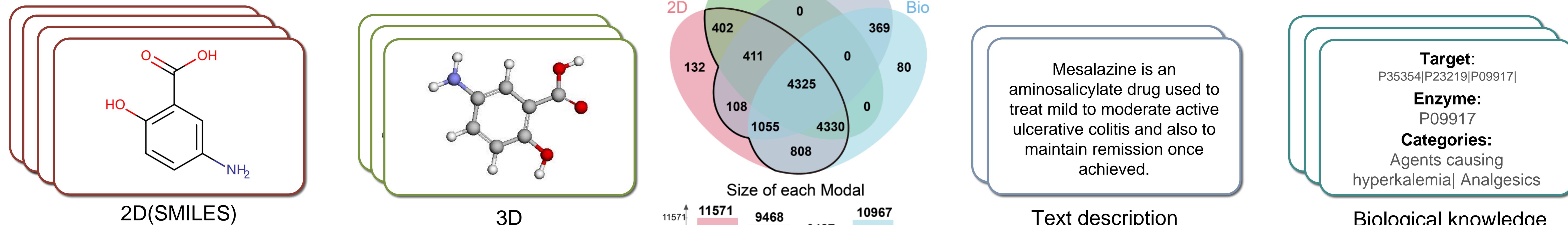
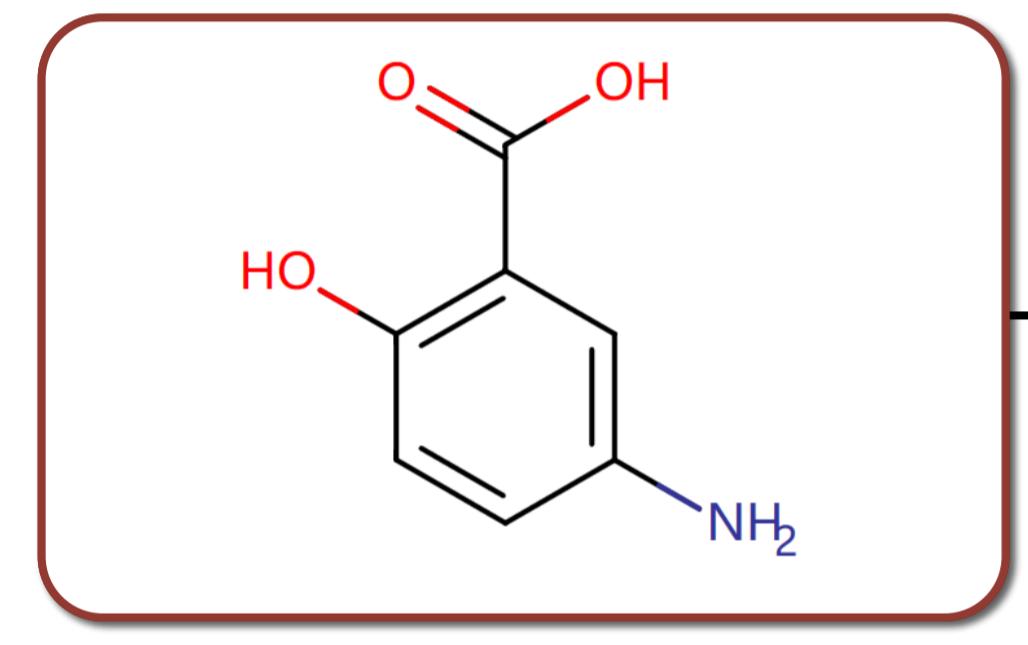


