Dillon B. Nye

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SUMMARY OF QUALIFICATIONS

Protein scientist with over five years experience and expertise in:

- Designing, purifying and characterizing enzymes and proteins
- Driving complex research projects to completion and publication
- Collaborating within a multidisciplinary research group to leverage individual skills
- Communicating results to the scientific community (1 award)
- Managing a team to optimize and maintain instrumentation

EDUCATION

Johns Hopkins University Baltimore, MD
PhD, Chemical Biology Expected February 2019
Dissertation: Determinants and consequences of ligand-switching in truncated hemoglobins.

Reed College Portland, OR
BA, Biochemistry and Molecular Biology 2013

RESEARCH EXPERIENCE

Johns Hopkins University Baltimore, MD
Graduate Researcher; Advisor: Juliette Lecomte 2013 - Present
Biophysical investigation of bacterial and algal hemoglobin enzymes

- Rationally engineered pH-dependent ligand-switching properties in a hemoglobin.
- Solved the NMR structure and assessed ligand binding of a novel globin conformation.
- Contributed expertise in protein biophysics and data analysis to diverse projects within the lab.

Reed College Portland, OR
Undergraduate Researcher; Advisor: Arthur Glasfeld 2012 - 2013
Characterization of a virulence-related metalloregulatory protein

- Solved the X-ray structure of a transcription factor to 2.8 Å resolution.
- Determined DNA binding affinity of the protein using fluorescence polarization.

SKILLS AND TECHNIQUES

Protein Purification	*Protein Characterization*	*Computational*
AKTA HPLC	NMR spectroscopy	UNICORN
Affinity, ionic, SEC	X-ray crystallography	NumPy / BioPython
SDS-PAGE	Fluorescence polarization	Mathematica
PCR	Circular dichroism	Chimera / Pymol
Golden gate assembly	UPLC-MS	Bash
Bacterial cell culture	UV-Vis	MS Office

LEADERSHIP AND OUTREACH

Johns Hopkins University Baltimore, MD

Head RA, Biophysical NMR Facility 2016 - 2018

- Trained and supervised 3 – 5 junior scientists to perform liquid helium transfers.
- Managed schedules, maintained records and calibrated and troubleshot spectrometers.
- Interfaced with Bruker and Airgas to ensure optimal instrument performance.

Mentor, Women In Science and Engineering 2018

- Designed a "consensus" hemoglobin using 260 sequences derived from metagenomic data and guided student through characterization.

Mentor, Biophysics Research for Baltimore Teens 2016 – 2017

- Mentored a public high school in purification and NMR study of a globin enzyme for one summer and two semesters.

CONFERENCE PRESENTATIONS

Nye, D. B., Preimesberger, M. P., Majumdar, A., and Lecomte, J. T. J. A histidine-lysine axial ligand switch in a hemoglobin. Poster presentation and flash talk delivered at the Biophysical Society annual meeting, San Francisco, CA, February, 2018. ***Travel grant awardee.***

Nye, D. B., Preimesberger, M. P., Majumdar, A., and Lecomte, J. T. J. A role for the heme propionates in a monomeric hemoglobin. Poster presentation delivered at the Gibbs Conference on Biothermodynamics, Carbondale, IL, October, 2016.

Nye, D. B., Martinez, J., Preimesberger, M. P., Majumdar, A., and Lecomte, J. T. J. A role for the heme propionates in hemoglobins: Dictating the nature of the iron distal ligand. Poster presentation delivered at the Protein Society symposium, Baltimore, MD, July, 2016.

Nye, D. B., Preimesberger, M. P., Kougentakis, C., Rice, S. L., and Lecomte, J. T. J. Heme coordination versatility in a truncated hemoglobin. Poster presentation delivered at the Biophysical Society annual meeting, Baltimore, MD, February, 2015.

PUBLICATIONS

Nye, D. B., Johnson, E. A., Mai, M., and Lecomte, J. T. J. (2019) Axial heme coordination in truncated hemoglobins: the Lys53 variants of *Chlamydomonas reinhardtii* THB1. *In Preparation*.

Nye, D. B. and Lecomte, J. T. J. (2018) Replacement of the distal histidine reveals a non-canonical heme binding site in a 2-on-2 hemoglobin. *Biochemistry 57,* 5785 – 5796.

Johnson, E. A., Russo, M. M., **Nye, D. B.**, Schlessman, J. L., and Lecomte, J. T. J. (2018) Lysine as a heme iron ligand: A property common to three truncated hemoglobins from *Chlamydomonas reinhardtii*. *Biochim. Biophys. Acta 1862*, 2660 – 2673.

Nye, D.B., Preimesberger, M. R., Majumdar, A., and Lecomte, J. T. J. (2018) Histidine-lysine axial ligand switching in a hemoglobin: a role for the heme propionates. *Biochemistry 57*, 631 – 644.

Preimesberger, M. R., Johnson, E. A., **Nye, D. B.**, and Lecomte, J. T. J. (2017) Covalent attachment of the heme to *Synechococcus* hemoglobin alters its reactivity towards nitric oxide. *J. Inorg. Biochem. 177*, 171 – 182.

Spatafora, G., Corbett, J., Cornacchione, L., Daly, W., Galon-Donlo, D., Wysota, M., Tivan, P., Collins, J., **Nye, D. B.**, Levitz, T., Breyer, W. A., and Glasfeld, A. (2015) Interactions of the metalloregulatory protein SloR from *Streptococcus mutans* with its metal ion effectors and DNA binding site. *J. Bacteriol. 197*, 3601 – 3615.

Johnson, E. A., Rice, S. L., Preimesberger, M. R., **Nye, D. B.**, Gilevicius, L., Wenke, B. B., Brown, J. M., Witman, G. B., and Lecomte, J. T. J. (2014) Characterization of THB1, a *Chlamydomonas reinhardtii* truncated hemoglobin: linkage to nitrogen metabolism and identification of lysine as a distal heme ligand. *Biochemistry 53*, 4573 – 4589.