

Seminár z matematickej biológie

Mathematical Biology Seminar

Utorok, 21.6.2011 / Tuesday, June 21, 2011

14:15 - 15:15, poslucháreň C / 2:15-3:15 pm, Auditorium C

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A systems biology approach to tackle the problem of complex disease - physician's perspective discussed on an example of progressive multiple sclerosis

Abstract:

Fully evolved, progressive human disorders, such as neurodegenerative or chronic inflammatory diseases, represent extremely complex biological systems with multiple contributing pathophysiological processes. Traditional models of scientific research, which focus on studying a particular pathophysiological process in isolation, yielded only limited therapeutic success for complex human diseases. Systems biology represents an alternative model of scientific research, which is uniquely suited to study intricate biological systems. While "bottom-up" applications of systems biology, originating from genomic and expression profiling data are becoming increasingly common, "top-down" methods of systems biology, exceptionally suited to clinical and translational research of complex diseases, have not been embraced to the same extent.

The lecture will provide overview of systems biology "top-down" applications on the example of progressive multiple sclerosis (MS). It will highlight the need for development of computational approaches for analysis of multimodality datasets and the requirement to establish fruitful collaborations between physicians-scientists and team of experts in the area of biomathematics, biophysics and biostatistics in order to establish "wet-lab/bedside" - "dry-lab/modeling" bidirectional interactions that will lead to greater understanding of the biological system.