a Molecular multimodal data

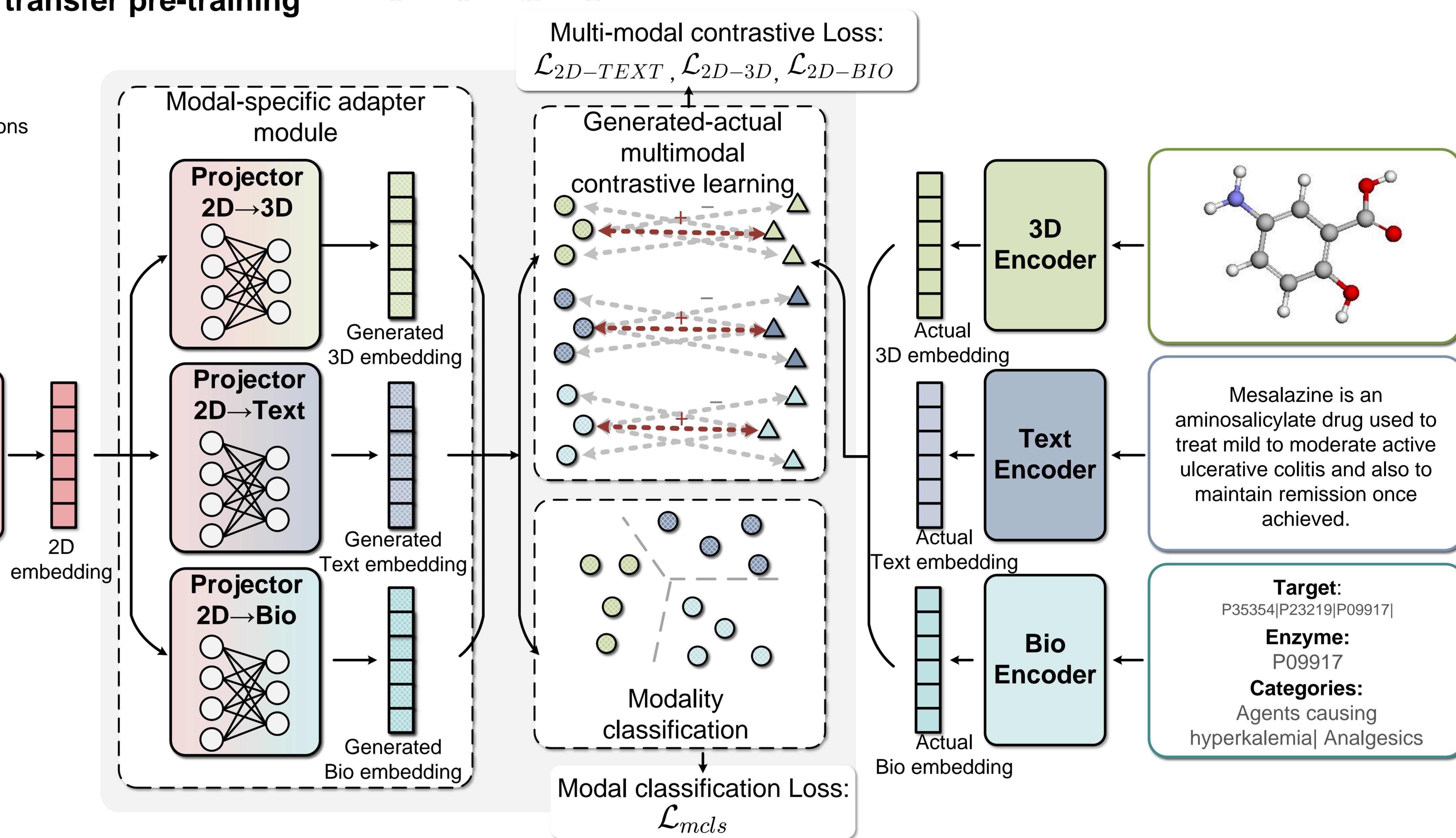


b Multi-to-uni modal knowledge transfer pre-training

- ● ○ Generated multimodal representations
- △ ▲ △ Actual multimodal representations
- ↔ + Contrastive learning
- ↔ - Contrastive learning



Pre-training loss
Multi-modal contrastive Loss
+
Modal classification Loss



c Fine-tuning

