Master Project

Mathematical Modeling of the Life Cycle of micro RNA

Micro RNAs (miRNA), a kind of small length non-coding RNAs existing in the cell, are post-transcriptionally regulating the gene expression in a sequence specific way. Recently, emerging evidences has proven that miRNAs play an important role in the field of medical biology, where they are used as the therapy target to control some malicious diseases such as cancer. However, the life cycle of miRNA, from its biogenesis to exerting its regulatory function and decaying, is still not completely understood by the scientists, so in this project we will supervise the student to unravel this biological process by using a systems biology approach. The adopted approach are composed of converting the biological reaction network into mathematical model and analyzing the model by using some analysis tools like sensitivity analysis and bifurcation analysis. Through such a systematic way, we ultimately aim to explain how the miRNA life cycle is controlled and affecting their regulatory functions in vivo.

Required knowledge and skills:

- Systems Biology Course I, II
- Basic MATLAB programming knowledge
- Basic molecular biology knowledge

For further information, please contact:

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