BIOLOGICAL DATA AND THEIR CHARACTERISTICS

Before embarking on a long tour across different machine learning methods, it is useful to look at some popular and their characteristics.

First of all, a typical gene expression data set contains a matrix \( X \) of real numbers. Let \( D \) and \( N \) be the number of its rows and columns, respectively. Then \( X \) is represented as

\[
X = \begin{bmatrix}
x_{11} & \cdots & x_{1N} \\
\vdots & \ddots & \vdots \\
x_{D1} & \cdots & x_{DN}
\end{bmatrix},
\]

where \( x_{ij} \) represents the value in the \( i \)th row and \( j \)th column.
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