



# A Single-cell Morphological Dataset of Leukocytes from AML Patients and Non-malignant Controls (AML-Cytomorphology\_LMU)

# Summary

The Munich AML Morphology Dataset contains 18,365 expert-labeled single-cell images taken from peripheral blood smears of 100 patients diagnosed with Acute Myeloid Leukemia at Munich University Hospital between 2014 and 2017, as well as 100 patients without signs of hematological malignancy. Image acquisition was done using a M8 digital microscope / scanner (Precipoint GmbH, Freising, Germany) at 100-fold optical magnification and oil immersion. Pathological and non-pathological leukocytes were classified into a standard morphological classification scheme derived from clinical practice by trained experts. To quantify inter- and intra-rater variability of examiners, a subset of images was re-annotated up to two times. The dataset has been used by the authors to train a convolutional neural network for single-cell morphology classification.




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- German Research Foundation, grant SFB 1243.
- Christian Matek gratefully acknowledges support from Deutsche José Carreras-Leukämie Stiftung.

## Data Access

### Data Access

Data Type	Download all
Images (TIFF, 11 GB)	
Abbreviations (TXT)	
Annotations (DAT)	

## Detailed Description

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Image Statistics	
Modalities	Pathology
Number of Participants	200
Number of Images	18,365
Images Size (GB)	11

## Additional Information about Data

- All single-cell images in this dataset were produced using the M8 digital microscope/scanner (Precipoint GmbH, Freising/Germany) from peripheral blood smears at 100x magnification and oil immersion. A coverage of 14.14 Pixels per Micron is given by the manufacturer.
- The abbreviations used for morphological classes in annotations and the folder structure are defined in abbreviations.txt
- Annotations are given in the file annotations.dat. In this file, the first column gives the name of the respective image file and the second column the morphological class assigned during the gold-standard annotation. If a single-cell image was re-annotated, the result of the first re-annotation process by a second independent annotator is given in the third column, and the result of the second re-annotation process after a time interval of 11 months by the same re-annotator in the fourth column. If a single-cell image was not re-annotated, the third and fourth column contain the value "nan".
- For details of the scanning and annotation process, please refer to:
  - Matek et al., Human-level recognition of blast cells in acute myeloid leukemia with convolutional neural networks., Nat. Mach. Intell. (2019)

### Citations & Data Usage Policy

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#### Data Citation

"Matek, C., Schwarz, S., Marr, C., & Spiekermann, K. (2019). A Single-cell Morphological Dataset of Leukocytes from AML Patients and Non-malignant Controls [Data set]. The Cancer Imaging Archive. <https://doi.org/10.7937/tcia.2019.36f5o9ld>"

#### Publication Citation

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### TCIA Citation



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### Versions

#### **Version 1 (Current): Updated 2019/10/24**

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