

invites to a seminar by

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The zebrafish as a model for studying RNA Biology

**29<sup>th</sup> June 2017 at 12:00 p.m.**

Venue: Centre of New Technologies, Banacha 2C,  
Lecture Hall 0142 (ground floor)

Host: Prof. Marta Wiśniewska

During the earliest stages of animal development, maternally deposited mRNAs direct embryogenesis without any contribution from the zygotic genome which is transcriptionally silent. Precise control of the expression of these maternal mRNAs is required to orchestrate development up to the point of mid-blastula transition (MBT) when zygotic genome is activated. In the zebrafish embryo, a large cohort of maternal mRNAs undergoes cytoplasmic polyadenylation during pre-MBT development, suggesting translational control of their expression. To further characterize the relationship between cytoplasmic polyadenylation and translation, we performed polysome fractionation followed by transcriptome profiling during several stages of pre-, during, and post-MBT. Our analysis revealed a correlation between polyadenylation and polysome association dynamics, providing evidence for the coupling of translation to cytoplasmic polyadenylation of maternal mRNAs. Inhibition of cytoplasmic polyadenylation by cordycepin (3'-deoxyadenosine) resulted in the failure of developmental progression past the MBT stage, as well as global gene expression changes suggesting a failure of zygotic genome activation and maternal mRNA clearance. Our results suggest the necessity of cytoplasmic polyadenylation as a translational control mechanism of maternal mRNAs during pre-MBT development to ensure passage through MBT. I will present results from the ongoing analysis of this data and show examples of how the dynamic translational regulation of maternal mRNAs correlate with early developmental events in the zebrafish.