

# Technology Licensing Opportunity



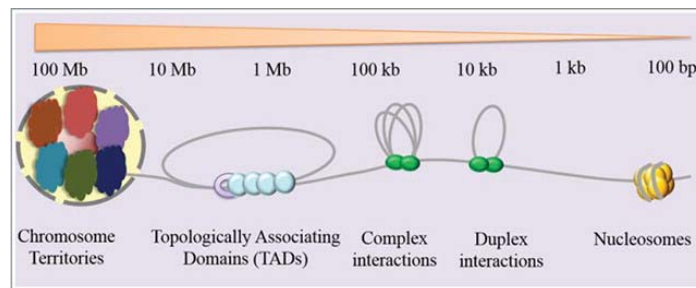
**NUS**  
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Enterprise

## Epigenetics - A computational method for predicting chromatin interactions (CHINN)

### MARKET OPPORTUNITY

“Epigenetics”, the study of changes caused by alteration of gene expression rather than the genetic code, has been gaining importance as a promising scientific approach for understanding complex diseases such as cancer. The pharmaceutical industry experienced considerable growth based on sales revenues of epigenetic drugs and there is increasing interest in discovering new epigenetic targets for non-oncology indications such as inflammatory diseases, autoimmune diseases and neurodegenerative disorders as well. Chromatin interactions play an important role as they bridge gene enhancers or silencers to genes, thereby stimulating or repressing gene expression, respectively. Thus, accurately understanding chromatin interactions is becoming essential for epigenetic drug developers and for the development of chromatin interaction-based biomarkers in health and disease.



Babu and Fullwood, Nucleus, 2015

### TECHNOLOGY

Researchers from NUS and Nanyang Technological University (NTU) have developed a computational method, Chromatin Interaction Neural Network (CHINN), which is able to predict chromatin interactions from DNA sequences directly. The convolutional neural network can both extract the sequence features and be coupled to a classifier to predict chromatin interactions based on the extracted sequence features.

### ADVANTAGES

- Much more accurate than other existing computational methods for chromatin interaction prediction.
- Can be applied to many samples, including clinical samples.
- Very few datasets are required as input: Open chromatin regions and their underlying DNA sequence-based datasets are relatively simple and cost-effective to prepare; many such datasets are also publicly available.

### APPLICATIONS

CHINN has applications in epigenetic drug discovery and biomarker development, in this era of personalized medicine.

### Inventors

Fan Cao

Dr. Melissa Fullwood

E-mail: [melissa.fullwood@nus.edu.sg](mailto:melissa.fullwood@nus.edu.sg)

### Contact:

Radhika Das Chakraborty

Phone: +65-66012768

E-mail: [radhika@nus.edu.sg](mailto:radhika@nus.edu.sg)

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