

PATRICK CHERRY, PHD

✉ pcherry [at] pm dot me | 📞 upon request | 🏢 Senior Scientist | Oncology | 🏠 BillionToOne | 📍 San Francisco, California |
🌐 pdcherry.github.io | 🌐 github.com/pdcherry | in [linkedin.com/in/p-cherry](https://www.linkedin.com/in/p-cherry) | 🇺🇸 United States Citizen | Updated on 2025-02-04

PhD scientist and professional critical thinker, problem-solver, and science communicator. At the interface of data science, genomics, and statistics; skilled at data visualization, bioinformatics, next-generation sequencing (NGS), and tool-building. I am passionate about advancing data science and bioinformatics to improve human health and to understand biology.

🏢 INDUSTRY EXPERIENCE



- Current
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Sep 2024
- **Senior Scientist, Oncology**
BillionToOne, Inc. 📍 Menlo Park, California
 - Designed and implemented multiplexed amplicon NGS assay with Bioconductor NCBI tools and primer3 primer selection; generated 500+ automated ddPCR designs with pipeline in snakemake using s3 database of variant data.
 - Informed key product decisions with analyses using PostgreSQL and s3 data sources and linear mixed-effects modeling
 - Circulated internal research reports on Notion written in Quarto notebooks with reproducible Python and R code.
- Apr 2024
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Dec 2021
- **Senior Scientist, Genomics**
Twist Bioscience, Inc. 📍 South San Francisco, California
 - Invented and introduced multiple new products to market, yielding \$1M+ in new revenue as *Tech Lead*, including: *Pan-cancer cfDNA* (v1 & v2), *CNV Controls*, *RNA Fusion Controls*, *Fragmentome Controls*, RNA-seq, and primer / adapter removal methods for highly-multiplexed dsDNA pools
 - Answered biological and business questions with DoE and data analysis using R and the libraries: dplyr, dbplyr, DBI, purrr, ggplot2, Bioconductor, DEseq2, Seurat, tidymodels, glm, nls, lme4, AlgDesign, and more
 - Wrote and published reports in Rmarkdown and LaTeX. Edited and maintained production QC pipelines with automated reporting using Python and the libraries: NumPy, pandas, polars, seaborn, statsmodels, biopython, pybedtools, pysam, vcfp, scanpy, Jinja2 (with CSS), WeasyPrint, and others
 - Maintained production code (git version control with code review) with CD (github actions); operated in high-performance compute environment aws s3 and Databricks using Unix shell / bash tools, like ssh, STAR-fusion, GATK, BaseSpace CLI, bwa, bedtools, samtools, vcftools, UMI-tools/fgbio; Confluence documentation
 - Authored internal R package “twistcolorpal” on Github with help files to help scientists style plots to Twist branding
 - Answered production and business questions with original SQL queries for Snowflake-based database
- Jan 2021
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Apr 2019
- **Scientist I, NGS Core & Strain-Build Process Development**
Zymergen, Inc. 📍 Emeryville, California
 - Boosted *NGS Core* genotyping success by 45% using DoE experimentation, data-driven decision-making, and teaching; Guided demanding and diverse internal customers on complex NGS experiments
 - Built and disseminated Rmarkdown and JMP statistical templates for autonomous NGS data exploration
 - Coded plasmid and strain build and QC experiments using Zymergen's alembic Python API to LIMS database
 - Rendered strain build and plasmid build reports from LIMS SQL database in MySQL and R / ggplot

🎓 EDUCATION

- Apr 2019
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Aug 2013
- **PhD in Molecular Biology**
University of Colorado School of Medicine 📍 Aurora/Denver, Colorado
 - Ph.D. in Molecular Biology. Advisor: Jay Hesselberth, PhD
 - Thesis: RNA terminus chemistry potentiates decay events targeting *HAC1* mRNA during the Unfolded Protein Response
 - Key courses: BIOS 6606 Statistics; MOLB 7621 Genome Analysis Workshop.
- May 2013
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Aug 2009
- **BA in Molecular Biology with Distinction, minor in Mathematics**
Hendrix College 📍 Conway, Arkansas
 - Senior Capstone Project showing changes of key stress response gene expression to oxidative stress in liver cells
 - Key courses: Probability & Statistics; Discrete Mathematics; Adv Biological Chemistry, Analytical Chemistry







SELECTED INTELLECTUAL PROPERTY

- Apr 2021 • **Libraries for mutational analysis**
Twist Bioscience  South San Francisco, California
- US Prov. Pat. Ref No 823.101
 - Configuration and fabrication of synthetic DNA & RNA reference standards and synthetic variant sequences
- Mar 2021 • **Method for counterselection in microorganisms**
Zymergen, Inc.  Emeryville, California
- US 2021_0087586 A1
 - Demonstration of novel counterselection mechanism in non-model *Bacillus* microbe for genetic modification










SELECTED PUBLICATIONS

- Jan 2024 • **Twist cfDNA Pan-Cancer Reference Standard v2 Technical Guidance**
Twist Bioscience [Product Sheet](#) & [FAQ](#)  South San Francisco, California
- Patrick Cherry, Lydia Bonar, & Mike Bocek
- Apr 2022 • **Characteristics and specificity of the wild-type / 0% VAF reference material**
Twist Bioscience  South San Francisco, California
- Patrick Cherry & Mike Bocek
- Mar 2019 • **Multiple decay events target HAC1 mRNA during splicing to regulate the unfolded protein response**
[eLife](#)  Aurora/Denver, Colorado
- Cherry, P., Peach, S., & Hesselberth, J.
- Dec 2017 • **Genetic bypass of essential RNA repair enzymes in budding yeast**
[RNA](#)  Aurora/Denver, Colorado
- Cherry, P., White, L., York, K., & Hesselberth, J.



SELECTED PRESENTATIONS & TALKS

- Feb 2024 • **Twist pan-cancer reference standard V2: Enhanced precision and reduced errors in ctDNA analysis**
[Advances in Genome Biology and Technology](#), Twist Bioscience  Orlando, Florida
- Apr 2023 • **Twist pan-cancer synthetic RNA fusion control for assay development**
[American Association for Cancer Researchers](#), Twist Bioscience  Orlando, Florida
- Feb 2023 • **Use of synthetic CNV fragments to mimic copy number alterations for ctDNA reference standards**
[Advances in Genome Biology and Technology](#), Twist Bioscience  Hollywood, Florida
- Apr 2022 • **Twist pan-cancer synthetic reference materials for cell-free DNA (cfDNA) assay development**
[American Association for Cancer Researchers](#), Twist Bioscience  New Orleans, Louisiana
- Jun 2020 • **R use at Zymergen**
Z-Tech Talk  Emeryville, CA
- Apr 2020 • **Data-driven troubleshooting of NGS experiments**
Data Science Talk  Emeryville, CA
- Aug 2017 • **RNA processing regulates the unfolded protein response**
CSHL: mRNA Processing Meeting Talk  Cold Spring Harbor, New York