Siying Li

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EDUCATION

- **Columbia University, New York, NY** **Sep 2019 – Present**
  Master of Science in **Biostatistics**
- **University of California, Davis, CA** **Sep 2015 - Jun 2019**
  Bachelor of Science in **Biochemistry** (annex 1 - course details)
- **Keith Country Day School, Rockford, IL** **Aug 2012 – Jun 2015**
  Senior High School

EXPERIENCES

I have accumulated a lot of knowledge and hands on experiences about genomics and proteomics with guidance from some leading life science professors. I also gained knowledge about high resolution mass spectrometry including hands on operation and data processing using various software at Thermo Fisher.

R&D Senior Intern - Mass spectrometer instrument head quarter
Thermo Fisher Scientific, Co., Ltd. San Jose, CA **Jun 2018-Aug 2018**

- Proficient at Proteome Discoverer, Skyline and Xcalibur software packages
- Learned LC-MS bottom-up proteomics workflows
  - Sample preparation, method setup, data acquisition, processing, troubleshooting
- Helped to carry out and analyzed data from Fusion Lumos and TSQ Quantiva mass spectrometers
- Summarized findings in reports

Research Intern
mProbe. Palo Alto, CA **March 2018**

- Conducted proteomics data analysis for human serum protein quantification using Skyline software
- Practiced R basic programming skill to manipulate large matrix data generated from LC-MS/MS data

Lab Intern at Professor Xu Huaxi's Lab (https://www.sbpdiscovery.org/team/huaxi-xu-phd)
Sanford Burnham Prebys Medical Discovery Institute. San Diego, CA **Jul 2017-Sep 2017**

- Conducted experiments using PCR, western blot, cell culture and confocal
- Read many papers about Alzheimer's Disease and hot topics in scientific field
- Tested protein concentration using Beer's Law

Lab Intern at Professor Deng Haiteng's Lab (http://www.cssb.tsinghua.edu.cn/en/core-staff/item/118-2015-10-22-12-48-05)

Tsinghua University. Beijing, China **Mar, Jul - Aug 2015**

- Carried out sample preparation for understanding biological functions of SIRT3
- Conducted data analysis and generated figures for two scientific papers published in Journal of Proteome Research
    - "SIRT3 Overexpression Inhibits Growth of Kidney Tumor Cells and Enhances Mitochondrial Biogenesis" (https://pubs.acs.org/doi/pdf/10.1021/acs.jproteome.8b00260)
    - "Glutaredoxin Deletion Shortens Chronological Life Span in Saccharomyces cerevisiae via ROS-Mediated Ras/PKA Activation" (https://pubs.acs.org/doi/pdf/10.1021/acs.jproteome.8b00012)

Annex 1 Major Class Details

Biological Science

Cell Biology: Membrane receptors and signal transduction; cell trafficking; cell cycle; cell growth and division; extracellular matrix and cell-cell junctions; cell development; immune system.

Bioenergetics/Metabolism: Carbon, nitrogen, and sulfur cycles in nature; key reactions of biomolecules (carbohydrates, amino acids, lipids, and nucleotides); energy production; use in different types of organisms; principles of metabolic regulation.

Struc-Func Biomolecules: Structure and function of macromolecules - proteins, catalysis, enzyme kinetics, lipids, membranes, and proteins as machines.

Genes & Gene Expression: Nucleic acid structure and function; gene expression and its regulation; replication; transcription and translation; transmission genetics; molecular evolution.

Molecular and Cellular Biology

Macromolecule Structure and Function: An in-depth investigation into protein and nucleic acid structure and thermodynamics and how these properties influence their biological functions. Key examples of important functional classes of these molecules will be examined.

Molecular Biological & Biochemical Lab: Laboratory methods and procedures employed in studying molecular biology and biochemical processes. Use of molecular biology and biochemical techniques as research and analytical tools.

Enzymes and Receptors: Principles of enzyme kinetics and receptor-ligand interactions - metabolic regulation and data analysis. Simultaneous equilibria; chemical and steady-state kinetics; allosteric enzymes; mulitreactant systems; enzyme assays; membrane transport; computer-assisted simulations and analyses.

Advanced Molecular Biology: Structure, expression, and regulation of eukaryotic genes. Chromosome structure and replication; gene structure, transcription, and RNA processing; protein synthesis and translation control; development, immune system, and oncogenes.

Computer Science

Programming: Design and analysis of data structures using Python; trees, heaps, searching, sorting, and graphs.

Discrete Math for CS: Discrete mathematics of particular utility to computer science. proofs by induction; propositional and first-order logic; sets, functions, and relations; Big-O and related notations; recursion and solutions of recurrence relations; combinatorics; probability on finite probability spaces; graph theory.

Organic Chemistry

Stereochemistry, spectroscopy and preparations and reactions of nonaromatic hydrocarbons, haloalkanes, alcohols, ethers. Aromatic hydrocarbons, organometallic compounds, aldehydes and ketones. Preparation, reactions and identification of carboxylic acids and their derivatives, alkyl and acylamines, ß-dicarbonyl compounds, and various classes of naturally occurring, biologically important compounds

Mathematics

Calculus: Functions, limits, continuity. Slope and derivative. Differentiation of algebraic and transcendental functions. Applications to motion, natural growth, graphing, extrema of a function. Differentials. L'Hopital's rule. Definition of definite integral, fundamental theorem of calculus, techniques of integration. Application to area, volume, arc length, average of a function, improper integral, surface of revolution.

Sequences, series, tests for convergence, Taylor expansions. Vector algebra, vector calculus, scalar and vector fields. Partial derivatives, total differentials. Applications to maximum and minimum problems in two or more variables. Applications to physical systems.

Linear Algebra: Matrices and linear transformations, determinants, eigenvalues, eigenvectors, diagonalization, factorization.

Physical Chemistry

Classical and statistical thermodynamics including equilibrium processes and solutions of both non-electrolytes and electrolytes. The thermodynamic basis of electrochemistry and membrane potentials.

Kinetic theory of gases and transport processes in liquids. Chemical kinetics, enzyme kinetics and theories of reaction rates. Quantum theory, atomic and molecular structure, and spectroscopy. Application to problems in the biological sciences.

Statistics

Applied Statistics for Biological Science: Descriptive statistics, probability, sampling distributions, estimation, hypothesis testing, contingency tables, ANOVA, regression; implementation of statistical methods using computer package.