Biomarker Evaluation

score_biomk	roc_biomk
diff_biomk	surv_biomk
compare_biomk	browse_biomk
integrate_analysis	

Response Associated Biomarkers

Data Loading

Gene Expression Matrix

Dataloader

TME Deconvolution

TME_deconvolution	IPS	TIMER
MCPCounter	xCell	fraction_pie
ESTIMATE	EPIC	Cibersort
ConsensusTME	ABIS	quanTIseq

Cell Fraction in TME

Prediction Model Construction

Multimodal Information

Cell Fraction

Samples

Biomarkers

IRS
tGE8
MEMTS
PRGScore
Angiogenesis
… (23 Signatures)

Signature Matrix

Expression Matrix

Machine Learning Algorithms

NB

SVM

RF

LGT

⋮

7 Machine Learning Models

data_standardization	
merge_SE	compare_roc
gini_gene	diff_gene
build_Model	test_Model

Response Prediction Model

Response Prediction Module

pred_response

Responders

Predicted Response

▉	Functional Module
▉	Function
▉	Analysis result