Supplementary file 1: Some of the commonly used pre-trained Transformer models in the literature. The higher the number of Transformer parameters, the larger the model.

|  |  |  |  |
| --- | --- | --- | --- |
| Work | No. of Parameters | Database (no. of proteins) for pre-training | Link |
| TAPE (67) | 38M | Pfam database (31M) | https://github.com/songlab-cal/tape |
| ESM-1b (41) | 652.4M | UniParc (250M) | https://github.com/facebookresearch/esm |
| Protein-BERT (42) | 16M | UniRef90 (~106M) | https://github.com/nadavbra/protein\_bert |
| ProTrans (40, 68) | ProtBert – 420M | UniRef100 (216M), BFD (2.1B) | https://github.com/agemagician/ProtTrans |
| ProtAlbert – 224M | UniRef100 (216M), BFD (2.1B) |
| ProtXLNet – 409M | UniRef100 (216M) |
| ProtTXL – 567M, ProtTXL-BFD – 562M | UniRef100 (216M)  BFD (2.1B) |
| ProtElectra – 420M | UniRef100 (216M) |
| ProtT5-XL – 3B  ProtT5-XXL – 11B | UniRef50 (49M) |
| ProtT5-XL – 3B  ProtT5-XXL – 11B | BFD (2.1B) |
| MSA Transformer (43) | 100M | UniRef50 (26M MSAs) | https://github.com/facebookresearch/esm |
| PRoBERTa (69) | 44M | UniProtKB/SwissProt (450K) | https://github.com/annambiar/PRoBERTa |