

MOLECULAR BIOLOGY, NUCLEIC ACIDS & MOLECULAR MEDICINE

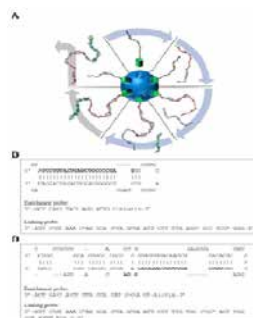
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Amplification-free detection of miRNA associated with rheumatoid arthritis by simple hybridization assay

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In our on-going project, we aim at rational design of novel oligonucleotide probes that target miRNA and developing a diagnostic method for clinically relevant microRNA (miRNA, Fig. 1). In my talk, I will discuss our recent studies on the development of highly specific LNA/DNA probes and present the results in testing miRNA levels by the new assay in clinical samples. Nucleic acids and their interactions are the basis of life. To build a reliable theoretical model on the structure and function of nucleic acids, and to apply this model to emerging tasks of life sciences, the detection and studies of nucleic acids must be carried out under biologically relevant conditions. Currently nucleic acids are most often detected by enzymatic amplification. Amplification has multiple disadvantages. First, it affects stoichiometry of the initial sample and cannot be carried out in cells. Secondly, not every sequence can be amplified. Thirdly, enzymes often make mistakes which results in biased detection. At last, amplification is time consuming and costly. As an alternative, efficient probe including modifications, i.e. locked nucleic acids (LNA), can be applied in non-enzymatic assays. The experiments proposed in this project open an exciting opportunity to learn about nucleic acid structure and interactions at biologically relevant low abundance levels and directly in biofluids. Detection and absolute quantification of disease related miRNA presented herein could benefit early diagnosis and treatment of the diseases such as cancer and rheumatoid arthritis.



Biography

Jesper Uhd is a Master's student of Science & Engineering in Advanced and Applied Chemistry at Technical University of Denmark. He is a current Member of Dr. Kira Astakhova's group at Technical University of Denmark. He has completed his BS degree in Chemistry at University of Southern Denmark in 2017 and working in the group of Dr. Kira Astakhova since 2016.

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