1. More about our project.
2. Genomic Interpreter: a novel architecture for genomic assay prediction. This model outperforms the state-of-the-art models for genomic assay prediction tasks.

1D-Swin: 1D Shifted window, is a novel transformer-based block designed by us for modelling long range hierarchical data.

Genomic interpreter demonstrates superior performance in gene expression prediction and also unmasks the underlying syntax of gene regulation.

Gene regulation is the process used to control the timing, location and amount in which genes are expressed. Gene regulation is key to the ability of an organism to respond to environmental changes.

Gene regulation is a fundamental process that a cell carries out in order to produce the transcripts that will lead to proteins.

Gene expression be thought of as an “on/off switch” to control when and where RNA molecules and proteins are made and as a “volume control” to determine how much of those products are made.

In these models, DNA sequences are encoded and transformed into high-dimensional vector representations. These encoded vectors are then processed through a series of linear layers to predict the corresponding real-value assay readings.

Predictive assays utilize specialized instrumentation, computational and mathematical tools (algorithms), and biochemical information and techniques to aid in the prediction of the potentially toxic effects of natural or synthetic compounds on the functioning of biological systems.

Swin Transformers: The Shifted Window (Swin) Transformer builds hierarchical feature maps of input images through self-attention operations within a local window and shift operations.