**About this dataset**

Bone marrow biopsy is procedure applied to collect and examine bone marrow — the spongy tissue inside some of your larger bones.  
This biopsy can show whether your bone marrow is healthy and making normal amounts of blood cells. Doctors use these procedures to diagnose and monitor blood and marrow diseases, cancers, as well as fevers of unknown origin.

The dataset contains a collection of over **170,000** de-identified, expert-annotated cells from the bone marrow smears of 945 patients stained using the May-Grünwald-Giemsa/Pappenheim stain. The diagnosis distribution in the cohort included a variety of hematological diseases reflective of the sample entry of a large laboratory specialized in leukemia diagnostics. Image acquisition was performed using a brightfield microscope with 40x magnification and oil immersion.

All samples were processed in the Munich Leukemia Laboratory (MLL), scanned using equipment developed at Fraunhofer IIS and post-processed using software developed at Helmholtz Munich.

**How to use this dataset**

* Create a multi-classification model to predict cell abnormalities;
* Create a binary-classification model to predict if a cell is normal or not.

# Acknowledgements

If you use this dataset in your research, please credit the authors.

### Citation

Matek, C., Krappe, S., Münzenmayer, C., Haferlach, T., & Marr, C. (2021). An Expert-Annotated Dataset of Bone Marrow Cytology in Hematologic Malignancies [Data set]. The Cancer Imaging Archive. <https://doi.org/10.7937/TCIA.AXH3-T579>

Matek, C., Krappe, S., Münzenmayer, C., Haferlach, T., and Marr, C. (2021). Highly accurate differentiation of bone marrow cell morphologies using deep neural networks on a large image dataset. <https://doi.org/10.1182/blood.2020010568>

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# Abstract

Classify fetal health in order to prevent child and maternal mortality.

# About this dataset

## Context

Reduction of child mortality is reflected in several of the United Nations' Sustainable Development Goals and is a key indicator of human progress.  
The UN expects that by 2030, countries end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce under‑5 mortality to at least as low as 25 per 1,000 live births.

Parallel to notion of child mortality is of course maternal mortality, which accounts for **295 000 deaths** during and following pregnancy and childbirth (as of 2017). The vast majority of these deaths **(94%)** occurred in low-resource settings, and most **could have been prevented**.

In light of what was mentioned above, **Cardiotocograms (CTGs)** are a simple and cost accessible option to assess fetal health, allowing healthcare professionals to take action in order to prevent child and maternal mortality. The equipment itself works by sending ultrasound pulses and reading its response, thus shedding light on fetal heart rate (FHR), fetal movements, uterine contractions and more.

## Data

This dataset contains **2126** records of features extracted from Cardiotocogram exams, which were then classified by three expert obstetritians into **3 classes**:

* Normal
* Suspect
* Pathological

# How to use

* Create a multiclass model to classify CTG features into the three fetal health states.

# Acknowledgements

If you use this dataset in your research, please credit the authors.

### Citation

Ayres de Campos et al. (2000) SisPorto 2.0 A Program for Automated Analysis of Cardiotocograms. J Matern Fetal Med 5:311-318 ([link](https://onlinelibrary.wiley.com/doi/10.1002/1520-6661(200009/10)9:5%3C311::AID-MFM12%3E3.0.CO;2-9))

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