Image-based classification of acute myeloid leukemia

김유식[†]
한국과학기술원
(ysyoosik@kaist.ac.kr[†])

Acute myeloid leukemia (AML) is an aggressive blood cancer characterized by the abnormal proliferation of immature myeloblasts. Compared to other types of leukemia, AML was notoriously known to have low overall survival and high mortality rate, even at the early diagnosis stage. To overcome AML, continuous efforts have been made clinically to establish new guidelines for early and more accurate diagnosis and to develop more effective treatment methods. In this talk, we present two image-based approaches to classify AML patients. First, we combine RNA in situ hybridization (RNA-ISH), quantitative image-analysis, and RNA-sequencing to develop clinically applicable detection tools that can quantitate the expression ratio of cancer-specific splicing variant AIMP2-DX2. Second, we present an optical methodology to categorize AML subtypes through optical diffraction tomography (ODT) and deep learning. Collectively, our methods present image-based diagnostic tools to subclassify AMLs based on their morphology and gene expression to ensure maximal patient survival.