DATASET CURATION BASE LEARNER FEATURE REPRESENTATION Bitter Peptides Non-Bitter Peptides **SELECTION TECHNIQUES BIOPEP** Database Evolutionary Scale Model (ESM) Support Vector Machines (SVM) Binary profile for N- and C- terminus Decision Tree (DT) (BPNC) 56 Base Learners Remove Peptide with 100% identity Naïve Bayes (NB) Amino Acid Index (AAI) (7x8)K-Nearest Neighbors (KNN) Dipeptide Composition (DPC) 320 - BP 320 - Non-BP Logistic Regression (LR) Amino Acid Entropy (AAE) Random Forest (RF) Composition-Transition-Distribution Remove Peptide with 100% identity (CTD) Adaptive Boosting (ADA Boost) **Grouped Tripeptide Composition** Multi-Layer Perceptron (MLP) (GTPC) 64 – BP 256 - BP 64 - Non-BP 256 - Non-BP **OPTIMAL LEARNERS** META LEARNER Learner 1 Learner 2 Learner 3 Learner 4 if MCC>0.8 Reject Logistic Regression (LR) Learner Learner 5 ACC>0.85 Learner 6

Learner 7

Meta Dataset

BP or Non-BP

Learner 8