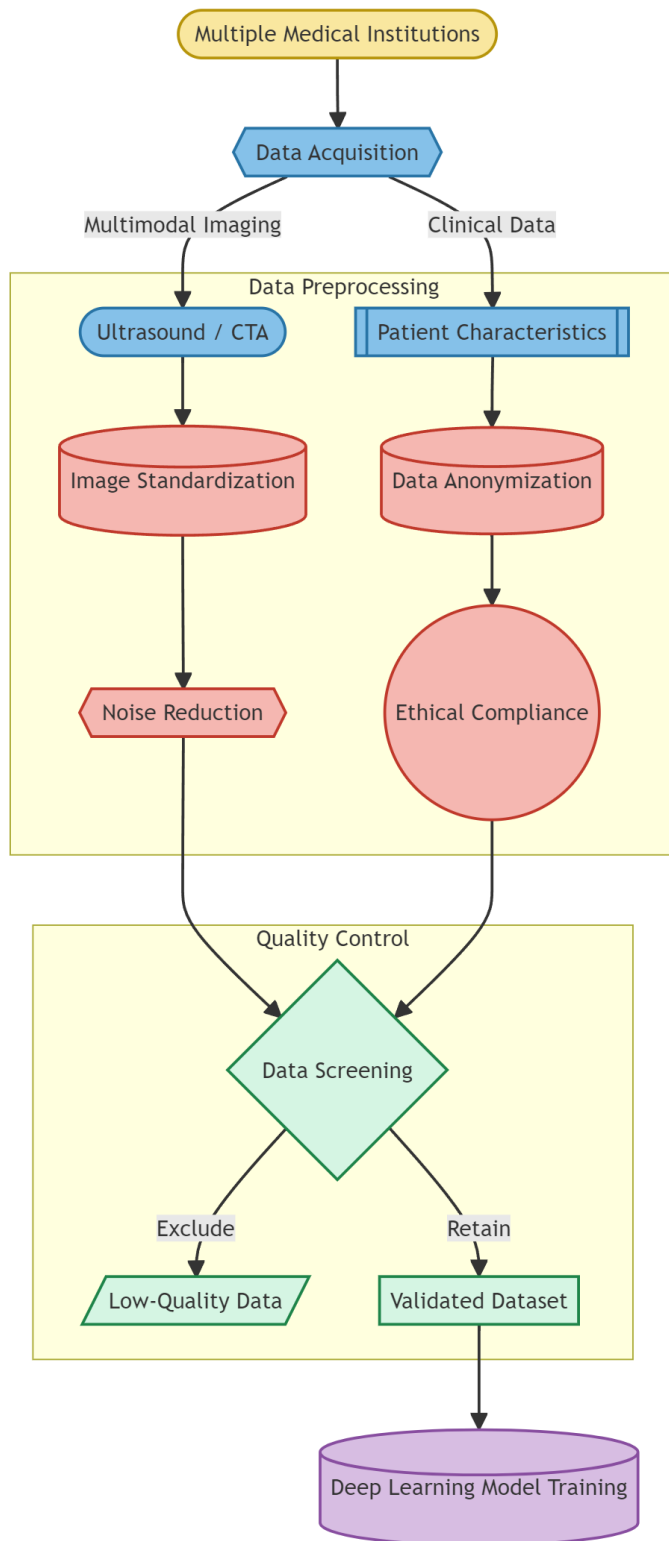
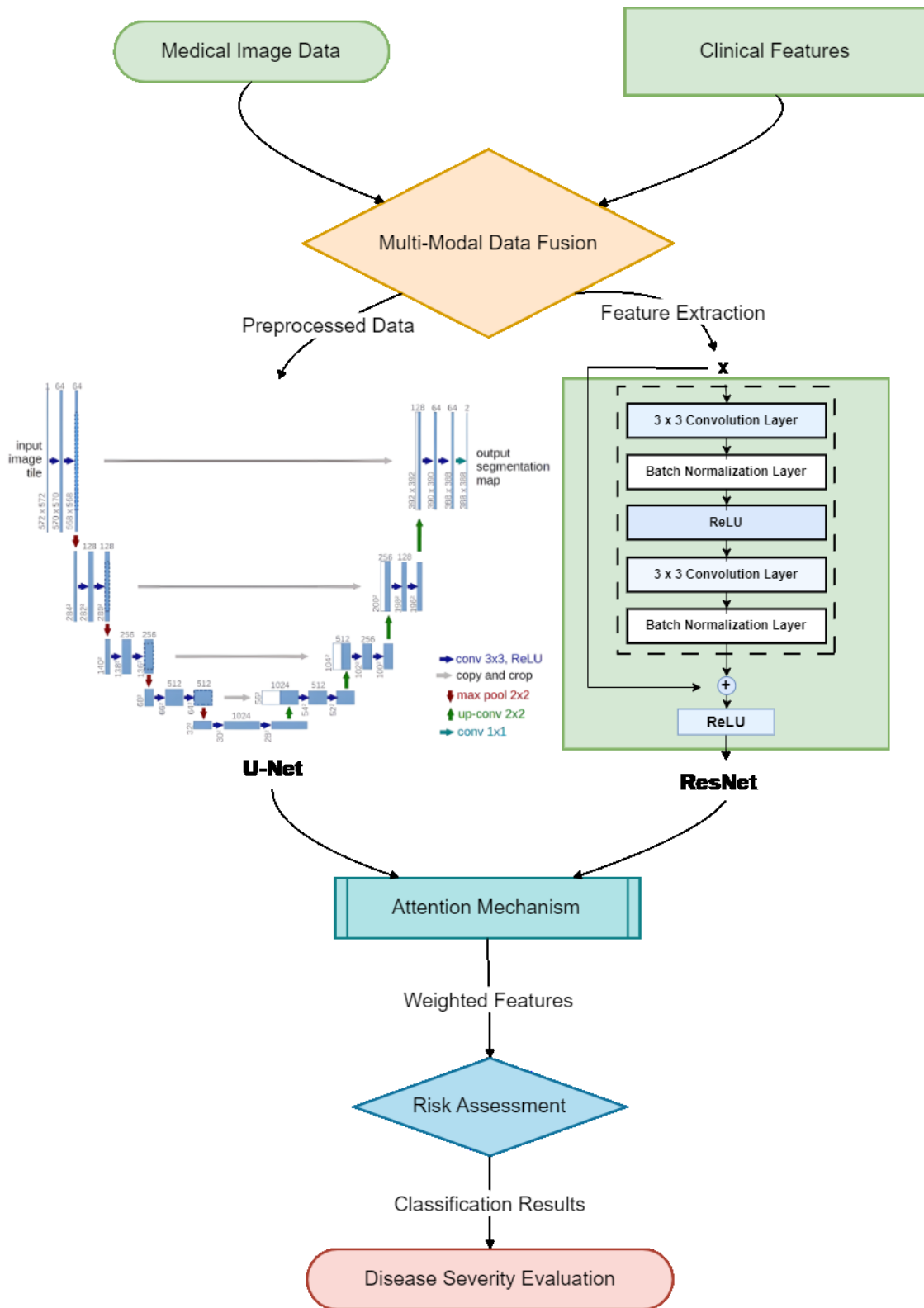


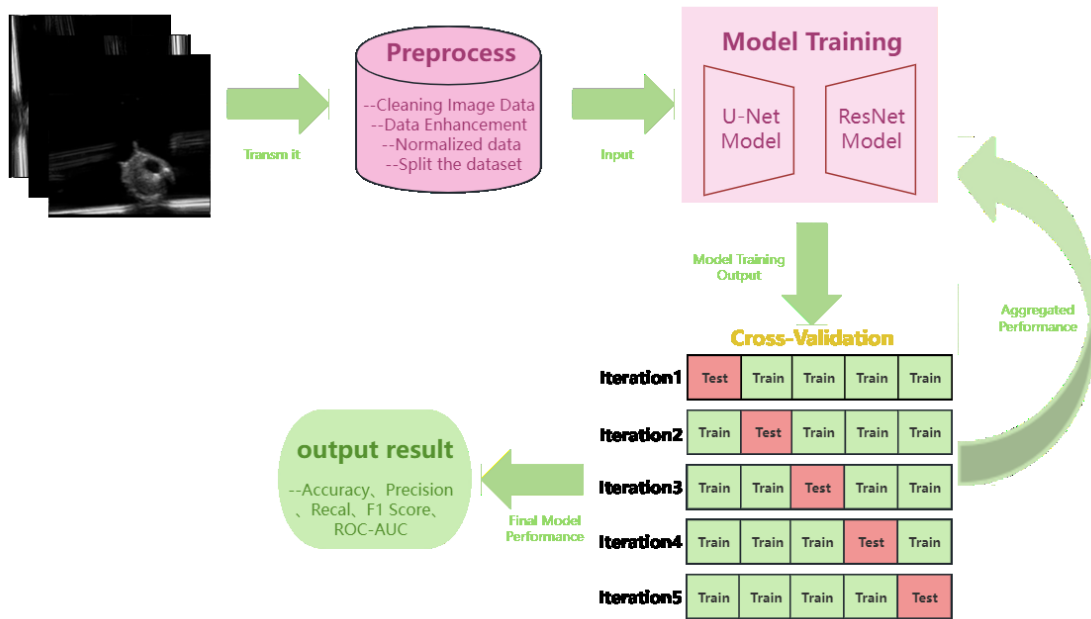
**Supplementary Figure S1.** Workflow of Multimodal Data Collection and Quality Control for Atherosclerosis. This figure illustrates the overall process of data collection, including the sources of public datasets, image acquisition, data cleaning, and quality control procedures



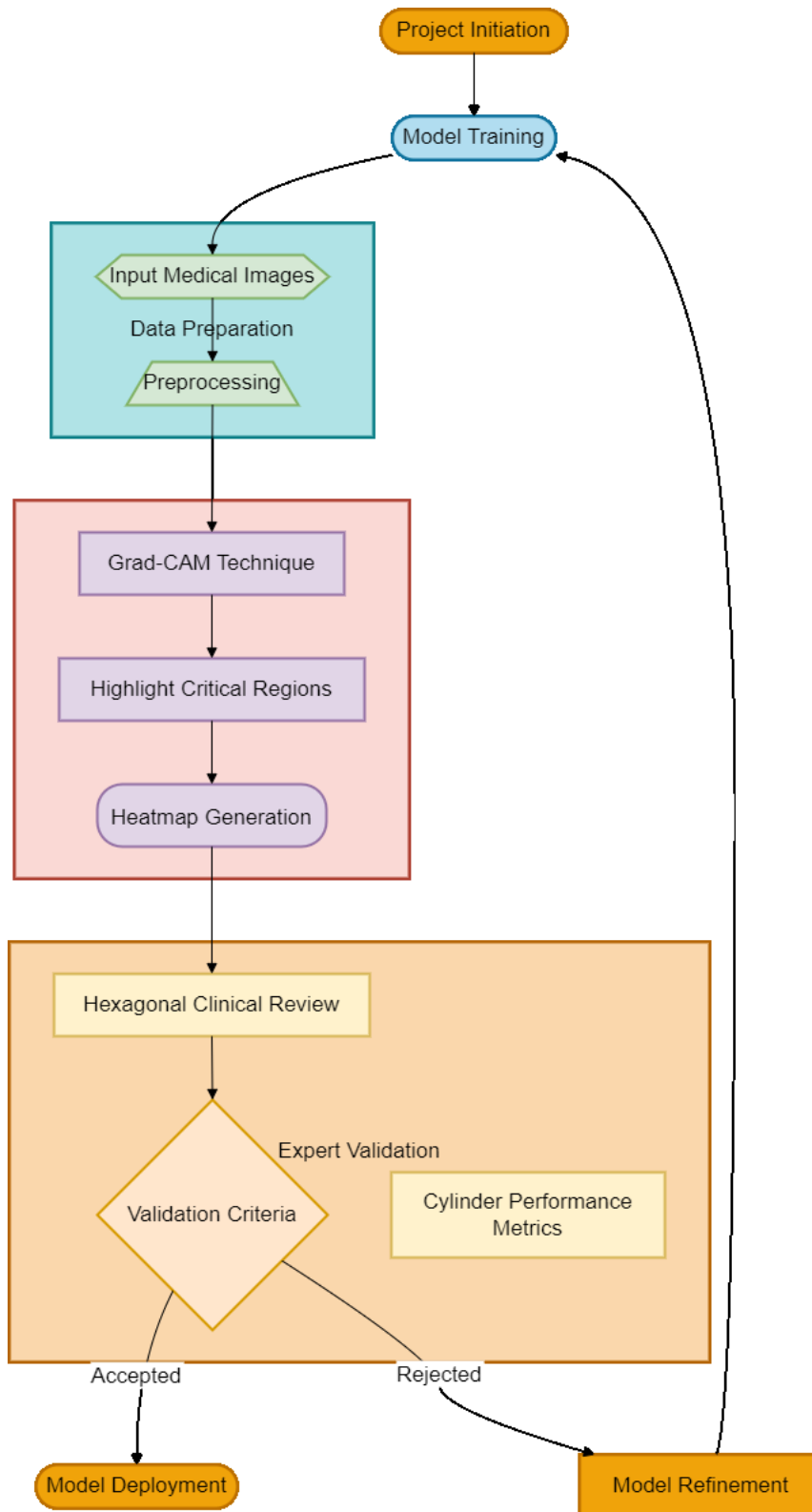
