c

Input

Seq TT...CAGA...TGTC...GA

Model

DNA encoder

Hidden states
$\mathbf{H} \in \mathbb{R}^{L \times 256}$

[B, L]

Hyena Operator

hyena

[B, L, 256]

[B, L, 1]

Softmax
dim = 1

[B, L, 1]

[B, 256]

$\otimes$

$\sum_{i=1}^{L} \alpha_i \mathbf{h}_i$

Attention pooling

Residual Layer
[B, 512]

MLP

MLP

Predict

Bioltogical

Artifcial

d

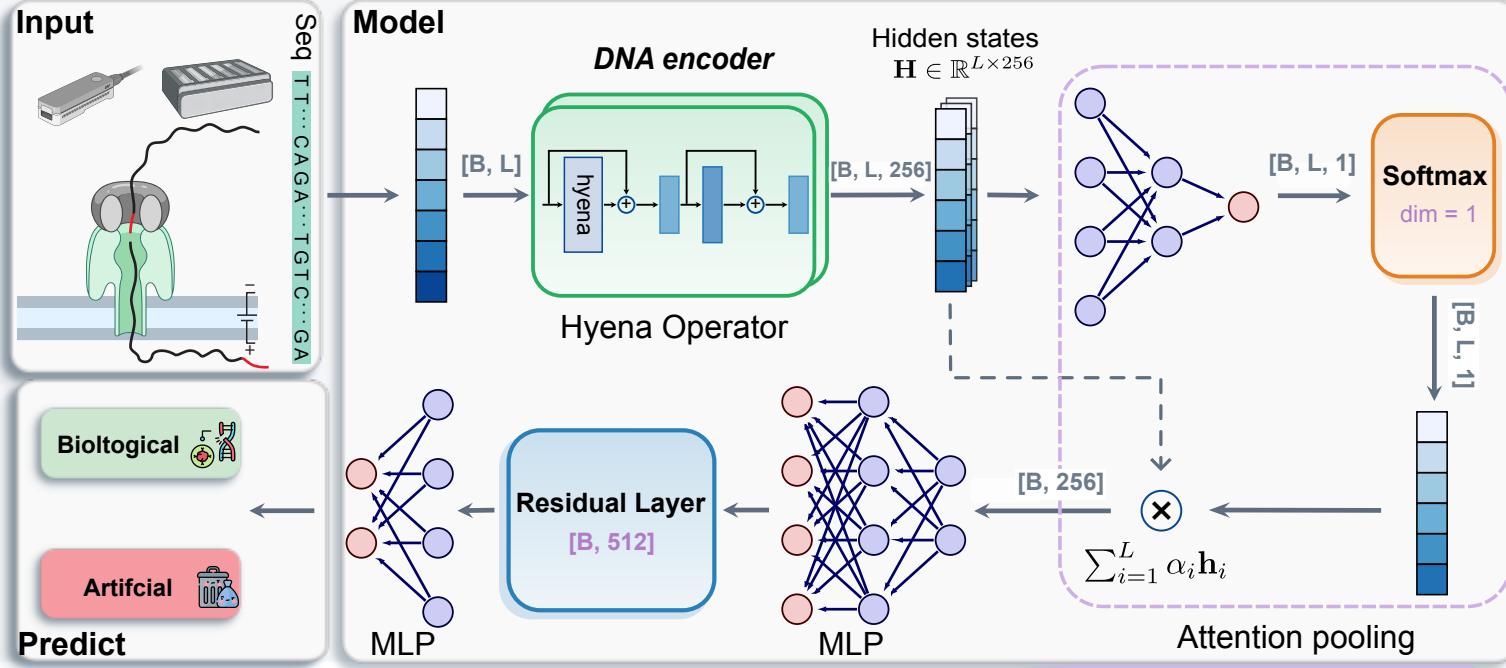B: Batch size
L: Sequence length
256: Hidden dimension size

TCGATG

Input

DNA encoder

Hidden states
$\mathbf{H} \in \mathbb{R}^{L \times 256}$

Linear layer | GELU | Linear layer | Softmax

TCGATG

Weighted sum over L

Attention weights
$\boldsymbol{\alpha} \in \mathbb{R}^{L \times 1}$

Pooled output
$\mathbf{h}_{\text{pooled}} \in \mathbb{R}^{256}$