

Teaching Statement

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I view teaching as an exciting opportunity and challenging endeavor. It is an indispensable component of research that leads to novel ideas, often put forward by students. These novel ideas and students drive the future research in every research domain. In addition, teaching involves presenting a complex research problem in a simple way, which in itself gives a completely different perspective about the problem to the teachers themselves. My teaching approach is based on three points:

1. I stress on making sure that the student understands the core concept of the subject while also developing an interest and critical thinking towards the known findings. This eventually drives the student towards further quest of knowledge within a particular domain or applying it to other subject areas.
2. A Picture say thousand words and therefore, I try to explain the concepts in as much pictorial form as possible. This is especially important while teaching interdisciplinary subjects like bioinformatics where the students come from diverse domains such as those with majors in computer science having limited knowledge in biology, or vice-versa.
3. Practical experience should always follow good theoretical foundations. A project-based approach is particularly helpful to students in understanding real and, most often, unexpected challenges faced during the research and devising novel solutions to overcome them. Projects are also excellent evaluation methods, since the students can demonstrate their level of understanding in a way that can be much more easily quantified, thereby reducing the bias often found in more structured evaluations.

Teaching experience

I have taught bioinformatics and biostatistics to post-graduate students of biotechnology during my employment (2005-2008) at Devi Ahilya University (DAVV), Indore. I have also organized and delivered lectures (theoretical and practical) in several bioinformatics seminars and workshops (both in India and Denmark). This included preparing lectures and step-by-step tutorials, and communication using both conventional (white-board) and electronic (LCD projector) medium. An

important lesson I have taken from these events is that putting forward a concrete problem upfront and demonstrating practical ways to solve it maintains enthusiasm among the audience.

Mentorship

I have been fortunate enough to mentor a few bright students during my employment in India and Denmark. In India, I mentored two students from Banasthali Vidyapith who showed keen interest in learning computational programming to analyze biological data. I am especially proud that one student that I mentored pursued her career as Ph.D. in bioinformatics at the prestigious Indian Statistical Institute, Kolkata. In Denmark, I have mentored two students who worked on their master's thesis project for the analysis of next-generation sequencing data, and secured a high ECTS grade (10/12) for this project. My mentoring experiences have taught me to adapt to the needs of each individual student in order to suite their learning approach.

Courses taught

1. *Computational biology*: Biological databases and data formats, pairwise and multiple sequence alignment algorithms, sequence motifs, Protein 3D structure prediction, hidden-markov models (HMM), homology modeling and monte-carlo simulations, programming using Perl, Bash and C, web programming.
2. *Biostatistics*: probability theory, statistical distribution (normal, binomial and poisson) and significance test based on these distributions, correlation and regression, statistical graphics and analysis using R, multiple testing correction, bayesian statistics.
3. *Basic molecular biology*: DNA structure and cellular organization, DNA replication and transcription, RNA translation, primer designing.

Advanced courses of Interest

1. *Computational biology*: Non-coding RNA prediction, next-generation sequencing data analysis, RNA splicing, genome annotation, gene expression analysis, epigenetics, transcriptional regulation, machine learning, statistical analysis using R.