ALISON BARRETT, PH.D. CHEMISTRY

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SKILLS

- Protein Biochemistry
  - Protein expression
  - Protein purification
  - AKTA FPLC
  - Molecular cloning
  - PROTAC development
  - Isothermal titration calorimetry
  - Structure prediction
  - X-ray crystallography
  - Synthetic chemistry (click chemistry)
- Cell culture
  - Cancer cell lines
  - Transformed cell lines
  - CRISPR
  - Stable cell line creation
  - Differentiation
  - siRNA
- Assay development
  - SOP creation
  - Fragment-based screening
  - Chromatin immunoprecipitation
  - Western blot
  - Immunoassays
  - qPCR
  - Luciferase
  - Enzyme assays
  - FACS
  - Drug screening
- Data Analysis
  - Python
  - PRISM
  - Excel
  - Chimera
  - Jupyter
  - ImageJ
  - FlowJo

WORK EXPERIENCE

Rubin Lab, UCSC, graduate research

- Created unique method of PROTAC technologies for cancer treatment using entirely DNA-encodable peptide PROTACs
- Engineered 200+ PROTAC library for degradation of an oncogenic transcription factor - developed novel luciferase and FACS based protein degradation assays
- Disproved age-old speculations regarding the role of histone deacetylases in cell-cycle regulation by performing a robust set of experiments against a panel of mammalian cell-lines
- Trained and managed a productive and happy team of three undergraduate students, who are now successfully employed at biotech start-ups and scientific non-profits
- Lead fruitful collaborations across interdisciplinary departments, academic institutions, and industry
- Successfully received a 3.5-year fellowship (TRDRP) and additional $250,000 grant (ALSF)

Sgourakis Lab, UCSC, undergraduate research

- Developed new functionality for the Rosetta software suite (AutoNOE/CS-Rosetta)
- Directly advised on new NEF (NMR Exchange Format) standards, and ultimately contributed code to the NEF Github

EDUCATION

- UCSC - PhD Chemistry 09/2016-03/2023
- UCSC – B.S. Biochemistry and Molecular Biology – Minor in Bioinformatics 09/2013–06/2016

PUBLICATIONS

Barrett AK, Rubin SM. Heavy metal in cancer: The cell cycle jams with arsenic. Cell Cycle. 2017 Sep 17; PMID: 28820326

Barrett AK. The role of HDAC complexes in cell-cycle gene repression. https://www.proquest.com/docview/2812351573

In submission: Barrett AK, …, Müller AG. HDAC activity is not essential for cell-cycle gene regulation. 2023