Rich McGhee

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Education

2012-2016   B.S. in Biochemistry, *magna cum laude*
University of Missouri. GPA: 3.74

Technical Skills

- Software - Strong in PHP, Python, Javascript, SQL (MySQL and Postgres), familiar with Dart (Flutter), C, and Swift. Strong in Symfony and ExtJs.
- Biochemistry - PCR, PCR assay optimization, gel electrophoresis, column chromatography, protein dialysis, NIRS, spectrophotometry for quantification of biological molecules, Western blot, gene expression analysis by Northern blot, preparation of reagents.
- Bacteria - Molecular cloning, nucleic acid purification, design of primers for PCR, SLIC, restriction digest cloning, Gibson assembly, cell culture, protein expression induction and purification, competent cell production, and design of plasmid vectors.
- Experience working in a GLP 21 CFR regulated lab as part of clinical/pre-clinical regulated trials.
- Immunochemistry - ELISA, ECLIA, sample analysis in a regulated environment, validation of assays, QC in a regulated environment, and some method development of assays.

Experience

Jan 2021 - Present Stowers Institute for Medical Research (Full-stack Developer)

- Full stack developer for the Institute's custom LIMS (Laboratory Information Management System) website.
- Symfony, MySQL, ExtJS, Apache stack.
- Work as part of a team to design UI, communicate with stakeholders, implement front end and back end components, as well as optimizing SQL queries.
- Develop workflows for scientific assays and work as key designer for components that required a scientific background and communication with scientist stakeholders.
- Team uses git (Bitbucket), Jira, and Agile/Scrum.
- Dynamic work environment that encourages team based problem solving to meet needs for scientific workflows.
- Main developer for data retention and migration of scientific data into new db while preserving data integrity for high impact studies.

Oct 2017 - Dec 2021 Stowers Institute for Medical Research (Associate Scientist II)

- Robotics specialist for the Screening Core.
- Method development for molecular biology assays, bacterial cloning, COVID-19 serum antibody testing, nucleic acid purification, and high throughput PCR.
- Developed bioinformatics pipelines for high throughput assays using Python, enabling higher throughput and more consistent experiments for researchers.
- Developed de novo multiple sequence alignment program that automatically trims alignments, resolves conflicting sequence reads, trims bad reads, screens for non-degenerate errors, and catches errors in MAFFT alignment.
- Developed programs for handling varied data from different biological assays and instruments.

- Programmed, tested, and ran liquid handling and plate handling robots for high-throughput biology experiments.
- Deep knowledge of the PerkinElmer Janus liquid handling platform, including Varispan, MDT, GIP, PlateStack integrations, Bioshake integration, and BioTek plate washer integrations.
- Deep experience programming in and using WinPrep, usage and modification of the Janus Application Assistant, and programing low level functions in MSL (a subset of the C language).
- Experience programming in PerkinElmer plate::works, including development of assays, modification of the platform for new assays, integrating the Janus platform into the plate::works platform. Added new capabilities to the plate::works software for novel assays, as well as interacting with other integrations including the PerkinElmer Nivo plate reader.
- Experience programming and developing new assays for the PerkinElmer Chemagen chemagic 360 robotic magbead system, including adapting existing assays and modifying other chemistries to work on the system.
- Experience developing assays with the PerkinElmer Envision plate reader.
- Experience with Integra electronic pipettes, including the Viaflo 96/384, Voyagers, and Viaflo 6-12 channel pipettes.

Aug 2016 - Sep 2017 PRA Health Sciences (Lab Analyst)
- Lab Analyst for large molecule assays.
- Primary assays are ELISA and ECLIA.
- GLP environment, experience with different regulatory agencies and requirements, including 21 CFR.
- Preparation of reagents, reconstitution of proprietary reference materials in clinical trials, and familiarity of laboratory equipment used in assays (ELISA plate readers, plate washers, ECLIA readers, pH meters, and balances).
- Primary functions include validation of assays, bioanalysis of samples from clinical trials, and some method development of assays.
- Responsible for QC of generated data in a regulated environment.
- Training of new analysts.

Feb 2014 - May 2016 Synthetic Biology Research Group, University of Missouri.
- President 2014.
- Designed a novel method of testing for HIV in solution based on ELISA.
- Directed wet work in the lab, as well as main design of chimeric proteins used for construct.
- Recombinant production of snake antivenin via *E. coli* lines designed by the team in 2015.
- Skills learned: PCR, cloning of bacterial plasmids, primer design, competent cell production, protein induction and purification, DNA purification, gel electrophoresis, and Western blot.

Apr 2014 - Oct 2014 Retrovirus Research, Johnson Lab, University of Missouri.
- Undergraduate Research Assistant.
- Conducted gene cloning, bacterial transformation, and maintenance of bacterial cell lines.

Sept 2012 - Oct 2013 Soybean Breeding Research Lab, University of Missouri.
- Undergraduate Research Assistant.
- Harvested, organized, and selected desirable soybean crops.
- Conducted equipment maintenance.

Jul 2008 - Apr 2012 United States Marine Corps.
- Motor Transport Operator, Training NCO, OVE NCO, and Master Dispatcher for MASS-1.
- Maintained and organized records on both a Platoon and Battalion level.
- Responsible for coordinating and deploying transport missions at a squadron level.
- Corporal at Honorable discharge, secret security clearance.

Additional Skills
- Strong team based problem solving skills, enjoy multidisciplinary problems, and fast learner.
- Organizational skills - project management, conflict resolution, and strong commitment to team success.
- Handy - electrical systems (AC and DC), carpentry, plumbing, and mechanical (car and appliance).

Honors and Awards
Lowell Miller Scholarship 2015-2016
Elsa "Elsie" Kemble Memorial Scholarship 2015-2016
Wurdack Scholarship 2014-2015
Mizzou Advantage Scholarship 2014
Dean's List 2013 (Fall), 2014 (Spring, Summer, Fall), 2015 (Spring, Fall)
USMC - Meritorious Promotion (2008), Navy Unit Commendation (2011)