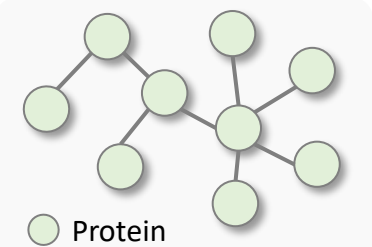
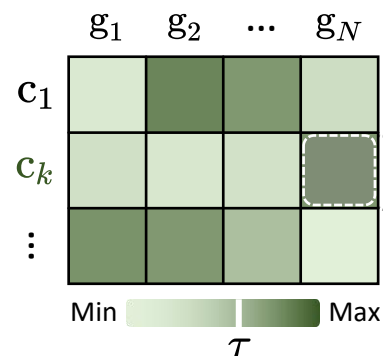


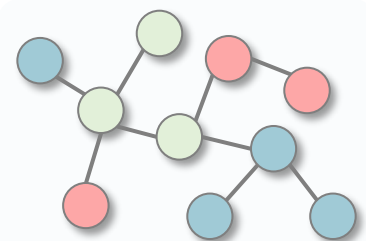
**Multi-omics
Input Data**



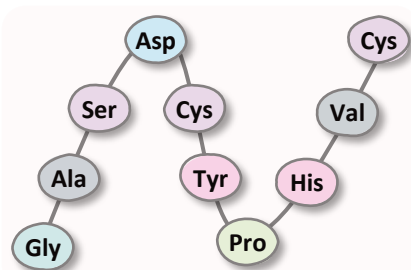
PPI Network



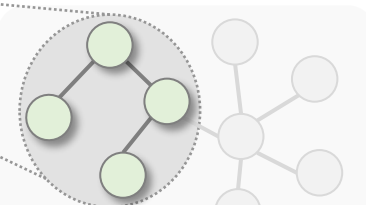
**Over-expressed
Genes Determination**



Biological
Knowledge Graph

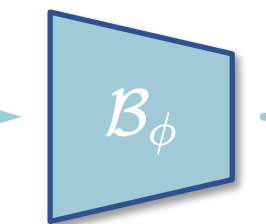


Protein Sequence

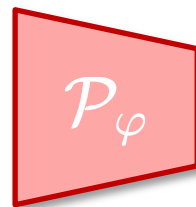


Related proteins of
cell line c_k

Sub-PPI Graph



BKG Encoder



PS Encoder

Cell Line
Encoding

$z_{\text{kg}}(g_j)$

$z_{\text{kg}}(g_i)$

Graph-based
Representation

$z_{\text{seq}}(g_j)$

$z_{\text{seq}}(g_i)$

Sequence-based
Representation

$h(c_k)$

Cell Line
Representation

Triplet Representation

Predictor

\mathcal{L}_{CE}

DLM Loss

\mathcal{L}_{DLM}

CE Loss

\mathcal{L}_{CL}

Optimization