**TASK 3**

Information content:

IC = | P(Letter|Matrix) * $\log_2$(P(Letter|Matrix) / P(Letter|Background)) |

where P(Letter|Matrix) = #Letter in Position / #Samples taken for Position
and P(Letter|Background) = 0.25 for approx. equally distributed ACGT

Frequency Matrix:

| Letter\Position | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| A | 0.245 | 0.000 | 0.981 | 0.000 | 0.472 |
| C | 0.245 | 0.094 | 0.000 | 0.000 | 0.132 |
| G | 0.340 | 0.906 | 0.019 | 0.000 | 0.283 |
| T | 0.170 | 0.000 | 0.000 | 1.000 | 0.113 |

Information Content (Bits):
using 0 for letter-position-combinations with 0 relative frequency

| Letter\Position | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| A | 0.00674 | 0 | 1.93530 | 0 | 0.43205 |
| C | 0.00674 | 0.13264 | 0 | 0 | 0.12158 |
| G | 0.15011 | 1.68185 | 0.07034 | 0 | 0.05065 |
| T | 0.09475 | 0 | 0 | 2.0 | 0.12939 |

PubMed publications association GATA2 with cancer:

1.
Name of Cancer:        Promyelocytic Leukemia
Title of publication:  Tumor suppressor function of Gata2 in acute promyelocytic leukemia
PMID:                  34125173

2.
Name of Cancer:        Castration-resistant Prostate Cancer
Title of publication:  Inhibition of GATA2 in prostate cancer by a clinically available small
                       molecule
PMID:                  34636746

3.
Name of Cancer:        Myelomonocytic Leukemia
Title of publication:  GATA2 hypomorphism induces chronic myelomonocytic leukemia in mice
PMID:                  30710465