

Samuel Charles Fehling, PhD

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Education

University of Alabama at Birmingham (UAB)
Doctor of Philosophy in Biomedical Sciences / Cancer Biology

2014 – 2019 📍 Birmingham, AL
GPA: 3.69/4.00

University of Wisconsin – Eau Claire (UWEC)
Bachelor of Science in Biochemistry & Molecular Biology

2010 – 2014 📍 Eau Claire, WI
GPA: 3.41/4.00

Work Experience

BioCryst Pharmaceuticals Inc.

Sr. Research Biologist

July 2025 – Present

- Designed, optimized and qualified pharmacodynamic assays to quantify total and free therapeutic target levels using the Gyrolab xPlore ELISA for non-human primate (NHP) studies, authoring validation reports.
- Accelerated preclinical development of biologic therapeutics by screening antibody candidates and generating data packages, figures and study reports to support IND-enabling studies.
- Performed surface plasmon resonance (SPR) assays on the Biacore T200 utilizing Protein A and CM5 chips to evaluate binding kinetics and cross-reactivity for antibody therapeutics.

Research Biologist

December 2022 – July 2025

- Screened and characterized the efficacy and mechanism of action of thousands of small-molecule therapeutics and antibody candidates using high-throughput cell-based and cell-free *in vitro* assays to support medicinal chemistry and protein science pipelines.
- Evaluated *in vivo* pharmacodynamic biomarkers in rodent and NHP studies by analyzing plasma samples to quantify total and free protein expression levels to support efficacy and safety assessments.

BioGX Inc.

Research and Development Scientist

February 2020 – December 2022

- Developed 30+ direct-addition PCR assays for custom and FDA EUA-approved diagnostics, executing developments and IQ/OQ/PQ qualifications on BD MAX, QuantStudio, Bio-Rad and ABI 7500 platforms.
- Utilized data modeling and QC risk assessments to validate outgoing products, guide design decisions and train technical personnel.

University of Alabama at Birmingham (UAB)

Graduate Research Assistant

August 2014 – December 2019

- Discovered synergistic drug combination therapies for cholangiocarcinoma by evaluating small-molecule BET bromodomain inhibitors that downregulated c-Myc and Chk1.
- Conducted preclinical *in vivo* oncology studies using athymic nude and C57BL/6 mice, managing oral gavage, intraperitoneal (IP) injections and patient-derived xenograft (PDX) efficacy studies.
- Developed primary and drug-resistant cancer models (*in vitro* and PDX *in vivo*) to investigate therapeutic resistance mechanisms and identify translational biomarkers of drug response.

Research Experience

Collaborative Undergraduate Research

“Molecular Dynamic Simulations and *In Silico* Mutations for the Identification of Amino Acid Residues that Promote Dynamical Coupling between Domains in *Aminoacyl*-tRNA Synthetase” with Dr. Sudeep Bhattacharyay and Dr. Sanchita Hati at the University of Wisconsin – Eau Claire (UWEC). Summer 2013 - 2015. *Study the effect of site-directed mutagenesis on the collective dynamics of E. coli methionyl- and prolyl-tRNA synthetases.*

"Molecular Dynamics Simulations and Principal Component Analysis for Classification of Proteins Based on their Intrinsic Dynamics" with Dr. Sudeep Bhattacharyay and Dr. Sanchita Hati at the University of Wisconsin – Eau Claire (UWEC). Summer 2013 - 2015. *Long-time scale simulations are being carried out to explore if the substrate specificity of proteins are related to their intrinsic dynamics.*

Publications *Denotes Undergraduate Collaboration

Aubrey L Miller, **Samuel C Fehling**, Rebecca B Vance, Dongquan Chen, Eric Josh Brown, M Iqbal Hossain, Eric O Heard, Shaida Andrabi, Hengbin Wang, Eddy S Yang, Donald J Buchsbaum, Robert CAM van Waardenburg, Susan L Bellis, Karina J Yoon. *"BET Inhibition Decreases HMGCS2 and Sensitizes Resistant Pancreatic Tumors to Gemcitabine."* Cancer Letters. 2024 June 28. (PMID: 38704133)

Aubrey L. Miller, Patrick L. Garcia, **Samuel C. Fehling**, Tracy L. Gamblin, Rebecca B. Vance, Leona N. Council, Dongquan Chen, Eddy S. Yang, Robert CAM van Waardenburg, Karina J. Yoon. *"The BET Inhibitor JQ1 Augments the Antitumor Efficacy of Gemcitabine in Preclinical Models of Pancreatic Cancer."* Cancers. 2021 July 11. (PMCID: PMC8303731)

Samuel C. Fehling, Aubrey L. Miller, Patrick L. Garcia, Rebecca B. Vance, Karina J. Yoon. *"The Combination of BET and PARP Inhibitors is Synergistic in Models of Cholangiocarcinoma."* Cancer Letters. 2019 October 9. (PMCID: PMC7017643)

