Non-invasive Potential Circulating mRNA Markers for Colorectal Adenoma Using Targeted Sequencing

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We have developed an optimized protocol for plasma targeted mRNA sequencing in our previous study. Here, we performed plasma targeted mRNA sequencing for 40 colorectal adenoma patients and 39 colonoscopy-proven normal controls in order to find potential circulating mRNA markers for colorectal adenoma. Results showed that GSK3A and RHOA were differential expressed genes identified by a cut-off of fold change > 2 and adjusted P value < 0.05. More detailed analysis showed that the expression of both GSK3A (0.01-fold with adjusted P < 1×10-6) and RHOA (0.35-fold with adjusted P < 0.01) in adenoma patients was significantly lower than those in normal healthy subjects. Based on the enrichment analysis of biological process for potential markers, we found that the regulation of programmed cell death (GO: 0043067; GO: 0043069), regulation of cell death (GO: 0010941; GO: 0060548) and cell differentiation (GO: 0021861) were the main processes involved in adenoma formation. In summary, this study is a cutting-edge research on the detection of plasma mRNA in colorectal adenoma patients and normal healthy subjects.