**Supplementary Figure S2.** Flowchart of Image Preprocessing and Annotation. Note: This figure provides a detailed explanation of the image preprocessing pipeline, including denoising, normalization, data augmentation, and the process of expert annotation of lesion regions



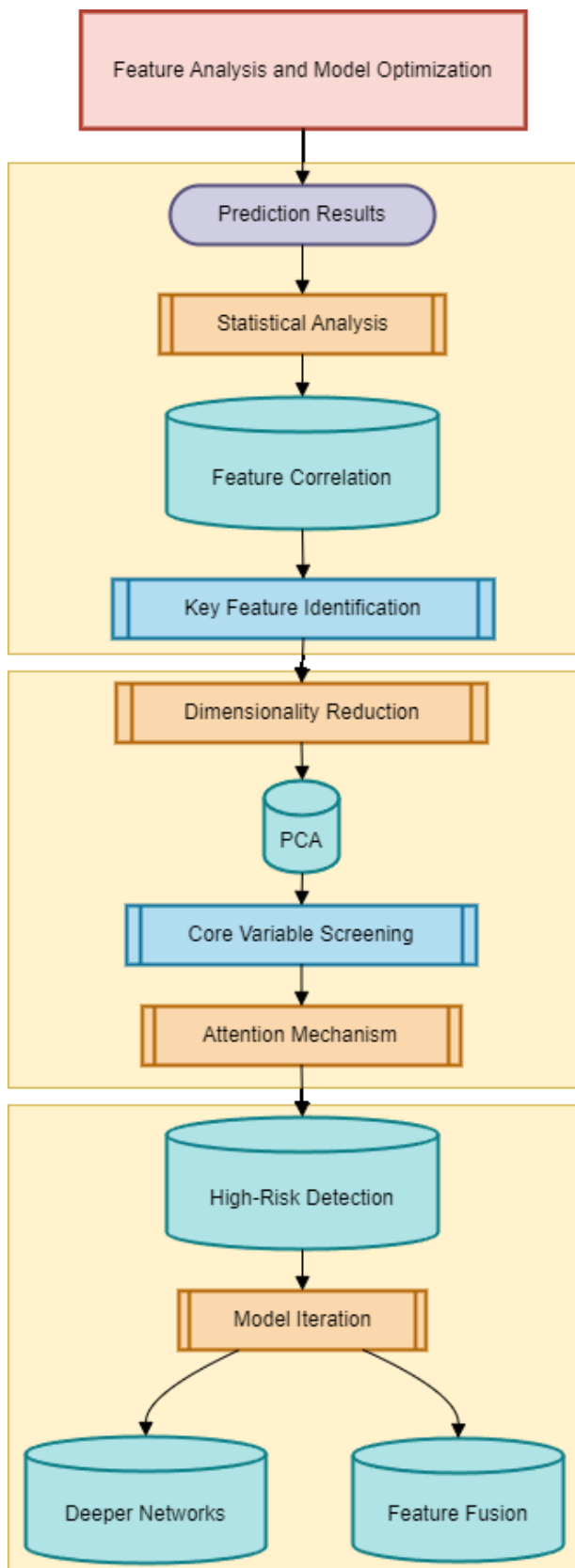
**Supplementary Figure S3.** Schematic Diagram of the Deep Learning Model Architecture. This figure outlines the overall architecture of the model, including U-Net for segmentation, ResNet for feature extraction and classification, and the integration of an attention mechanism



**Supplementary Figure S4.** Flowchart of Dataset Splitting and Cross-Validation. This figure illustrates the process of dividing the dataset into training, validation, and test sets in an 8:1:1 ratio, along with the specific steps involved in 5-fold cross-validation



**Supplementary Figure S5.** Model Interpretability and Grad-CAM Visualization Flowchart. This figure demonstrates the use of methods such as Grad-CAM to generate heatmaps, highlighting the critical lesion regions identified by the model, and the process of validation by experts



**Supplementary Figure S6.** Feature Analysis and Model Optimization Flowchart. This figure shows the steps involved in feature importance analysis, dimensionality reduction, and iterative model optimization