Identification of Circulating Biomarkers in Patients with Active Inflammatory Bowel Disease

ORB Contributes to New Findings in Inflammatory Bowel Disease Research –Implications for the Development of a Non-Invasive Diagnostic Panel

A recent publication in volume 21 issue 3 of Inflammatory Bowel Diseases, entitled “Overexpression of miR-595 and miR-1246 in the Sera of Patients with Active Forms of Inflammatory Bowel Disease”, demonstrates Ocean Ridge Biosciences’ (ORB) profiling capabilities to identify circulating biomarkers. This study revealed that microRNAs miR-595 and miR-1246 circulating in serum can distinguish patients with active inflammatory bowel disease from those with inactive disease, and from healthy subjects. The microRNAs could be included in a diagnostic reagent panel to non-invasively measure disease activity in patients, and monitor their response to treatment, or be employed as targets for therapeutic intervention. During the last century, inflammatory bowel disease (IBD), including ulcerative colitis (UC) and Chron’s disease (CD) emerged with dramatically increasing incident rates, and despite extensive research the etiology of IBS remains unknown. This publication by Dr. Geoff Krissansen and co-workers in the departments of Molecular Medicine and Pathology and Medicine Faculty of Medical and Health Sciences in the University of Auckland presents evidence miR-595 and miR-1246 might be associated with IBD pathogenesis as they distinguish active versus inactive disease.

Ocean Ridge Biosciences (ORB) performed RNA isolations from patients’ sera samples, microarray analysis with multispecies miRBase v. 15 microarrays, and validation of selected miRNAs with ABI Taqman qPCR analysis during Phase II and III studies. ORB’s proprietary microarray v. 15, which is capable of detecting as little as 20 attamole of synthetic microRNA, and subsequent data analysis revealed upregulation by 2-fold of 168 microRNAs in sera of colonic CD, UC, and rheumatoid arthritis (RA) patients with active disease versus healthy control subjects. During Phase II of Krissansen’s work, a total of 20 microRNAs, selected from the original group of microRNAs determined to be significantly upregulated by microarray analysis, were validated with RT-qPCR analysis. A subset of 5 microRNAs were shown to be significantly upregulated in at least one disease group by this validation study that utilized sera from 10 patients with active disease and healthy controls from cohorts separate from the microarray analysis. Phase III expanded the cohorts of disease patients to include varying levels of disease activity and increased the healthy controls group by 5-fold to further validate selected microRNAs with RT-qPCR.

Ultimately, Krissansen and colleagues showed both miR-595 and miR-1246 were strongly upregulated with high significance levels (P < 0.001) for CD and UC patients and upregulated with significance (P < 0.036) for RA in patients with active disease compared to those with inactive disease or healthy controls, and thereby revealing miR-595 and miR-1246 as biomarkers useful to patient stratification. The first author of the research article states “I thoroughly enjoyed working with ORB on the project. The level of support, efficiency, and professionalism was exemplary, and I highly recommend ORB to anyone contemplating a microRNA profiling project.”

About Ocean Ridge Biosciences

Ocean Ridge Biosciences supports academic and industrial researchers internationally to further biomarker identification and the understanding of responders vs non-responders, patient stratification, and mechanisms of action. In addition to microRNA microarray analysis, ORB’s service profile includes gene expression microarrays analysis, RNA sequencing, small RNA sequencing, quantitative multiplex protein profiling, and bioinformatics. ORB specializes in difficult sample types, such as low volume or degraded samples. With ORB service packages, researchers are supported from customized study design through the publication, patent, and IND application processes.