Miller AL, **Fehling SC**, Garcia PL, Gamblin TL, Council LN, van Waardenburg RCAM, Yang ES, Bradner JE, Yoon KJ. *"The BET Inhibitor JQ1 Attenuates Double Strand Break Repair and Sensitizes Models of Pancreatic Ductal Adenocarcinoma to PARP Inhibitors"*. EBioMedicine. 2019 June. (PMCID: PMC6604668)

Kreitzburg KM, **Fehling SC**, Landen CN, Gamblin TL, Vance RB, Arend RC, Katre AA, Oliver PG, van Waardenburg RCAM, Alvarez RD, Yoon KJ. *"FTY720 Enhances the Anti-Tumor Activity of Carboplatin and Tamoxifen in a Patient-Derived Xenograft Model of Ovarian Cancer"*. Cancer Letters. 2018 August 15(18): 30527-5. (PMCID: PMC6756795)

Meares GP, Rajbhandari R, Gerigk M, Tien CL, Chang C, **Fehling SC**, Rowse A, Mulhern KC, Nair S, Gray GK, Berbari NF, Bredel M, Benveniste EN, Nozell SE. *"MicroRNA-31 is Required for Astrocyte Specification"*. Glia. 2018 May, 66(5): 987-998. (PMCID: PMC5851835)

Fehling SC*, Strom AM*, Lehman BP*, Andrews RJ*, Bhattacharyya S, Hati S. *"A Comparative Study of All-atom Molecular Dynamics Simulation and Coarse-Grained Normal Mode Analysis in Identifying Pre-Existing Residue Interaction Networks that Promote Coupled-Domain Dynamics in Escherichia coli Methionyl-tRNA Synthetase"*. American Journal of Undergraduate Research. 2017 June; 14(2): 27-44

McFarland BC, Marks MP, Rowse AL, **Fehling SC**, Gerigk M, Qin H, Benveniste EN. *"Loss of SOCS3 in Myeloid Cells Prolongs Survival in a Syngeneic Model of Glioma"*. Oncotarget. 2016 April 12; 7(15): 20621-35. (PMCID: PMC4991480)

Rajbhandari R, McFarland BC, Patel A, Gerigk M, Gray GK, **Fehling SC**, Bredel M, Berbari NF, Kim H, Marks MP, Meares GP, Sinha T, Chuang J, Benveniste EN, Nozell SE. *"Loss of Tumor Suppressive microRNA-31 Enhances TRADD/NF- κ B Signaling in Glioblastoma"*. Oncotarget. 2015 July 10; 6(19): 17805-16. (PMCID: PMC4627347)

Dorner ME*, McMunn RD*, Bartholow TG*, Calhoon BE*, Conlon MR*, Dulli JM*, **Fehling SC***, Fisher CR*, Hodgson SW*, Keenan SW*, Kruger AN*, Mabin JW*, Mazula DL*, Monte CA*, Olthafer AG*, Sexton AE*, Soderholm BR*, Strom AM*, Hati S. "Comparison of Intrinsic Dynamics of Cytochrome p450 Proteins Using Normal Mode Analysis". Protein Science. 2015 September; 24(9): 1495-507. (PMCID: PMC4570543)

Strom AM*, **Fehling SC***, Bhattacharyya S, Hati S. "Probing the Global and Local Dynamics of Aminoacyl-tRNA Synthetases using All-Atom and Coarse-Grained Simulations". Journal of Molecular Modeling. 2014 May; 20(5): 2245 (PMCID: PMC4030129)

National and Regional Presentations **Denotes Undergraduate Collaboration*

Samuel C. Fehling, Aubrey L. Miller, Patrick L. Garcia, Karina J. Yoon. *BET Inhibition Sensitizes Cholangiocarcinoma Cells to PARP Inhibition*. Oral presentation. UAB Department of Pharmacology and Toxicology Seminar. Birmingham, AL. April 25, 2019.

Samuel C. Fehling, Aubrey L. Miller, Karina J. Yoon. *JQ1 Induces Cell Death and Disrupts BET Protein Binding to the MYC Locus in Cholangiocarcinoma Cells*. Poster. Abstract #6299. American Association for Cancer Research. Atlanta, GA. March 30 – April 3, 2019.

Samuel C. Fehling, Aubrey L. Miller, Rebecca B. Vance, James E. Bradner, Karina J. Yoon. *The BET Inhibitor JQ1 Sensitizes Cholangiocarcinoma Cells to PARP Inhibitors*. Oral presentation. Comprehensive Cancer Center Trainee Research Seminar. Birmingham, AL. December 5, 2018.

Samuel C. Fehling, Aubrey L. Miller, James E. Bradner, Karina J. Yoon. *The BET Inhibitor JQ1 Sensitizes Cholangiocarcinoma Cells to PARP Inhibitors*. Poster. Abstract #313. Comprehensive Cancer Center Retreat. Birmingham, AL. November 16, 2018.

Samuel C. Fehling, Aubrey L. Miller, James E. Bradner, Karina J. Yoon. *The BET Inhibitor JQ1 Sensitizes Cholangiocarcinoma Cells to PARP Inhibitors*. Poster. Abstract #5824. American Association for Cancer Research. Chicago, IL. April 14 – 18, 2018.

