# Amol Upadhyay

## Senior Bioinformatician

Indore, Madhya Pradesh, India

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## CAREER OBJECTIVE ....................................................................................................

Ready to accept the challenge in the field of Bioinformatics and Next Generation sequencing (NGS) analysis activity by utilizing my knowledge and skills (hands-on skills in Bioinformatics, molecular & cell biology, computational biology and Next Generation Sequencing data collection, processing, mining and analysis), while maintaining continual professional Growth same time.

## PROFESSIONAL PROFILE .........................................................................................

To seek a challenging career position and opportunities to gain and leverage cross-functional experience, business, analytical and technical skills and in turn make significant contributions to the organization. To be a part of a vibrant team where my potential can be exploited to the maximum, ensuring my future progress with the growth of the organization.

## SKILLS..............................................................................................................

**Computational Biology Skills:**

**NGS tools and workflows**

- Transcriptome Data analysis/RNA-Seq Analysis using Tuxedo I suite of tools. (Tophat2, Cufflinks, cummeRbund-R package)
- Transcriptome Data analysis/RNA-Seq Analysis using Tuxedo II suite of tools (Bowtie2, Hisat2, Stringtie, Ballgown-R package), RSEM, edgeR.
- Metagenomics using dada2 pipeline.
- DNA Seq Analysis (WGS, WES analysis, and variant calling using GVD (Genome Variant Detection)pipeline.
- Somatic and Germ line variant calling using GATK (Genome Analysis ToolKit) Pipeline.
- Single-cell RNA analysis (scRNA-seq): Seurat pipeline for scRNA-seq data analysis
- Snakemake for automating workflow
- R Programming: Basic operations, Data structures, Data types, Operators, Packages: dplyr, gplot2, ggplot, rgl, CummeRbund, Ballgown, edgR
- Python: Standard Python, List, Dictionary, Tuple, Pandas, NumPy, array, Matplotlib, Seaborn and all Scikit-learn.
- Linux/Shell-scripting: Basic operations, Data manipulation, grep, awk, sed etc.
- Experience with cloud computing platforms, AWS.
- Experience with knowledge management tools such as Confluence.
- Experience with project management tools such as Jira.
- Knowledge of data wrangling and visualization tools such as Tableau.

- Statistics: Descriptive Statistics: Mean, Median, Mode, Variance, Standard Deviation, Range, Percentile, Quartiles, Inter Quartile Range, Skewness and Kurtosis.
- *Inferential Statistical*: One Sample t-Test, Wilcoxon Signed Rank Test, Two Sample t-Test, Wilcoxon Rank Sum Test, Mann-Whitney-Wilcoxon Test, Shapiro Test, Kolmogorov And Smirnov Test, Fisher's F-Test, Chi Squared Test, Correlation testing, Fisher's exact test, Annova.
- *Co-variance and Correlation*: Pearson correlation, Spearman correlation
- Clustering: Hierarchical clustering, k means clustering

- Hypothesis testing & Model fitness estimators: p-value: Checking for statistical significance, test statistics
- R-Squared and Adj R-Squared, Standard Error and F-Statistics.
- Multivariate data analysis: Principal Component Analysis (PCA), Multi-Dimensional Scaling (MDS), Linear Discriminant analysis
- Machine Learning Skills: Supervised ML
  Classification based: SVM, Nearest Neighbor, Decision Trees, Random Forest, Neural Networks, Logistic Regression, AdaBoost. Naive Bayes.
  Regression Based: Linear regression, Multiple Linear Regression
  Unsupervised ML – Clustering K-means, K-Medoid, Hierarchical, PCA.

- Bioinformatics Skills:
- Database: NCBI, EMBL, and Software: Emboss, ORF Finder, BLAST (offline and online).
- MSA-Tools: Clustal Omega, ClustalW2, ClustalX.
- Genome databases and analysis, Gene finding: Softberry, Genscan, Ensemble, and dbSNP.
- Proteomics: Swissprot/UniProtKB, BioEdit, SOPMA, Rasmol, Swiss-PDB viewer, and Protein modelling: homology modelling.
- Drug Databases: PubChem ChEMBL, and Zinc Chemical DatabaseDrug Designing: Marvin sketch, Virtualscreening, Molecular docking: Molegro virtual docker, AutoDock 4, and Discovery studio.
- Areas of proven performance
- Health and safety protocols, Laboratory instrumentation, Wet chemistry and separation techniques, Qualitative & quantitative analysis, CGMP, ICH & FDA requirement, Troubleshooting complex issues, Documentation & production logs, Gel Electrophoresis, DNA isolation, Spectrophotometer, PCR, UV. Visual spectrophotometers & Handling of various microscopes, Dissolution apparatus, HPLC preparation (Mobile phase, STD., SPL.), Gel electrophoresis, and SDS-PAGE, Chromatography, ELISA.
- Microbiological Techniques
- Isolation & characterization of microorganisms, Multiple-tube fermentation (MPN)method, spread plat method, pour plate method and membrane filtration method.

## PROFESSIONAL EXPERINCE ........................................................................................................

Eminent Biosciences (Indore, Madhya Pradesh, India)
senior Bioinformatician (March 2022 to present)
I am currently working as an senior Bioinformatician at Eminent Biosciences, an organization working on Next-Generation Sequencing (NGS) analysis using several computational tools like Machine learning, R programming, LINUX command- line scripting, and Python. Optimizing NGS pipelines for data processing, alignment, variant calling, and annotation and generating clinical and healthcare reports summarizing NGS data analysis results.

