中文題目：利用人工智慧協助骨髓抹片判讀與診斷

英文題目：Using artificial intelligence to assist bone marrow smear reading and diagnosis

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Background: Despite the development of flow cytometry (FCM), molecular and gene analyzes, and bone marrow aspiration, biopsy is still the golden tool for the diagnosis of hematological diseases. However, the interpretation of the result is laborious and operator dependent. Furthermore, the results obtained by different specialists have inter- and intra-variations. Therefore, it is important to develop a more objective and automated analysis system. Using artificial intelligence evolution, several deep learning models have been developed and applied in medical image analyzes, but not in the field of hematological histology, especially for bone marrow smear applications.

Method: Spanning from January 1, 2016 to December 31, 2018, bone marrow smears were photographed and derived into development cohort, validation cohort, and competition cohort. This study included eight annotation categories: erythroid, blasts, myeloid, lymphoid, plasma cells, monocyte, megakaryocyte, and unable to identify. BMSNet is a convolutional neural network with YOLO v3 architecture, which detects and classifies in one model. Six visiting staff and one resident participated in a human–machine competition, and the results from the FCM were considered as the ground truth.