocuration platform for robust taxonomic and biological process characterization of nucleic acid sequences of interest"** International Conference on Bioinformatics and Biomedicine. November 2019

D. Albin, T. J. Treangen **"Meta-metagenomics: 3 minutes in the life of a microbe hunter"** (3-minute fast pitch) Rice Annual SynBio Hangout. May 2019

D. Albin *"**Using soybean VIGS as a functional genomics tool in common bean**"* George Washington Carver Research Symposium. Iowa State University. Ames, IA. August 2015

D. Albin "*Global analysis of gene regulation in human myeloma cells: understanding the role of the transcription factor Ikaros*" McNair's National Conference. University of California, Berkeley. Berkeley, CA. August 2015

Poster Presentations
D. Albin, Dan Nasko, Jacob Lu, Ryan Leo Elworth, Advait Balaji, Gene Godbold, Krista Ternus, Todd Treangen "**Computational Techniques for Sensitive and Accurate Threat Screening of Oligonucleotides**" Rice Data Science Conference, October 15, 2019

D. Albin, Dan Nasko, Jacob Lu, Ryan Leo Elworth, Advait Balaji, Gene Godbold, Krista Ternus, Todd Treangen "**SeqScreen: A Biocuration Platform for Robust Taxonomic and Biological Process Characterization of Nucliec Acid Sequences of Interest**" Keck Annual Research Conference (Rice University), October 11, 2019

D. Albin, T. Pavelitz, M. Shortridge, G. Varani "**Computational Modeling the 3D structure of Cyrano (OIP5-AS1)**" UW Undergraduate Research Symposium (NIH-PREP), May 18, 2018

D. Albin, P. Burns, J. Haughian "**Histological Analysis of the FP receptor in the Bovine Corpus Luteum**" UNC Research Day. University of Northern Colorado. Greeley, CO. April 9, 2017

D. Albin, L. Lincoln, J. Perez, M. Gonzales, M.A. Graham, J.A. O'Rourke **"Using Soybean VIGS as a functional genomics tool in common bean"** Association of Biomolecular Research Facilities. San Diego, CA. March 19-25, 2017

D. Albin, L. Lincoln, J. Perez, M. Gonzales, M.A. Graham, J.A. O'Rourke **"Using Soybean VIGS as a functional genomics tool in common bean"** Annual Biomedical Research Conference for Minority Students. Tampa, FL. November 9-12, 2016

D. Albin, L. Lincoln, J. Perez, M. Gonzales, M.A. Graham, J.A. O'Rourke **"Using Soybean VIGS as a functional genomics tool in common bean"** Society for Advancement of Chicanos/Hispanics and Native Americans in Science. Los Angeles, CA. November 9-12, 2016

D. Albin, S. Frietze "**Global analysis of gene regulation in human myeloma cells: understanding the role of the transcription factor Ikaros**" UNC Research Day. University of Northern Colorado. Greeley, CO. April 9, 2015

Awards and Honors
- **National Science Foundation Graduate Research Fellowship**   Spring 2018-Current
- **Helmsley Scholarship for Synthetic Biology course at CSHL**   Summer 2018
  $1,885; The Helmsley Charitable Trust
- **"The Dean's Prize"**   Fall 2018
  $10,000; Deans of Graduate Studies, Rice University
- **Dean's Honor Roll at The University of Northern Colorado** (GPA > 3.5+)   2016-2017

- **ABRCMS ABRF Best Poster Award**
  Spring 2017
- **FASEB DREAM Mentored Travel Award**
  Spring 2017
- **Undergraduate Academic Scholar Award (Department of Chemistry and Biochemistry)**
  Spring 2017
- **Research Grant Funding**   Fall 2016
  $750, Office of Undergraduate Research, UNC
- **Annual Biomedical Research Conference for Minority Students**   Fall 2016
  ~$800, Travel Award
- **Society for Advancement of Chicanos/Hispanics and Native Americans in Science**
  ~$500, Travel Award   Fall 2016
- **Research Grant Funding**   Summer 2016
  $250, Office of Undergraduate Research, UNC
- **Society for Advancement of Chicanos/Hispanics and Native Americans in Science**
  ~$500, Travel Award   Fall 2015
- **Student Senate Award Travel Award**   Fall 2015
  $250, The University of New Mexico
- **Research Grant Funding and Stipend**   Spring 2015
  $1000, Office of Undergraduate Research, UNC
- **McNair's Scholarship**   Spring 2014
- **Dean's Honor Roll at The University of Northern Colorado** (3.5+)   2012-2013
- **First year scholar at The University of Northern Colorado**   Spring 2012

Other Conferences Attended

ABRCMS   Fall 2017
Phoenix, Arizona
Mathematical Association of America, Regional Conference   Fall 2016
Denver, Colorado
Midwest American Chemical Society Conference   Fall 2014
Colorado State University