Samuel Fehling, Aubrey Miller, Patrick Garcia, Tracy Gamblin and Karina Yoon. *BET Bromodomain Inhibition as an Approach for Treatment of Gemcitabine Resistant Cholangiocarcinoma*. Poster #324. Comprehensive Cancer Center Retreat. Birmingham, AL. October 30th, 2017.

Samuel C. Fehling, Aubrey L. Miller, Patrick L. Garcia, Karina J. Yoon. *BET Bromodomain Inhibition as an Approach for Treatment of Cholangiocarcinoma*. Oral presentation. UAB Department of Pharmacology and Toxicology Seminar. Birmingham, AL. October 12, 2018.

Samuel C. Fehling, Kory J. Dees, Braden C. McFarland and Etty N. Benveniste. *Evaluating the Therapeutic Efficacy of FDA-Approved Ruxolitinib for the Treatment of Glioblastoma*. Poster #318. Comprehensive Cancer Center Retreat. Birmingham, AL. October 17th, 2016.

Samuel C. Fehling, Braden C. McFarland, Etty N. Benveniste. *Ruxolitinib Inhibits STAT3 Activation in Glioma*. Oral presentation. Brain Tumor Research in Progress. Birmingham, AL. July 22nd, 2016.

Samuel C. Fehling, Braden C. McFarland, Etty N. Benveniste. *Ruxolitinib Inhibits STAT-3 Activation in Glioblastoma*. Poster. Abstract #3861. American Association for Cancer Research. New Orleans, LA. April 16 – 20, 2016.

Samuel Fehling, Braden McFarland, ETTY Benveniste. *Ruxolitinib Inhibits STAT-3 Activation in Glioblastoma*. Poster. Cellular, Developmental and Integrative Biology Retreat. Lake Guntersville, AL. September 18th, 2015.

Samuel Fehling*, Alexander Strom*, Dr. Sudeep Bhattacharyya, Dr. Sanchita Hati. *Principal Component Analysis to Explore Transition Pathway of the Conformational Change in E. Faecalis Prolyl – tRNA Synthetase upon Substrate Binding*. Poster. Celebration of Excellence in Research and Creative Activity. Office of Research and Sponsored Programs. Eau Claire, WI. May 2, 2014.

Samuel Fehling*, Alexander Strom*, Dr. Sudeep Bhattacharyya, Dr. Sanchita Hati. *Application of Statistical – Thermal Coupling Analysis to Identify Residue – Residue Interaction Networks that Facilitate Coupled – Domain Dynamics in E. coli Methionyl–tRNA Synthetase*. Poster 12C. National Conference on Undergraduate Research. Office of Research and Sponsored Programs. Lexington, Kentucky. April 3 – 5, 2014.

Samuel Fehling*, Alexander Strom*, Dr. Sudeep Bhattacharyya, Dr. Sanchita Hati. *Application of Statistical – Thermal Coupling Analysis to Identify Residue – Residue Interaction Networks that Facilitate Coupled – Domain Dynamics in E. coli Methionyl–tRNA Synthetase*. Poster 23. MERCURY Education and Research Consortium. Office of Research and Sponsored Programs. Pennsylvania. July 25 – 27, 2013.

Grants, Scholarships and Awards

Grants

- “Molecular Dynamic Simulations and Mutational Studies to Explore the Role of Transfer RNA in Prolyl-tRNA Synthetase Allostery” with Dr. Sudeep Bhattacharyya and Dr. Sanchita Hati. Office of Research and Sponsored Programs, UWEC, Spring 2013 (**\$2,000 awarded**)
- “Continued Effort to Explore the Role of Transfer RNA in Prolyl-tRNA Synthetase Allostery using Molecular Dynamic Simulations and Mutational Studies” with Dr. Sudeep Bhattacharyya and Dr. Sanchita Hati. Office of Research and Sponsored Programs, UWEC, Fall 2013 (**\$2,300 awarded**)
- NIH Grant # 5T32NS048039-08 T32 Brain Tumor Training Grant, July 2015 to November 2016

Scholarships and Awards

- Recipient of academic distinction: Fall 2010, Fall 2011, Spring 2012, Fall 2012, Spring 2013
- College of Arts and Sciences Dean’s List: Spring 2014
- Graduation Distinction: Cum Laude, 2014

Travel Awards

- Bertram Marx Student Research Endowment: Spring 2016 and Spring 2018
- Amanda Layne Isom Travel Award: Spring 2018

Memberships and Distinctions

UWEC Biology Club – Member (2012 – 2014), Treasurer (2013 – 2014)

UWEC Molecular Movement – Member (2012 – 2014), Treasurer (2013 – 2014)

American Association for Cancer Research (AACR) – Member (2015 – Present)

Outreach and Service

University of Alabama at Birmingham Cancer Biology Newsletter

Editorial Board: Fall 2015 to Winter 2019

University of Alabama at Birmingham Cancer Biology Student Seminar

Co-Organizer: Summer 2016 to Summer 2017

University of Alabama at Birmingham Graduate Career Awareness and Trends (GCAT)

Communications Director: Summer 2018 to Winter 2019