UNIVERSITY OF WARSAW | CeNT CENTRE OF NEW TECHNOLOGIES

invites to a seminar by

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Undercover translation - hidden secrets of the ribosomes.

5th of April 2018 at 12 p.m.

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

Host: Urszula Nowicka

Ribosomes are a centre of every living cell. For decades, they were perceived as homogeneous macromolecules carrying a constant set of ribosomal RNAs and proteins. Consequently, they were not considered to actively participate in the regulatory role of gene expression. The hypothesis of specialized ribosomes assumes the existence of a subpopulation of ribosomes carrying unique structural properties allowing fast and precise response to environmental stimuli throughout selectivity for distinct mRNAs.

I use sporulation process in Bacillus subtilis bacteria as a model to study regulation of gene expression on translational level. Using combination of ribosome profiling, genetics, biochemistry and microscopy, I aim to identify factors modulating translation and accounting for ribosomal selectivity towards mRNAs. Initial data shows massive global rearrangements in proteins synthesis profile and unveils interesting events, like expression of previously unannotated genes, occurrence of paralogues of ribosomal proteins or rearrangements in the ribosomal structure – implying a presence of distinct sub-sets of ribosomes.

Spores, widely found in environment, can survive most of the processes used for sterilization of bacteria, including heat, radiation, chemical treatment, high pressure, they are an increasing burden in food processing and in hospitals.

This work will shed more light on how translation contributes to the gene expression regulation during sporulation. Finding specialised ribosomes will add a new level of regulation of gene expression with a ribosome as an active element. Moreover, within the result, I may identify critical elements suitable for the rational design of new drugs, leading to discovery of novel potential targets for antimicrobials.