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SUMMARY

I help pharmaceutical and biotechnology organizations turn complex biological data into actionable scientific insight — through multi-omics analysis, reproducible Nextflow workflows, computational modeling of biological systems, and lab digital-transformation initiatives. 10+ years across pharma consulting, biotech, and academic research, with six peer-reviewed publications — including first- and co-first-author papers in *JBC*, *Scientific Reports*, and *NPJ Genomic Medicine*. Actively exploring AI-assisted bioinformatics and agentic scientific workflows.

CORE SKILLS

Pipelines & Workflow Orchestration	Nextflow, nf-core, Seqera / Nextflow Tower, Google Cloud Workflows, Azure DevOps, GitHub Actions, Docker, Encode pipelines
NGS & Multi-omics Analysis	Bulk RNA-seq, Small RNA-seq, ChIP-seq, ATAC-seq, WGS, Ribo-seq, Proteomics, Comparative transcriptomics
Cloud & Infrastructure	AWS, Google Cloud Platform, On-prem HPC
Bioinformatics Analyses	Variant annotation, Functional annotation, Pathway enrichment, Survival analysis, Evolutionary rate analysis (phyloP), siRNA / qPCR primer design, In-silico drug screening, Protein structure prediction, de novo motif analysis
Mathematical Modeling	ODE-based modeling, Boolean modeling, Steady-state and sensitivity analysis, Parameter estimation, Network reconstruction
Pharma R&D Consulting	Lab digital-maturity assessments, Stakeholder interviews, Pharma benchmarking, Scientific software evaluation, FAIR data principles, RFP / proposal contributions
Programming	R, Bash, Python, Nextflow, MATLAB

PROFESSIONAL EXPERIENCE

Bioinformatician Consultant and SME, Cognizant

Feb 2025 – Present

Bioinformatics Pipeline Validation & Documentation (global pharma client)

- Tested and validated 17 omics Nextflow pipelines (genomics, transcriptomics) by executing them through Google Cloud Workflows, Seqera/Nextflow Tower, and local environments.
- Triage observed errors with engineering teams; documented root causes; maintained a centralized troubleshooting knowledgebase.

- Authored comprehensive developer documentation covering Nextflow coding standards and modular design, pipeline publishing via Azure DevOps and GitHub Actions, pipeline execution via Google Cloud Workflows and Seqera Tower, and operational FAQs/runbooks.
- Captured as-is (on-prem) and to-be (on-cloud) architectures of proteomics and metabolomics analysis pipelines for cloud-migration planning.

Pharma R&D Lab Digital Maturity Assessment (global pharma client)

- Defined and owned the maturity assessment framework (strategic areas, levels, baseline criteria); designed survey and interview questions mapped to assessment areas.
- Established pharma-benchmarking areas adopted by the team for comparative analysis across labs.
- Co-conducted 16+ stakeholder interviews across multiple lab sites; documented transcripts and MoMs for leadership alignment.
- Led interviews with internal instrument-connectivity experts to capture connectivity requirements and data types.
- Translated leadership requirements into team-actionable steps; contributed to weekly leadership presentations; owned the organizational chart.

Project Scientist II, CSIR-National Chemical Laboratory (NCL)

2023 – 2024

- Evaluated and benchmarked ChIP-seq tools and workflows (ENCODE, nf-core) for alignment, peak detection, and de novo motif analysis.
- Implemented pipelines to analyze ATAC-seq, ChIP-seq, and RNA-seq data for differential binding and expression analysis on on-prem HPC.
- Integrated multi-omics data to construct gene regulatory networks and study molecular mechanisms underlying breast cancer.
- Co-authored Gharui, Puntambekar, et al., *Biochemical and Biophysical Research Communications* (2026).

Head of Computational Biology, NonExomics LLP

2021 – 2023

- Implemented and maintained nf-core RNA-seq and WGS Nextflow pipelines on AWS to identify novel cancer biomarkers and therapeutic targets.
- Processed and analyzed proprietary and publicly available DNA and RNA expression datasets across cancer types.
- Designed siRNAs and qPCR primers for bioinformatically predicted targets.
- Established the bioinformatics function from scratch; managed a fully remote 3-person team across time zones.
- Represented NonExomics at the startup meetup organized by VCR Park, Vizag, India.

Research Associate (Postdoctoral), Indian Institute of Science Education and Research, Pune (IISER-Pune)

2018 – 2019

- Evaluated state-of-the-art read alignment and assembly tools; developed an optimized comparative-transcriptomics pipeline for two cichlid fish species.
- Identified accelerated regions in the cichlid genome using phyloP-based evolutionary rate analysis.

- Built a proteogenomic pipeline to characterize novel open reading frames (nORFs) using pan-cancer RNA-seq and Ribo-seq — including survival analysis, structure prediction, disease-mutation mapping, and in-silico drug screening.
- First author of *Scientific Reports* (2020); co-first author of *NPJ Genomic Medicine* (2021).

Doctoral Researcher, CSIR-National Chemical Laboratory **2011 – 2017**

- Reconstructed signaling and metabolic networks for melanosome transport, melanogenesis, and sumoylation through literature-based manual curation.
- Developed and analyzed Boolean and ODE-based mathematical models to propose mechanistic explanations for clinical and experimental observations in pigmentation and post-translational modification systems.
- Collaborated with three wet labs to routinely interpret experimental data and present modeled simulation and prediction results.
- First author of *Journal of Biological Chemistry* (2016); co-author of *PNAS* (2014).
- Mentored undergraduate and summer students.

Research Assistant, CSIR-National Chemical Laboratory **2010 – 2011**

- Analyzed confocal images of keratinocytes for nuclear-capping phenomena.
- Analyzed FACS and microarray data to study melanosome uptake by melanocytes.
- Manually curated and reconstructed signaling and metabolic pathways involved in skin pigmentation, in collaboration with three academic labs.

Education

Ph.D., Biological Sciences (Computational Biology) **2011 – 2017**

CSIR-National Chemical Laboratory (NCL), Pune, India

M.Sc., Bioinformatics · Bioinformatics Centre, University of Pune · **2008 – 2010**

B.Sc., Biotechnology · University of Pune · **2005 – 2008**

Certifications

AI-Empowered SAFe 6 Product Owner/Product Manager · Scaled Agile, Inc. · 2026

AI-Empowered SAFe 6 Scrum Master · Scaled Agile, Inc. · 2026

Fellowships

- International Travel Grant, Department of Biotechnology (DBT), Govt. of India — to present at the International Conference on Systems Biology (ICSB-2016), Barcelona, Spain.
- Bioinformatics National Certification (DBT-BINC) Ph.D. Fellowship.

Teaching

- Guest Lectures — Boolean Modeling in Biology, M.Sc. Systems Biology course, SPPU University of Pune · March 2026.

Course material: <https://github.com/shraddhapuntambekar/Boolean-Modeling-Biology-MSc-2026>

- Mentored undergraduate and summer interns during Ph.D. tenure at CSIR-NCL.