Supplementary

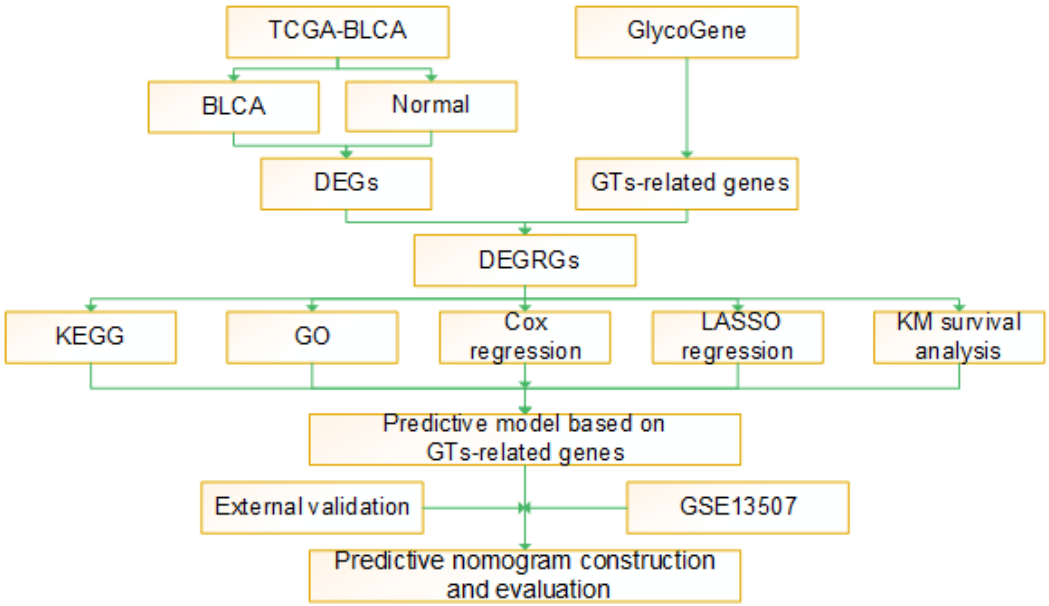

Figure S1 Flow diagram. The BLCA dataset was derived from the TCGA-BLCA cohort downloaded from the database (https://portal.gdc.cancer.gov/) and included 411 BLCA tumor samples (406 samples with survival information) and 19 healthy samples. The GSE13507 dataset from the GEO database (http://www.ncbi.nlm.nih.gov/geo/) was used as a validation set and included 165 primary bladder cancer samples with survival information. Additionally, 169 GT-related genes were obtained from the GlycoGene database (https://acgg.asia/acgg-db-doc/ggdb/). BLCA, bladder urothelial carcinoma; DEG, differentially expressed gene; DEGRG, differentially expressed glycosyltransferase-related gene; GT, glycosyltransferase; GEO, Gene Expression Omnibus; KEGG, Kyoto Encyclopedia of Genes and Genomes; LASSO, least absolute shrinkage and selection operator; KM, Kaplan-Meier; TCGA, The Cancer Genome Atlas.

Table S1 Clinical information tables of samples contained in the training set and the validation set

Character	TCGA-BLCA	GSE13507
Tissue		
Tumor	411	165
Normal	19	0
Gender		
Male	310	135
Female	114	30
Age (years)		
<50	23	18
≥50	401	147
Status		
Alive	191	69
Death	233	96
Survival (years)		
≥5	47	54
<5	377	111

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Tables S2 KEGG enrichment pathway

ID	Description	Gene ratio	Bg ratio	P value	p.adjust	qvalue	geneID	Count
hsa00514	Other types of O-glycan biosynthesis	8/28	47/8163	1.84182253848288e-12	3.68364507696575e-11	1.35713239677686e-11	ST3GAL3/GALNTL6/GALNT6/GALNT14/GALNT15/GALNT16/B4GALT3/COLGALT2	8
hsa00512	Mucin type O-glycan biosynthesis	7/28	36/8163	1.93684926192907e-11	1.93684926192907e-10	7.13576043868605e-11	ST6GALNAC3/GALNTL6/GALNT6/GALNT14/GALNT15/GALNT16/GCNT1	7
hsa00601	Glycosphingolipid biosynthesis - lacto and neolacto series	6/28	27/8163	2.58975936394961e-10	1.72650624263307e-09	6.36081247285869e-10	FUT7/ST3GAL3/ST8SIA1/B3GALT2/B3GNT4/B4GALT3	6
hsa00604	Glycosphingolipid biosynthesis - ganglio series	4/28	15/8163	1.47310088379118e-07	6.92587779613778e-07	2.55163918805076e-07	ST6GALNAC3/ST6GALNAC5/ST6GALNAC6/ST8SIA1	4
hsa00513	Various types of N-glycan biosynthesis	5/28	39/8163	1.73146944903444e-07	6.92587779613778e-07	2.55163918805076e-07	ST3GAL3/B4GALNT4/B4GALT3/ALG3/ALG9	5
hsa00515	Mannose type O-glycan biosynthesis	4/28	23/8163	9.37783151946401e-07	3.12594383982134e-06	1.15166351993418e-06	ST3GAL3/B3GALNT2/B4GALT3/B3GAT2	4
hsa00500	Starch and sucrose metabolism	4/28	36/8163	6.05011313461622e-06	1.72860375274749e-05	6.36854014170128e-06	GYG1/GYS2/PYGB/PYGM	4
hsa00510	N-Glycan biosynthesis	3/28	50/8163	0.000636015264314635	0.00159003816078659	0.000585803532921374	B4GALT3/ALG3/ALG9	3
hsa00533	Glycosaminoglycan biosynthesis - keratan sulfate	2/28	14/8163	0.00100657654850729	0.00223683677446064	0.000824097759011815	ST3GAL3/B4GALT3	2
hsa00532	Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	2/28	20/8163	0.00207507029238454	0.00415014058476908	0.00152899916280966	CHPF/CSGALNACT1	2
hsa04922	Glucagon signaling pathway	3/28	107/8163	0.0056526555508936	0.00966814543762482	0.00356194831912493	GYS2/PYGB/PYGM	3
hsa04931	Insulin resistance	3/28	108/8163	0.00580088726257489	0.00966814543762482	0.00356194831912493	GYS2/PYGB/PYGM	3
hsa04910	Insulin signaling pathway	3/28	137/8163	0.011148623831452	0.0171517289714646	0.00631905804211853	GYS2/PYGB/PYGM	3
hsa00603	Glycosphingolipid biosynthesis - globo and isoglobo series	1/28	15/8163	0.050276550604484	0.0718236437206914	0.0264613424234126	ST8SIA1	1
hsa04217	Necroptosis	2/28	159/8163	0.102570947400889	0.136761263201185	0.0503857285478051	PYGB/PYGM	2
hsa00600	Sphingolipid metabolism	1/28	53/8163	0.16697527281325	0.208719091016562	0.0768965072166282	UGCG	1
hsa00310	Lysine degradation	1/28	63/8163	0.195308420431762	0.229774612272661	0.0846538045215068	COLGALT2	1
hsa04152	AMPK signaling pathway	1/28	121/8163	0.342196239514221	0.38021804390469	0.140080331964886	GYS2	1
hsa05415	Diabetic cardiomyopathy	1/28	203/8163	0.506533638898303	0.533193304103477	0.196439638353913	GYS2	1
hsa04151	PI3K-Akt signaling pathway	1/28	354/8163	0.711620904554404	0.711620904554404	0.26217612273057	GYS2	1

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