# KEVIN A. BOYD

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## PROFESSIONAL SUMMARY

Hardworking data scientist and bioinformatics analyst with extensive experience analyzing complex biological datasets, developing NGS pipelines, and applying machine learning to genomics research. Proven track record supporting multiple Principal Investigators by delivering high quality analyses for publications, securing grant funding, developing automated workflows, and training lab members in downstream analytics. Result focused and efficient in performing statistical analyses with multiple programming languages. A motivated, detail-oriented team player with a passion for coding and biological sciences.

## EDUCATION

**Master of Science:** Data Science, December 2023
**Southern Methodist University** – Dallas, TX

**Bachelor of Science**: Microbiology, May 2016
**University of Oklahoma** – Norman, OK

## WORK HISTORY

**Senior Bioinformatics Analyst**, 2024 to Current
**Oklahoma Medical Research Foundation (OMRF)** – Dr. Linda Thompson, Oklahoma City, OK

- Lead genomic analyses for 8 different PIs (Principal Investigators).
- Develop and deploy 6 custom Snakemake NGS workflows to improve reproducibility, reduce processing time, and better utilize resource allocation.
- Train 7 lab members how to run workflows on a slurm managed HPC.
- Collaborate with researchers and perform analysis used in 5 manuscripts, 3 publications and 14 grants.

**Bioinformatics Analyst**, 2021 to 2023
**Oklahoma Medical Research Foundation (OMRF)** – Dr. Linda Thompson, Oklahoma City, OK

- Perform Bulk RNA-seq, scRNA-seq, ChIP-seq, Cut&Run, and Cut&Tag analysis for 12 PIs.
- Analyze microscopy image analysis using both conventional methods and machine learning.
- Optimize pipelines/scripts to run samples in parallel to reduce time and generate results from NGS.
- Collaborate with researchers to perform analysis used in 6 grants.

**Senior Laboratory Technician**, 2019 to 2021
**Oklahoma Medical Research Foundation (OMRF)** – Dr. Chris Sansam Lab, Oklahoma City, OK

- Performing drug screens with transcriptional inhibitors to study DNA replication.
- Optimize protocols, perform DNA/RNA extractions, run RT-qPCRs, and analyze data sets.
- Design, optimize, and perform genome wide CRISPR Knockout and Activation screens.
- Maintain zebrafish colony by performing health checks, generating new transgenic lines, and sustaining genetic variability.

- Train new lab members, mentor students, and optimize protocols.
- Maintain cancer cell lines, perform In Situ Hybridization experiments, clone genes, make variants, and microinject morpholinos and RNAs.

## Skills

**Programming and Platforms**

- Windows, MacOS, Linux
- Python
- R
- Bash
- SQL
- C++
- RegEx
- HTML
- Command Line
- Spark
- Hadoop
- Slurm
- GitHub
- Singularity
- AWS

**Bioinformatic / Data Science Tools**

- FastQC / MultiQC / Fastq-Screen
- BWA / Bowtie2
- STAR / HISAT2
- Fastp / Cutadapt / Trimmomatic
- MACS2 / SICER
- SAMtools / Bedtools / Deeptools
- IGV (Integrative Genomics Viewer)
- IPA (Ingenuity Pathway Analysis)
- FIJI (ImageJ)
- TensorFlow / Scikit-learn / Matplotlib / Seaborn
- Tidyverse / ggplot2 / DESeq2 / edgeR / limma
- GenomicRanges / pheatmap / plotly / DiffBind
- 10x Genomics scRNA-seq / Cell Ranger / Seurat
- ApE
- Snakemake

## Publications

Boyd, Kevin A.; Mitra, Rudranil; Santerre, John; and Sansam, Christopher L. (2023) "Deep Learning Image Analysis to Isolate and Characterize Different Stages of S-phase in Human Cells," SMU Data Science Review: Vol. 7: No. 3, Article 7.

Dai, Wentao; Sandoval, Imelda; Cai, Shengxin; Smith, Kaylee; Delacruz, Richard; Boyd, Kevin; Mills, Jessica; Jones, David; Cichewicz, Robert, “Cholinesterase Inhibitory Arisugacins L-Q from a Penicillium sp. Isolate Obtained through a Citizen Science Initiative and their Activities in a Phenotype-Based Zebrafish Assay", Submitted Manuscript to Journal of Natural Products, 2019

Imelda T Sandoval, Richard Glenn C Delacruz, Braden N Miller, Shauna Hill, Kristofor A Olson, Ana E Gabriel, Kevin Boyd, Christeena Satterfield, Holly Van Remmen, Jared Rutter, David A Jones, “A metabolic switch controls intestinal differentiation downstream of Adenomatous polyposis coli (APC)”, *eLIFE*, 2017, https://elifesciences.org/articles/22706