

## ПРИЛОЖЕНИЕ

к статье В.В. Климонтова, К.С. Шишина, Р.А. Иванова, М.П. Пономаренко, К.А. Золотаревой, С.А. Лашина  
«База данных о генах и белках, ассоциированных с нарушениями метаболизма глюкозы (Glucogenes®):  
описание и возможности применения в биоинформатических исследованиях»

Клинические SNP-маркеры заболеваний, которые аннотированы в базе данных ClinVar и статистически значимо изменяют сродство ТАТА-связывающего белка (ТВР) к промоторам 52 исследованных генов человека, ассоциированных с нарушениями метаболизма глюкозы (НМГ)

Интернет-портал Glucogenes® (эта работа)			База данных ClinVar (Landrum et al., 2014)				База данных Human_SNP_TATAdb (Филонов и др., 2023)								
№	Символ гена	Статус гликемии	Ассоциации с SNP		База данных dbSNP (Day, 2010)			$K_D$ , нМ, <i>in silico</i>				Достоверность			
			Заболевание	dbSNP ID:min	5'-flank, 10 bp	WT→min	3'-flank, 10 bp	WT $M_0$	min $\pm$ SEM	$M_0$	$\pm$ SEM	z	p	$\rho$	$\Delta$
1	ABCA1	[High and Low Glucose] & [Low Glucose] & [High Glucose];	Hyperinsulinemic hypoglycemia; Hereditary hyperinsulinism; Maturity onset diabetes mellitus in young; Transitory neonatal diabetes mellitus; Transient Neonatal Diabetes; Dominant/Permanent neonatal diabetes mellitus; Hyperinsulinism; Dominant/Recessive Maturity onset diabetes mellitus in young; ABCC8-related disorder; Monogenic diabetes	rs886063317:C	agccgaatct	A→C	taaaaggaac	2.23	0.22	9.87	0.9	21.9	10 <sup>-6</sup>	A	↓
				rs886063317:G	agccgaatct	A→G	taaaaggaac	2.23	0.22	7.05	0.66	16.69	10 <sup>-6</sup>	A	
2	ABCC8	[High and Low Glucose] & [Low Glucose] & [High Glucose]	ABCC8-related disorder, hypoglycemia, hyperinsulinism, diabetes mellitus, monogenic diabetes	rs1409900082:A	agcactttcc	G→A	catcttgcc	74.04	5.71	30.75	2.85	14.58	10 <sup>-6</sup>	A	↑
				rs1409900082:T	agcactttcc	G→T	catcttgcc	74.04	5.71	52.37	3.26	6.99	10 <sup>-6</sup>	A	
				rs1955706366:A	cctgtccagt	G→A	cagagatccg	53.2	4.54	12.08	1.4	20.58	10 <sup>-6</sup>	A	
				rs1957150758:A	cttggccgac	C→A	cttcgggagg	74.04	5.71	47.43	3.75	8.06	10 <sup>-6</sup>	A	
				rs541244107:A	agctgcaagg	G→A	acagaggcgc	59.19	4.91	50.3	3.4	3.04	10 <sup>-2</sup>	C	
				rs541244107:C	agctgcaagg	G→C	acagaggcgc	59.19	4.91	47.44	3.82	3.83	10 <sup>-3</sup>	B	
				rs565662182:A	tgccccccat	G→A	agcccacacc	53.2	4.54	31.21	2.78	8.65	10 <sup>-6</sup>	A	
3	ADAMTS13	[High and Low Glucose]	Abnormal bleeding; Thrombocytopenia Upshaw-Schulman syndrome	rs782563004:G	tccagttatg	T→G	cctgtcctcc	7.54	0.75	10.29	0.98	4.5	10 <sup>-3</sup>	B	↓
				rs587712950:C	accctagcca	T→C	ggcccctgcc	103.92	6.75	57.35	5.28	10.55	10 <sup>-6</sup>	A	↑
4	ADGRV1	[High Glucose]	Usher syndrome type 2C	rs375468899:C	cttatggcta	T→C	gtgacagctg	11.59	1.12	14.55	1.07	3.76	10 <sup>-3</sup>	B	↓
5	AGTR1	[High Glucose]	Renotubular dysgenesis	rs529360494:G	cgcccctcac	T→G	ataaattcgg	1.87	0.19	6.42	0.58	18.28	10 <sup>-6</sup>	A	↓
6	APOA1	[High Glucose]	Adenylosuccinate lyase deficiency	rs909669:T	agattctccg	C→T	agccggcagc	69.13	5.55	55.06	6.65	3.14	10 <sup>-2</sup>	C	↑
7	APOB	[High and Low Glucose]	Familial hypobetalipoproteinemia 1; Hypercholesterolemia, autosomal dominant, type B	rs1266180253:A	ctgagtgccc	T→A	tctcggttgc	71.83	4.85	63.65	4.82	2.38	0.05	D	↑
				rs200621906:A	ggggtgggcc	G→A	gatcagctga	89.97	7.19	55.96	3.68	9.17	10 <sup>-6</sup>	A	
				rs459543:T	gcacgaggag	G→T	agcgtgcgag	120.77	10.01	52.72	4.74	13.55	10 <sup>-6</sup>	A	
				rs459543:A	gcacgaggag	G→A	agcgtgcgag	120.77	10.01	93.07	6.72	4.74	10 <sup>-3</sup>	B	
8	APP	[High Glucose]	Early-onset autosomal dominant Alzheimer disease	rs886056998:T	cctcggcagc	G→T	gtaggcgaga	120.77	10.01	101.55	8.7	2.91	10 <sup>-2</sup>	C	↑
				rs527497064:G	tgaggagggt	A→G	agtcatgtgc	27.98	2.15	24.63	1.8	2.41	0.05	D	
9	CASP8	[High Glucose]	Autoimmune lymphoproliferative syndrome type 2B	rs527497064:G	tgaggagggt	A→G	agtcatgtgc	27.98	2.15	24.63	1.8	2.41	0.05	D	↑

