

## A comprehensive, cell specific microRNA catalogue of human peripheral blood

Simonas Juzenas<sup>1,2</sup>, Geetha Venkatesh<sup>1</sup>, Matthias Hübenthal<sup>1</sup>, Marc P. Höppner<sup>1</sup>, Zhipei Gracie Du<sup>1</sup>,  
Maren Paulsen<sup>1</sup>, Philip Rosenstiel<sup>1</sup>, Philipp Senger<sup>3</sup>, Martin Hofmann-Apitius<sup>3</sup>, Andreas Keller<sup>4</sup>,  
Limas Kupcinskas<sup>2,5</sup>, Andre Franke<sup>1</sup>, Georg Hemmrich-Stanisak<sup>1</sup>

<sup>1</sup>Institute of Clinical Molecular Biology, Christian-Albrechts-University of Kiel, 24105 Kiel, Germany

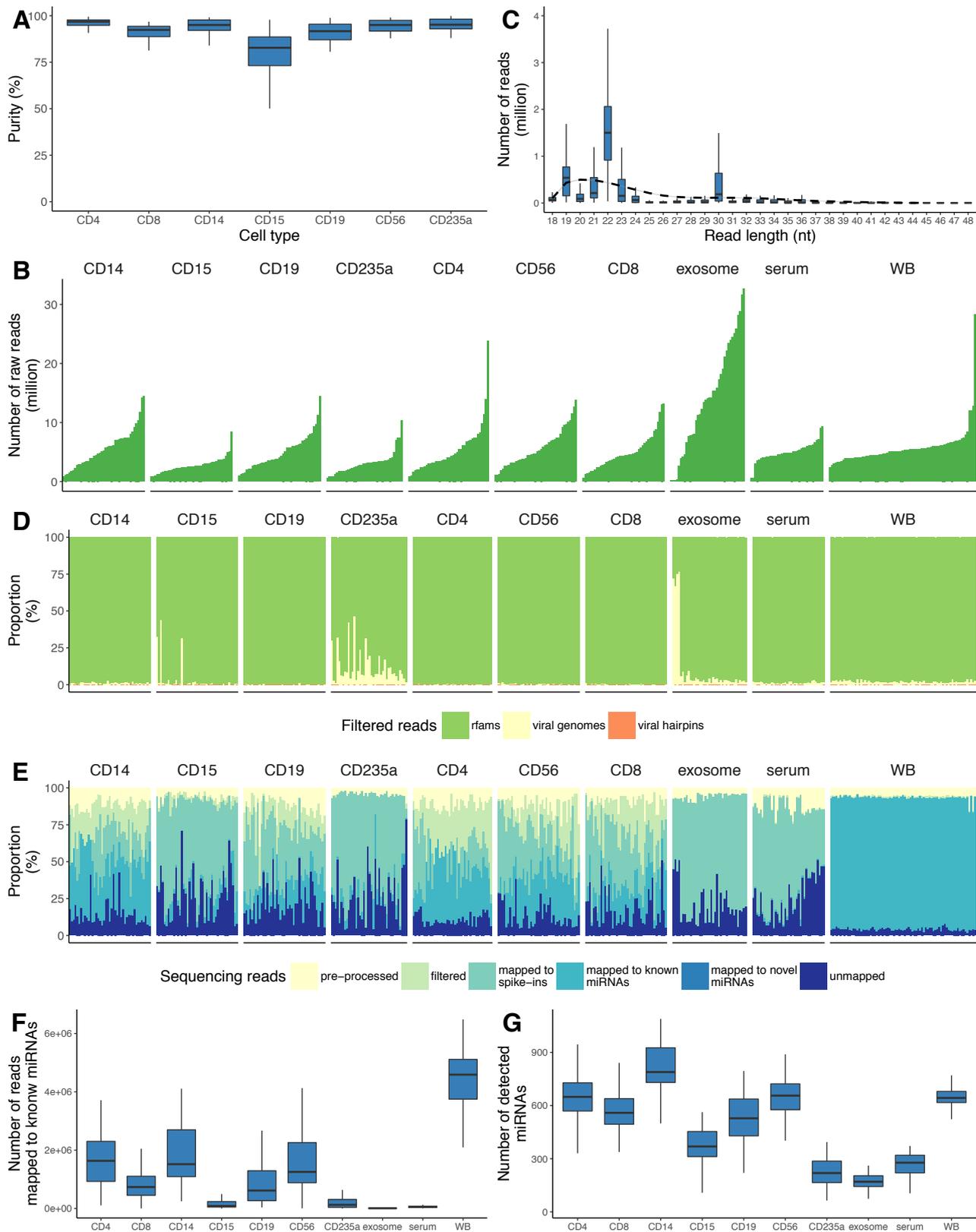
<sup>2</sup>Institute for Digestive Research, Academy of Medicine, Lithuanian University of Health Sciences, Kaunas, 44307, Lithuania

