

## DNA methylome analysis in blood using the MethDet technology: A universal media for clinical biomarkers

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Early detection and differential diagnosis of a disease is a significant challenge. Asymptomatic disease present in an unknown location in the body has to be identified precisely, inexpensively, and quickly. Only a few types of biomarkers can accomplish this task, including epigenetic biomarkers based on Methylation of cell-free circulating DNA in blood.

In this presentation an overview of a novel technology for genome-wide detection of DNA methylation in ultra-small samples, MethDet, will be presented alongside with results of the proof-of-principle platform for identification of abnormal DNA methylation patterns in each sample. This platform allows identification of advanced adenoma of the colon, ductal carcinoma *in situ*, and stage I/II colon cancer. The possibility of differential diagnosis by blood analysis has been established by comparison of patterns between benign lesions of the breast vs. ductal carcinoma, and benign ovarian disease vs. adenocarcinoma of the ovary. Application of DNA methylome-wide analysis to differential diagnosis of cancer, psychiatric, and neurological diseases will be discussed. Drug-specific changes in DNA methylation patterns detected in cell-free circulating DNA from blood of drug-exposed patients will be demonstrated.

### Biography

Victor V. Levenson received his M.D. from the 2<sup>nd</sup> Moscow State Medical Institute in Moscow, USSR and his Ph.D. in Cellular and Molecular Biology from the Institute of Molecular Biology in Moscow, USSR, where he worked as a Junior Scientist, then Scientist, and Group Leader. After coming to the US he was on faculty at University of Illinois at Chicago, Northwestern University and Rush University Medical Center where he developed the proprietary MethDet technology. In 2010 he has co-founded US Biomarkers, Inc where he serves as President and CEO. He left academia in 2012 to concentrate on commercialization of biomarkers developed by the MethDet approach.

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