



Erez Levanon

Bar-Ilan University, Israel

Day 2- 26.6, Session III- 10:45-12:45

A-to-I RNA editing, brain transcriptome diversifier: application in stress disorders

Abstract:

Modifications of RNA affect its function and stability. RNA editing is unique among these modifications because it not only alters the cellular fate of RNA molecules but also alters their sequence relative to the genome. The most common type of RNA editing is A-to-I editing by double-stranded RNA-specific adenosine deaminase (ADAR) enzymes. Recent transcriptomic studies have identified a number of 'recoding' sites at which A-to-I editing results in non-synonymous substitutions in protein-coding sequences. Many of these recoding sites are conserved within (but not usually across) lineages, are under positive selection and have functional and evolutionary importance. However, systematic mapping of the editome across the animal kingdom has revealed that most A-to-I editing sites are located within mobile elements in non-coding parts of the genome. Editing of these non-coding sites is thought to have a critical role in protecting against activation of innate immunity by self-transcripts. Both recoding and non-coding events have implications for genome evolution and, when deregulated, may lead to disease. Specifically, alterations of editing patterns were observed in stress conditions.