

Knowledgeable, driven, hands-on scientist with 7+ years of successful bench research experience obtained through calculated time management. Professional, creative and resourceful. Excellent personal and presentation skills with expertise in a wide array of areas in and surrounding recombinant protein evolution utilizing phage and yeast display technology as well as downstream biochemical and biophysical characterization.

Work Experience

Senior Scientist I LakePharma, Inc

**2020 – 2021
San Carlos, CA**

- Scientific lead for various affinity reagent discovery/maturation projects using directed evolution (phage and yeast display); including, but not limited to, the design, construction, selection and screening of libraries from *in vitro* and *in vivo* sources, and per clients detailed instructions.
- Experienced user and method + workflow developer on the Carterra LSA biosensor (HT-SPR) for standalone clients biophysical characterization (i.e., kinetics and binning) projects.
- Effectively managed the design and presentation of scientific reports with internal teams.

Research Scientist

Wyss Institute for Biologically Inspired Engineering at Harvard Univ.

**2016 – 2019
Boston, MA**

- Independently led the establishment of the phage display core facility for drug/diagnostic development by designing, building and implementing various naive and matured, peptide and hFab phagemid-based libraries, including all associated SOPs + materials.
- Led all efforts in matured library design, creation, selection and screening strategy to identify leads to a small molecule targeting scFv biologic for use in a multiplexed anaphylaxis diagnostic.
- Led the design, creation, selection and screening efforts for multiple matured/secondary libraries based on previously identified peptide-based, transcytotic leads for the Gut-on-chip platform.
- Led the design and implementation of high-throughput, automated, in-solution target-based selection and screening protocols on a Thermo Kingfisher FLEX instrument.

Technical Manager

Aviva Systems Biology

**2012 – 2015
San Diego, CA**

- Head of internal antibody QA/QC, external antibody development lead and WB services lab manager.
- Bioinformatic software design lead; integrating publicly available gene expression data into internal antibody QA/QC (Tissue Tool) and an internal BLAST algorithm/antibody finder (BLAST Tool).
- Lead Technical Support provider for catalogue of >100,000 products from >20 OEMs.

Postdoctoral Research Associate

Brian Kay Lab at University of Illinois

**2009 – 2011
Chicago, IL**

- Utilized phage display to identify and affinity mature scFv's to peptide biomarkers for a diagnostic.
- Constructed large secondary/matured libraries via chain-shuffling and random mutagenesis.
- Led conversion from scFv to Fab, scFv-Fc, IgG; for bacteria, yeast and mammalian expression.
- Led downstream purification + characterization efforts of various affinity chromatography methods (HIS, FLAG, GST) and specificity (ELISA, WB, IHC) and affinity constants determination (SRU Biosensor).

Education

Certified Food Scientist, 8/13, Institute of Food Technologists; Chicago, IL

Ph.D., 8/08 Biochemistry; University of Illinois, Urbana-Champaign; Advisor: David J. Shapiro

Thesis: '*Estrogen Inducible Proteinase Inhibitor 9 Protects Target Cells from Immune Surveillance and Apoptosis.*'

B.A., 12/98 Molecular and Cell Biology (emphasis Immunology); University of California, Berkeley

Publications

- Kierny MR, Cunningham TD, Bouhenni RA, Edward DP, Kay BK., "Generating Recombinant Antibodies against Putative Biomarkers of Retinal Injury," PLoS One, 10 (4); Apr 22 (2015).
- Kierny MR, Cunningham TD, Kay BK., "Detection of biomarkers using recombinant antibodies coupled to nanostructured platforms," Nano Rev, Vol.3 (2012).
- Patterson N, Cunningham TD, Jiang X, Shapiro DJ., "A DELFIA® time-resolved fluorescence cell-mediated cytotoxicity assay performed on the PHERAstar," BMG Labs (2009).
- Cunningham TD, Jiang X, Shapiro DJ., "Expression of high levels of human proteinase inhibitor 9 blocks both perforin/granzyme and Fas/Fas ligand-mediated cytotoxicity," Cell. Immun., Jan;245(1):32-41 (2007).
- Asher O, Cunningham TD, Yao L, Gordon AS, Diamond I., "Ethanol stimulates cAMP-responsive element (CRE)-mediated transcription via CRE-binding protein and cAMP-dependent protein kinase," J Pharmacol Exp Ther., Apr;301 (1):66-70 (2002).

Patents

Cunningham, T, Ingber, D, Jolly, P, and Watters, A. Histamine Binding Polypeptides and Uses Thereof. US Provisional Application No. 63/048,352, filed July 6, 2021.
