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## IMG seminar

# Professor Dr. Mathias Sprinzl

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## “Chemical and Allosteric Control of Peptide Bond Formation on Ribosomes”

**Abstract:**

Ribosome catalyzes peptide bond formation with a specificity highly exceeding the thermodynamic gain resulting from triplet mediated codon-anticodon interaction. This paradox can be explained by allosteric control of aminoacyl-tRNA binding regulated by elongation factor Tu. Central role in this process plays the coupling of GTPase activity of EF-Tu with codon-anticodon interaction of tRNA and mRNA, which in turn, serves as a switch for control of the peptidyl transferase reaction. Structural investigations performed in last two decades and the recent progress in the elucidation of ribosome structure, provide now a detailed molecular view on mechanism of decoding. Recently, also the role of 2'-hydroxyl in the 3'-terminal adenosine of peptidyl-tRNA during peptide bond formation on the ribosomes attracted a considerable attention. It was assumed that this free vicinal hydroxyl group is essential in a “substrate assisted catalysis” of the peptide transfer. We demonstrated, recently, that the role of free vicinal OH group is not the participation on a proton shuttle, as suggested for the “substrate assisted catalysis” mechanism, but more likely to stabilize the conformation of the ribose in a structure competent to react with the incoming amino acid.

**The seminar will be held**

**on Friday, 20th April 2012, at 10:00 a.m.**

**in the Milan Hašek Auditorium  
(IMG ASCR, Vídeňská 1083, Prague 4)**

**Everybody is cordially invited**

**Jiří Jonák**

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