
Kristen Holbrook

kholbrook@chem.ucla.edu

Qualifications Summary

Biochemistry/Cell Biology Ph.D. (Summer 2016) with versatile research and experimental experience. Diverse technical skillset with a proven ability to manage challenging research projects in demanding environments. Strategist able to identify key issues, make critical decisions and see projects through independently or as part of a collaborative team. Excellent communication skills; able to translate complicated scientific concepts into basic terms.

Technical Skills and Knowledge

Biochemistry:	Recombinant protein expression (<i>P. pastoris</i> , <i>S. frugiperda</i> (SF9), <i>E. coli</i>); isotopic labeling; protein purification; column chromatography; protein characterization (including SDS-PAGE; immunoblotting, crosslinking, Co-immunoprecipitation); enzyme kinetics (GTPase experiments: γ - ³² P-Labeled GTP); protein import kinetics (radioactive protein import assays) inductively coupled plasma mass spectrometry (ICP-MS) elemental analysis
Molecular Biology:	Site directed mutagenesis techniques; DNA manipulation techniques (including oligonucleotide design, vector ligations, cloning, subcloning); polymerase chain reaction techniques
Microscopy:	Cell imaging: confocal microscopy (Zeiss Airyscan 880 LSCM, Zeiss ELYRA superresolution (SIM, PALM, dSTORM), Leica SP8)
Tissue Culture:	Mammalian cell lines (CHO, TREX CHO, HEK293, HeLa, BHK21); Transfections and dual transfections with DNA and siRNA; Transient and stably transfected cell lines; biolistic transformations; Agrobacterium-mediated plant transformation; <i>Chlamydomonas reinhardtii</i> culturing: defined media, metal free preparations
Computer Skills:	Microsoft Office Suite, Adobe Illustrator and Photoshop, ImageJ, Zeiss ZEN, NIS elements, Leica LASX, OpenLab, GraphPad Prism, DNASTar

Education and Experience

Amgen (9/2018-present)

Scientist, Comparative Biology and Safety Sciences

- (1) Worked with multidisciplinary teams to design and manage a wide array of exploratory and regulatory toxicology studies
- (2) Development and implementation of nonclinical toxicology and safety strategy for early lead discovery through clinical targets

University of California, Los Angeles (11/2016-9/2018)

Postdoctoral scholar

- (1) Led a project to develop novel strategies to image the dynamics and physiological response of metal uptake and sequestration using high resolution confocal microscopy techniques
- (2) Designed and executed analytic techniques to characterize *Chlamydomonas reinhardtii* mutants deficient in copper and zinc uptake to dissect metabolic pathways and regulation mechanisms.

University of Tennessee, Knoxville (5/2012-7/2016)

Ph.D. candidate

- (1) Worked as part of a multidisciplinary team investigating underlying subcellular protein localization. Study combined both *in vivo*, *in organello* and *in vitro* biochemistry to investigate organelle function

(2) Developed and improved transient protein expression techniques using the primary reference organism for *in organello* chloroplast localization assays, *Pisum sativum*.

University of Tennessee, Knoxville (8/2008-5/2012)

M.S. student

Designed novel research into the mechanistic details of the neurological disorder DYT1 dystonia; direct contribution to the understanding of the disease mechanism and the development of new therapeutics.

Other Experience

Co-Instructor at Cal State LA, Physiology (Biology 4330) (Fall 2017-present)

Lectured classes of 30+ students in human physiology; integrated modern teaching techniques to improve student learning and participation

Lecturer and Teaching Assistant at University of Tennessee, Cell Biology (BCMB 311) (2013-2016)

Guest lecturer: classes of 80+ students in advanced cell biology; graded papers and provided discussion and review sessions

Publications

- 1) *Tsednee, M., *Castruita, M., *Salome, P., Sharma, A., Lewis, B.E., Schmollinger S., **Holbrook, K.**, Otegui, M., Khatua, K., Das, S., Datta, A., Chen, S., Ramon, C., Ralle, M., Weber, P.K., Stemmler, T., Pett-Ridge, J., Hoffman, B. M., Merchant, S. (2019) Hyper-accumulated Mn, co-localized in acidocalcisomes with Ca and P, can be mobilized in Mn-deficient situations. Under Review. *Denotes equal authorship contribution
- 2) *Chotewutmontri, P., **Holbrook, K.** and Bruce, B.D. (2017) Plastid protein recognition and import. International Review of Cell and Molecular Biology. 330: 227-294. *Denotes equal authorship contribution.
- 3) **Holbrook, K.**, Subramanian, C., Chotewutmontri, P., Reddick, L.E., Wright, S., Zhang, H., Moncrief, L. and Bruce, B.D. (2016) Functional analysis of semi-conserved transit peptide motifs and implications in chloroplast protein import. Molecular Plant. 9(9): 1286-1301.
- 4) Goodchild, R.E., Buchwalter, A., Naismith, T., **Holbrook, K.**, Billion, K., Dear, M.L. and Hanson, P. (2015) Access of torsinA to the inner nuclear membrane is regulated in the endoplasmic reticulum and cytosol. Journal of Cell Science. 128: 2854-2865.
- 5) Jungwirth, M., Dear, M.L., Brown, P.B., **Holbrook, K.**, and Goodchild, R.E. (2010) Relative tissue expression of homologous torsins can explain the neuronal specific importance of DYT1-dystonia associated torsinA. Human Molecular Genetics 5: 888-900.
- 6) Albright, S., Chen, B., **Holbrook, K.**, and Jain, N. (2008) Solution NMR studies provide structural basis for endotoxin pattern recognition by the innate immune receptor CD14. Biochemical and Biophysical Research Communications. 368(2): 231-237.

Selected Presentations

Poster, ASPB National Conference, Honolulu, HI (Summer 2017)

Poster, DOE Genomic Sciences Principal Investigators Meeting, Washington, DC (Winter 2017)

Selected Speaker, ASPB National Conference, Chloroplast minisymposium, Portland, OR (Summer 2014)

Speaker, 22nd Western Photosynthesis Conference, Pacific Grove, CA (Beverly Green Young Investigator Award for Best Presentation) (Winter 2013)

Selected Honors

NIH Institutional Research and Academic Career Development Award (IRACDA) Fellowship (Fall 2017)

Carolyn W. Fite Research Fellowship (University of Tennessee – Spring 2016)

Biology Division Science Award (University of Tennessee – Spring 2015)

SARIF Summer Graduate Research Assistantship (University of Tennessee – Summer 2013)