Responsibilities:
- Perform NGS data analysis for Whole Genome, Whole Exome, and Transcriptome related analysis variant detection,structural variant, transcriptome, and alternative splicing.
- Analyze RNA-seq gene expression data differential gene expression, gene enrichment. Gene ontology,pathway and network analysis.
- Coordinate and perform NGS data management for current customers: arrange, monitor the acquisition& delivery of sequencing data and final results to customer within schedule.
- Manage daily operations of NGS lab including project management, personnel tasks assignment,budgeting, and managing lab inventory.
- Processed, quality-controlled and analyzed NGS data for alignment, transcriptomic gene expressionusing R, Python, plus other publicly-available computational methodologies.

Projects
- RNA-seq analysis of lung adenocarcinomas.
- Differential Gene Expression Analysis of Normal Healthy Tissue and Tumor Tissue Samples for Oral Cancer Using Tuxedo II Pipeline. (Publication in the process)
- Gene Expression Profiling of Primary Breast Cancer Samples using GATK and Tuxedo suite of tools.(Publication in the process).
- Transcriptome Expression analysis between human colon cancers and the adjacent normal colon tissues Using Tuxedo II pipeline.

Cipla Pharmaceutical Ltd. (Indore, Madhya Pradesh, India)
Senior Executive Officer R&D Department in Method Development(April 2021 to March 2022)
Responsibilities:
- Work with NGS pipeline RNA seq Tuxedo 1, tuxedo 2
- Analyzed NGS data.
- Read patient data and classify base on diseases.
- Read patient historical data and classify.
- Experience in analytical method development, qualification, validation and transfer.
- Expert knowledge and working application of method validation principles for regulated industriesincluding: FDA cGMP; ICH/USP guidelines ANSI/ISO/ASQC; FMEA, Risk Analysis and Design Controls.
- Method optimization (if required) and validation for quantification of significant leachable in the specific drug product matrix.
- Identification of impurities above the safety threshold.
- Perform work in accordance with GMP and work to safety evaluation thresholds recommended by the FDA.
- Ensuring clarity around priorities and goals for the entire functional area.
- Managing overall financial budgeting for her function.
- Guiding the talent identification and development processes for a group or function.
- Interacting with senior management for reporting.
- Provides guidance to junior members on various validation requirements (through team meetings and individual interactions)
- Working across functions with peers in other groups to ensure collaboration for shared goals.

Eminent Biosciences (Indore, Madhya Pradesh, India) NGS Analyst (Jul 2017 to Mar 2021)
Responsibilities:
- They handle the raw sequencing data, performing quality control checks, preprocessing, and filtering to ensure accurate and reliable results.
- Using specialized software and algorithms, they analyze the processed data to identify genetic variations, mutations, gene expression patterns, or other relevant biological information.
- They identify genetic variants, such as single nucleotide polymorphisms (SNPs), insertions, deletions, and structural variations, and assess their potential significance.
- They annotate the identified variants with relevant information, such as their location in the genome, predicted functional effects, and known associations with diseases or traits.

Cipla Pharmaceutical Ltd. (Indore, Madhya Pradesh, India)
As Trainee Quality Control Analyst
Responsibilities:

- Dry Penetrate Inspection (DPI) and Liquid Penetrate Inspection (LPI)testing
- Reviewed production records for accuracy and compliance.
- Performed routine quality inspection operations on industrial and commercial items.
- Maintained and organized all records, documentation, and other files associated with quality andinspection tasks.

- Inspect products to ensure that they meet quality standards.
- Create tests for quality control of products.
- Disassemble product parts to inspect them individually.
- Monitor production operations to ensure conformance to company specifications.

## ADDITIONAL SKILLS..............................................................................................

- Good communication and listening skills
- Good observational and monitoring ability
- Excellent interpersonal skills
- Ability to solve problems quickly and efficiently
- Ability to Serve Clients Needs
- A polite, calm, and reasonable approach
- Strong attention to detail and a completer finisher
- Able to stay calm under pressure

## EDUCATION.....................................................................................................

- Master of Science (Biotechnology)(May 2014) Devi Ahilya Vishwavidyalaya

- Bachelor of Science (Bioinformatics, computer sciences) (June 2012) Devi Ahilya Vishwavidyalaya

## PROJECT WORK................................................................................................

- Detection of the genetic variation amongst the soybean varieties PK472, JS 97 50 Hardee and Bragg" using ISSR markers. Project carried out of School of biotechnology. Soybean varieties were characterized by using ISSR marker in collaboration with Directorate of Soybean Research central, Indore.

- The Water Purification Project Water purification is the process of removing undesirable chemicals, biological contaminants, suspended solids and gases from contaminated water.

## ACHIEVEMENTS...............................................................................................

- R programming: John Hopkin's University
- Proteomics and genomics core genomics analysis citification
- Plant DNA isolation and comparison different varieties of plants DNA using marker citification

## PERSONAL DETAILS..........................................................................................

- Name: Amol Upadhyay
- Date of Birth: 31 Jul 1991
- Marital Status: Single
- Mother Tongue: Hindi
- Nationality: Indian

## REFERENCES...................................................................................................

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