Differences in our DNA sequence are responsible for the differences in our appearance, susceptibility to diseases, and variability to drug response. The focus of our research was to identify novel genetic variants associated with allergic diseases/immune-related diseases and to elucidate the associated pathways by genome analysis. Big genetic data has been generated by next generation sequencing and array-based genotyping technique in recent years. Using this big data, we aim to improve our ability to predict common diseases and new treatments.