

# StressRegNet: Molecular representations decipher stress response in gut pathogens

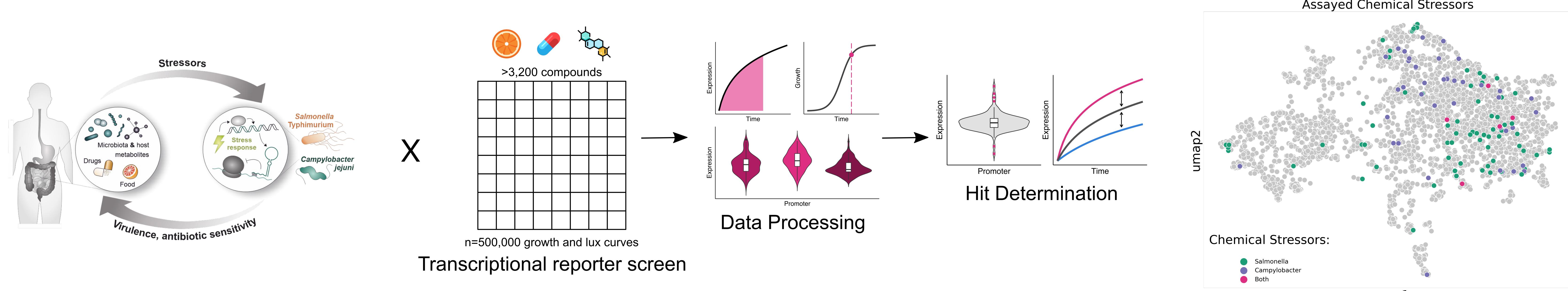
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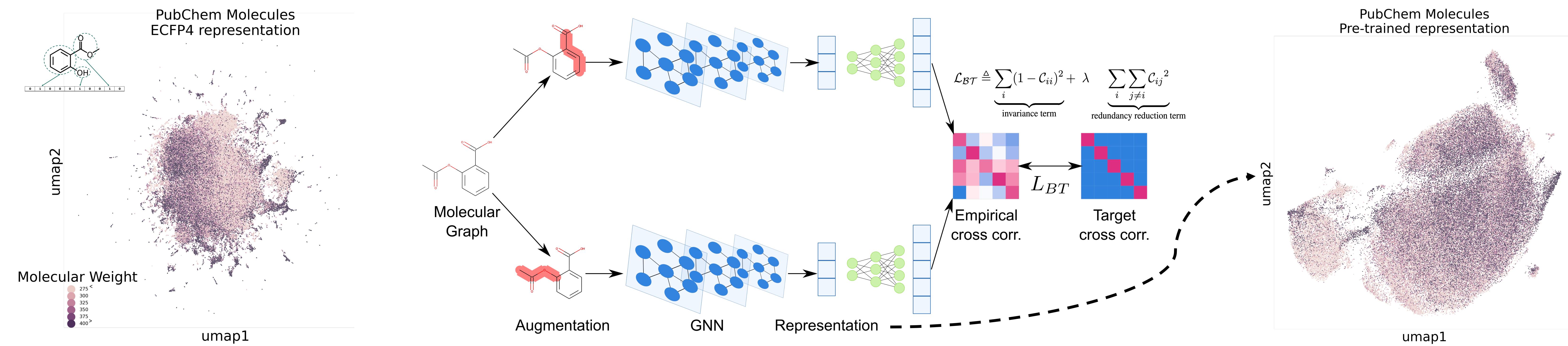
## A diverse set of molecules can induce a transcriptional response

We screen a large chemical library against transcriptional reporters in gut pathogens. We find that structurally diverse chemicals induce a transcriptional response in gut pathogens. It becomes an interesting task to relate chemical structure to the observed stress response.



## We leverage large databases to create a novel molecular representation

By adapting the Barlow-Twins pre-training strategy, we are able to use the structural information of various molecules available in PubChem to create a pre-trained chemical representation that is more informative than commonly used ECFP4 fingerprints.



## Our pre-trained representations can aid various computational tasks

Our pre-trained representation can improve the performance of predictive algorithms in various tasks of biological relevance. Furthermore, the representation can be fine-tuned to certain outcomes. With this, we can begin to clarify how structurally diverse compounds can induce similar responses in our StressRegNet data compendium.

