

Beyond gene expression

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Beyond gene expression

Novel methods and applications of transcript expression analyses in RNA-Seq

Propositions

1. In our search for answers to biological questions, we have developed numerous cell models for various tissues and organs. It has resulted in the problem of plenty. A thorough analysis of cell models through RNA-Seq helps in identifying what cell model(s) should be used for what research question(s). (Chapter 2)
2. The protein coding transcripts from one or more genes can form same/similar function proteins. A transcript-based analysis of the RNA-Seq data where transcripts are grouped based on their functions rather than loci helps in deriving better biological inferences. (Chapter 3)
3. The advent of machine learning (ML) approaches to RNA-Seq data analysis has proved to be a game changer. One such application has been identification of biomarkers. Through novel methods, transcript biomarkers have been determined. Validation of these preliminary findings will make us reassess how to look at biomarkers. (Chapter 4)
4. The protein complexes are formed in a phased manner. Joining of each subunit results in confirmational changes allowing for the next subunit to bind efficiently. The knowledge of assembly order of the protein complex helps in understanding evolution and provides opportunities for exploring novel drug targets. (Chapter 5)
5. In RNA-Seq, transcript expression provides a better metric to assess the biological system. (This Thesis)
6. To the naked eye, the RNA-Seq data shows the expression of the genes and transcripts. The moment you put start digging into it with the '*biological shovel*', you hit gold.
7. Biological research is amazing. One day you are sitting and thinking of a weird way through which the biological entities might interact. You go to the lab, do some experiments, analyze data, and voila, It's true!
8. All know that the drop merges into the ocean but few know that the ocean merges into the drop. – Kabir Das
9. When we learn something new, we do not go from “wrong” to “right”. Rather we go from wrong to slightly less wrong. - Mark Manson
10. I realized then that only diseases and not honesty and integrity are passed down to the next generation through genes. - Sudha Murty