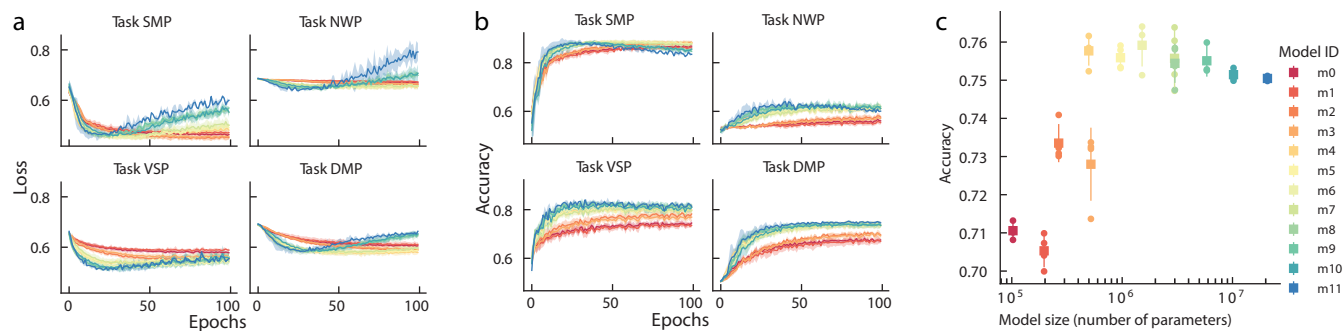
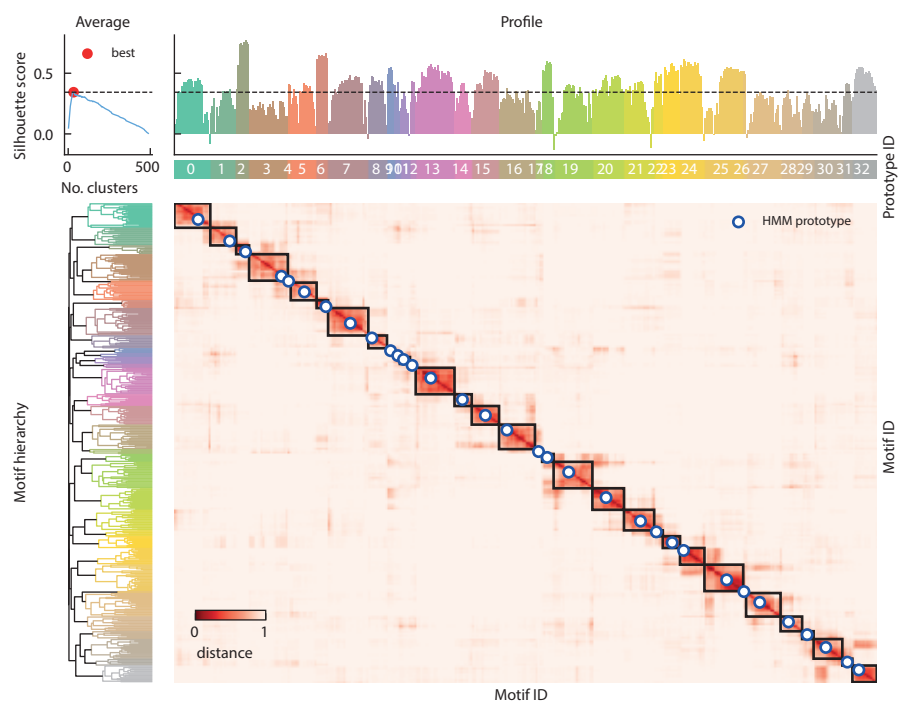






Extended Data Figure 1: LISBET tuning results.

a, Evolution of dev set losses during training for each self-supervised task. Solid lines represent the mean loss across cross-validation folds while the shaded areas represent the corresponding standard deviation. Model ID color codes as in **c**. **b**, Evolution of dev set binary accuracy during training for each self-supervised task. Solid lines and shaded areas have the same meaning as in **b**, Model ID color codes as in **c**. **c**, Binary accuracy summary. Circles represent the mean of the last 5 epochs in each cross-validation fold. Squares and vertical lines represent the mean and standard deviation across cross-validation folds respectively. Sample size $n = 4$ for every model, except model m9 with $n = 3$ and model m11 with $n = 2$.

Extended Data Figure 2: Automatic motif selection for the VTA-pDA dataset.

Top left: silhouette scores used to determine optimal clusters of motifs macro-categories. Bottom left: hierarchical motif clustering. Top right: Selection of prototype motifs within each macro-category. Bottom right: motifs distance matrix (Jaccard distance) with the identified macro-categories delineated by black edge square with corresponding prototype motif (blue circles) and human annotations.

Encoder pre-training	Encoder fine-tuning	Window offset	F1 score	NMI
TRUE	TRUE	0	0.794852	0.636776
FALSE	TRUE	0	0.733333	0.567618
TRUE	FALSE	0	0.69908	0.504681
TRUE	TRUE	49	0.804781	0.637817
TRUE	TRUE	99	0.812269	0.646746
TRUE	TRUE	149	0.802673	0.637473
TRUE	TRUE	199	0.785222	0.623323