

Daniel Barrett Whitefield

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PhD in Biomedical Engineering with focuses in live cell imaging, image analysis, DNA damage and repair, cellular rheology, and epigenetic changes during viral infection

Education:

PhD Biomedical Engineering Aug 2015 – July 2021
Carnegie Mellon University, Pittsburgh, PA QPA: 3.77

Thesis: Chromatin Mechanics: Starting Local, Going Global
Research Advisor: Prof. Kris Noel Dahl
BiRM NIH T32 Fellow: May 2018 - July 2021

BS Biology, **BS** Chemistry, **BS** Mathematics Aug 2009 – May 2015
Lubbock Christian University, Lubbock, TX GPA: 4.0

ARCS Scholar: Fall 2013 – Spring 2014

Experience:

- **Postdoctoral Researcher**, Texas A&M University, College Station, TX: August 2021 - Present
- **Doctoral Researcher**, Carnegie Mellon University, Pittsburgh, PA: November 2015 – July 2021
- **Lab Technician**, Biochemical Research Lab, Lubbock Christian University, Lubbock, TX: May 2014 – July 2015
- **FDA Intern**, Internship with Food and Drug Administration Center for Veterinary Medicine, Laurel, MD: Summer 2013
- **TWC Intern**, The Washington Center (TWC) for Internship and Academic Seminars, Washington, DC: Summer 2013
- **Lab assistant**, General and Organic Chemistry Lab and Engineering Physics Lab, Lubbock Christian University, Lubbock, TX: 2012 – 2015
- **Academic Tutor**, Calculus, Physics, Organic Chemistry, Biochemistry, General Chemistry, Physical Chemistry, and Algebra, Lubbock Christian University Center for Academic Achievement, Lubbock, TX: 2011 – 2015

Skills:

- **Imaging:** Fixed-Cell and Live-Cell fluorescence imaging, multi-position time-lapse imaging
- **Image Analysis:** Leica Image Acquisition Software, ImageJ, MATLAB alignment and particle tracking for microrheology
- **Tissue Culture:** Culture of Vero, human breast cancer cell lines, primary human cells, HeLa, and other epithelial cell lines; Viral transformation, plasmid transfection, drug treatments, and drug screens
- **Viral Culture:** Amplification, plaque assays, titer and quantification, infection
- **Recombinant DNA:** Amplification, purification, quantification
- Electrophoresis, Western blotting, Gas Chromatography, qRT-PCR Arrays

Conference Posters and Presentations

- **Presentation: Lubbock Christian University Scholars Colloquium**, Lubbock, TX, April 22, 2022 – “Improving Gene Drive Efficiency by Knockout of Non-Homologous End Joining in *Aedes aegypti*”
- **Presentation: Lubbock Christian University Scholars Colloquium**, Lubbock, TX, April 21, 2022 – “Engineering Mosquitos to Suck Less”
- **Poster: McGowan Institute Scientific Retreat**, Oglebay, WV, March 9, 2020 – “Viral Control Over Host Nuclear Architecture”
- **Presentation: Christian Scholars Conference**, Lubbock, TX, June 7, 2019 – “Chromatin Mechanical Response to A Variety of Clinically Relevant Stimuli”
- **Poster: Christian Scholars Conference**, Lubbock, TX, June 6, 2019 – “Mechanical Response of Chromatin to DNA Damage”
- **Poster: McGowan Institute Scientific Retreat**, Pittsburgh, PA, March 12, 2019 – “Mechanical Response of Chromatin to DNA Damage”
- **Poster: ASCB/EMBO**, San Diego, CA, December 8, 2018 – “Mechanical Response of Chromatin to DNA Damage”
- **Poster: AIChE**, Pittsburgh, PA, November 1, 2018 – “Mechanical Response of Chromatin to DNA Damage”
- **Poster: CBME**, January 2018 – “Site-Specific Mechanical Response of Chromatin to DNA Damage” presented by Kris Dahl, Ph. D.

Papers:

MM Nava, YA Miroshnikova, LC Biggs, **DB Whitefield** ... KN Dahl, SA Wickström
Cell 2020 May 14;181(4):800-817.e22. doi: 10.1016/j.cell.2020.03.052.

“Heterochromatin-Driven Nuclear Softening Protects the Genome against Mechanical Stress-Induced Damage”

DB Whitefield, ST Spagnol, TJ Armiger, L Lan, KN Dahl

Scientific Reports 2018 Dec 27;8(1):18084. doi: 10.1038/s41598-018-36343-x.

“Quantifying site-specific chromatin mechanics and DNA damage response”

Honors/Awards:

- Robert Lee Johnson Memorial Travel Stipend: Summer 2019
- ARCS Scholar: Fall 2013 – Spring 2014
- American Chemistry Society Award: Spring 2013
- President’s List: Fall 2010 – Spring 2015
- AX Honor Society: Fall 2010
- Top freshman Chemistry student: Spring 2010
- Honors program at Lubbock Christian University: Fall 2009 – Spring 2015

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Leadership/Volunteer Work:

- Student Researcher Representative on the Laboratory Safety Committee at Carnegie Mellon University – Fall 2017 – Spring 2021
- President of Kyodai Men's Social Club: Fall 2013 – Spring 2014
- Treasurer of Kyodai Men's Social Club: Fall 2010 – Spring 2013
- Mission Trips to Ukraine with Praise Choir and through Eastern European Mission