<sup>3</sup>Department of Bioinformatics, Fraunhofer Institute for Algorithms and Scientific Computing (SCAI), Schloss Birlinghoven, 53754, Sankt Augustin, Germany

<sup>4</sup>Clinical Bioinformatics, Saarland University, 66125 Saarbrücken, Germany

<sup>5</sup>Department of Gastroenterology, Academy of Medicine, Lithuanian University of Health Sciences, Kaunas, 50161, Lithuania

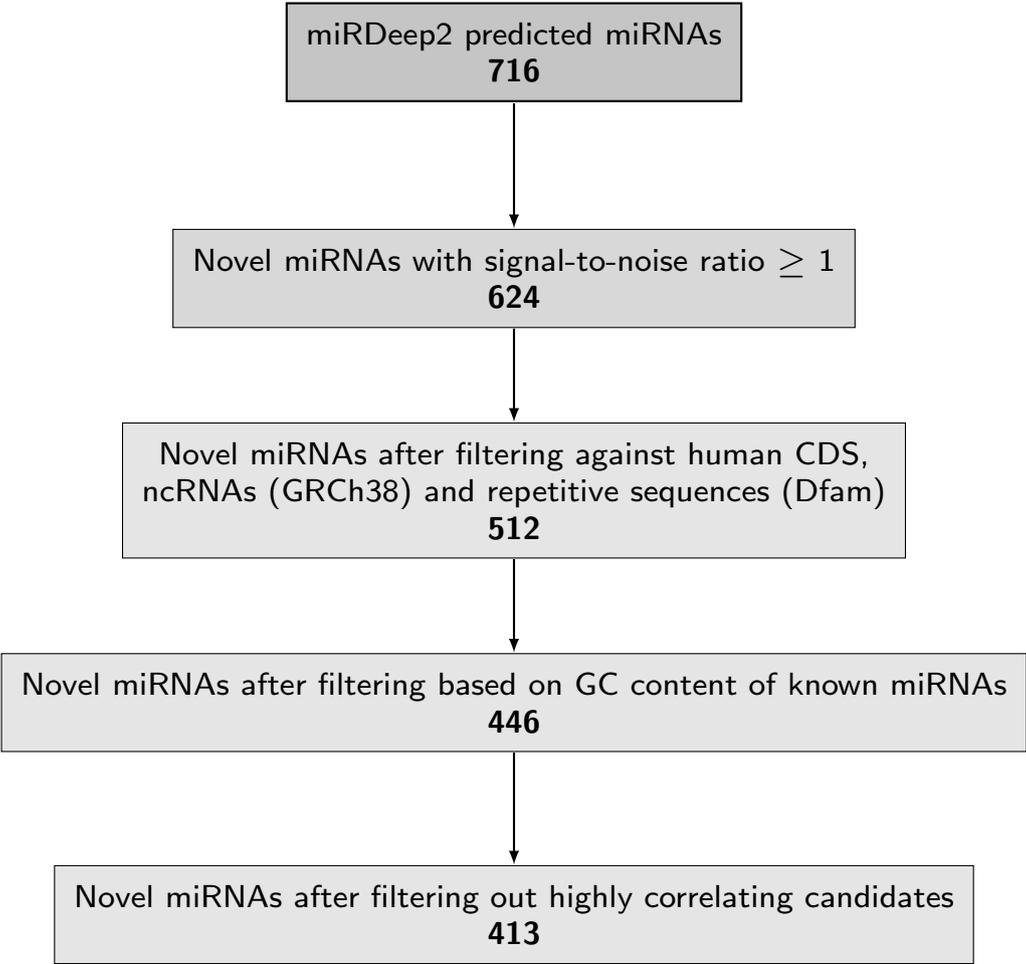
# Supplementary Figures



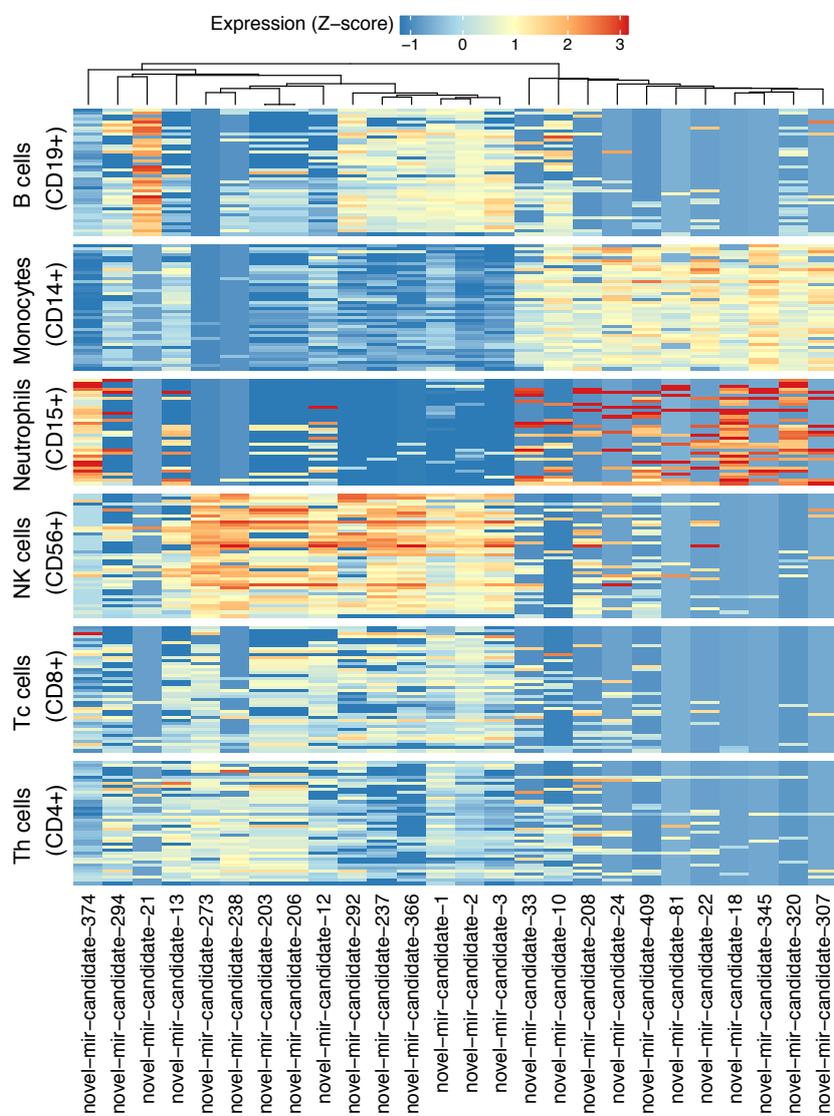
**Supplementary Figure S1: Overview of the small RNA transcriptome data. A)** The purity of blood cell populations after sorting by MACS; **B)** Raw reads per sample within different blood compounds; **C)** Read length distribution of pre-filtered sequencing reads; **D)** Composition of filtered reads within different blood compounds. The reads were filtered against non-miRNA small RNAs from Rfam (green), viral genomes from RefSeq (yellow) and viral precursors from miRBase (orange); **E)** Overall composition of the initial reads per sample in distinct blood compounds. Due to a small fraction of novel miRNAs, their proportions within most of the samples are not visible in graphs; **F)** Number of reads mapped to known miRNAs per distinct blood compound; **G)** Number of mature miRNAs detected per individual blood compound. **Note:** Samples in graphs B, D and E are aligned in the same order.



**Supplementary Figure S2:** Heatmap representing the expression levels of blood cell lineage-specific isomiRs. Each row of the heatmap corresponds to the one of the samples per blood cell types, and each column corresponds to an isomiR. All molecules were significantly up-regulated (FDR p-value<0.001;  $|\log_2FC|>1$ ) exclusively in one of the cell types. The unsupervised hierarchical clustering of isomiRs was performed using Spearman's correlation distance as metric and average linkage clustering as linkage criterion.



Supplementary Figure S3: Filtering pipeline of novel miRNA candidates.



**Supplementary Figure S4:** Expression of blood cell specific novel miRNA candidates in different blood cells. In the heatmap, rows represent samples and columns represent novel miRNA candidate transcripts which are exclusively significantly up-regulated (FDR  $p$ -value  $< 0.001$ ;  $|\log_2FC| > 1$ ) in one of the cell types. The Z-score represents standardized normalized expression values. The unsupervised hierarchical clustering was performed using Spearman's correlation distance as metric and average linkage clustering as linkage criterion.