# BIOINFORMATION

## Supplementary material:

**Methodology:**
**Equations:**

| (1) | $$d_i(t) = \sum_{j=1}^{N} (x_j(t) - w_{ij}(t))^2$$ | Where $d_i(t)$ is the Euclidean distance, $i$ is the neuron index, $j$ is the input node index, $N$ is the number of input signals (dimension of the input vector $x$), $x_j(t)$ is the input signal in node $j$ at iteration $t$, and $w_{ij}(t)$ is the weight between input node $j$ and neuron $i$ at iteration $t$. |
|---|---|---|
| (2) | $$\Delta w_{ij} = \text{n}(t).\,\text{h}_{ik}(t).\,(x_j - w_{ij})$$ | Where $\Delta \text{w}$ is the adjusted weight value, and $n(t)$ and $h_{ik}$ are the learning and neighborhood values for neuron grid update. |

**Table 1:** Organization of the sequenced samples according to the type of tissue, staging, and presence of GC

| Sample (Barcode) | Type of Tissue | TNM* | Type of Gastric Cancer |
|---|---|---|---|
| 1 | Healthy Gastric Tissue | - | - |
| 2 | Healthy Gastric Tissue | - | - |
| 3 | Adjacent Tissue | T1 | Intestinal |
| 4 | Gastric Cancer Tissue | T1 | Intestinal |
| 5 | Adjacent Tissue | T1 | Intestinal |
| 6 | Gastric Cancer Tissue | T1 | Intestinal |
| 7 | Gastric Cancer Tissue | T1 | Difuse |
| 8 | Adjacent Tissue | T1 | Difuse |
| 9 | Gastric Cancer Tissue | T4 | Intestinal |
| 10 | Adjacent Tissue | T4 | Intestinal |

* Tumor Node Metastasis

**Table 2:** Group of 76 miRNAs used as input for the artificial neural network.

| miRNA | | | |
|---|---|---|---|
| hsa-mir-22 | hsa-mir-150 | hsa-mir-130a | hsa-let-7i |
| hsa-mir-26b | hsa-mir-215 | hsa-mir-182 | hsa-let-7b |
| hsa-mir-590 | hsa-mir-1303 | hsa-mir-29c | hsa-mir-558 |
| hsa-mir-455 | hsa-mir-16-1 | hsa-mir-30d | hsa-mir-15a |
| hsa-mir-660 | hsa-mir-223 | hsa-mir-126 | hsa-mir-143 |
| hsa-mir-2276 | hsa-mir-17 | hsa-mir-140 | hsa-mir-34a |
| hsa-mir-574 | hsa-mir-28 | hsa-mir-3159 | hsa-mir-125a |
| hsa-mir-19a | hsa-mir-195 | hsa-mir-31 | hsa-mir-192 |
| hsa-mir-145 | hsa-mir-107 | hsa-mir-425 | hsa-mir-148a |
| hsa-mir-93 | hsa-mir-378 | hsa-mir-30b | hsa-mir-100 |
| hsa-mir-3929 | hsa-mir-1285-1 | hsa-mir-141 | hsa-mir-361 |
| hsa-mir-151 | hsa-mir-135b | hsa-mir-342 | hsa-mir-15b |
| hsa-mir-429 | hsa-mir-200c | hsa-mir-200b | hsa-mir-619 |
| hsa-mir-10a | hsa-mir-375 | hsa-mir-29a | hsa-mir-378c |
| hsa-mir-222 | hsa-mir-30e | hsa-let-7g | hsa-mir-210 |
| hsa-mir-21 | hsa-mir-424 | hsa-mir-221 | hsa-mir-4284 |
| hsa-mir-23a | hsa-mir-200a | hsa-mir-25 | hsa-mir-3607 |
| hsa-mir-23b | hsa-mir-484 | hsa-mir-451 | hsa-mir-199b |
| hsa-mir-1273 | hsa-mir-99a | hsa-mir-142 | hsa-mir-191 |