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№	Символ гена	Статус гликемии	Ассоциации с SNP	База данных dbSNP (Day, 2010)			$K_D$ , нМ, <i>in silico</i>				Достоверность				
			Заболевание	dbSNP ID:min	5'-flank, 10 bp	WT→min	3'-flank, 10 bp	WT		min		z	p	ρ	Δ
								$M_0$	±SEM	$M_0$	±SEM				
10	CDH3	[High Glucose]	EEM syndrome, i. e., Ectodermal dysplasia, Ectrodactyly and Macular dystrophy syndrome	rs537339409:T	GACCTCGTGG	C→T	GCTGGACCAA	69.56	3.98	63.44	4.54	2.01	0.05	D	↑
				rs74674351:T	GTGACTTCA	G→T	ATGTGTCTCC	9.19	0.83	8.05	0.67	2.15	0.05	D	
				rs886052227:T	ACCTCGTGGC	G→T	CTGGACCAAT	69.56	3.98	63.79	4.00	2.04	0.05	D	
11	CDKN1B	[High and Low Glucose] & [High Glucose]	Multiple endocrine neoplasia type 4; Hereditary cancer-predisposing syndrome	rs1555085477:A	tgtcaaacgt	G→A	cgagtgtcta	22.24	1.44	16.02	1.56	5.62	10 <sup>-6</sup>	A	↑
				rs756190836:A	ggagaaagat	G→A	tcaaacgtgc	22.24	1.44	11.01	0.91	13.36	10 <sup>-6</sup>	A	
12	COL3A1	[High Glucose]	Ehlers-Danlos syndrome type 4; Familial thoracic aortic aneurysm and aortic dissection	rs763316592:G	ccatatttca	A→G	tttactctcg	8.28	0.76	6.88	0.72	2.68	10 <sup>-2</sup>	C	↑
				rs766564882:T	ttcaatttta	C→T	tctgtagggg	8.28	0.76	5.32	0.47	6.98	10 <sup>-6</sup>	A	
13	DCN	[High Glucose]	Congenital stromal corneal dystrophy	rs189853358:G	ttaccatattg	A→G	tctaagtgtgg	5.11	0.52	6.64	0.53	4.02	10 <sup>-3</sup>	B	↓
14	DNMT1	[Low Glucose] & [High Glucose]	Hereditary sensory neuropathy-deafness-dementia syndrome; Inborn genetic diseases	rs149362098:A	agtgaagccc	G→A	tagagtggga	30.01	2.3	18.9	1.94	7.23	10 <sup>-6</sup>	A	↑
				rs554894511:A	aaccaagcaa	G→A	aagtgaagcc	30.01	2.3	22.51	1.47	5.72	10 <sup>-6</sup>	A	
15	EIF2AK3	[Low Glucose]	Wolcott-Rallison dysplasia	rs200991366:C	tgaatcttct	T→C	ataaatttgg	2.62	0.32	6.49	0.64	11.69	10 <sup>-6</sup>	A	↓
				rs766524866:A	gccagcttat	G→A	ccagacaca	20.18	1.85	6.2	0.71	16.15	10 <sup>-6</sup>	A	
17	FBN1	[High Glucose]	Stiff skin syndrome; Familial thoracic aortic aneurysm and aortic dissection; Weill-Marchesani syndrome; Ectopia lentis 1, isolated, autosomal dominant; Marfan syndrome; Acromicric dysplasia; Geleophysic dysplasia	rs1890299170	tcttttttta	A→T	aaaaagtatt	5.43	0.48	1.97	0.19	15.52	10 <sup>-6</sup>	A	↑
				rs3825792	aaaagtattt	C→G	tctcgcgaga	9.94	0.9	7.41	0.7	4.52	10 <sup>-3</sup>	B	
18	FBP1	[Low Glucose]	Fructose-biphosphatase deficiency	rs921192380:T	gccgaccgcg	G→T	tctaagggtt	19.48	1.62	12.54	0.99	7.68	10 <sup>-6</sup>	A	↑
				rs150450891:A	agcatacaac	G→A	taactttgct	7.17	0.73	8.48	0.8	2.42	0.05	D	
19	FTO	[High and Low Glucose]	Lethal polymalformative syndrome, Boissel type; Inborn genetic diseases	rs375930208:A	atcatttctt	G→A	tagacaaatg	6.38	0.45	3.57	0.35	9.6	10 <sup>-6</sup>	A	↑
				rs527438785:A	atttagcaca	G→A	gagaatttcc	20.2	1.63	15.89	1.58	3.74	10 <sup>-3</sup>	B	
				rs886052100:C	tgcatcctgg	G→C	agttgtagtt	8.7	0.86	6.79	0.67	3.56	10 <sup>-3</sup>	B	
				rs28370440:T	caggaggaaa	C→T	agtaccggct	33.75	2.38	14.85	1.15	15.68	10 <sup>-6</sup>	A	
20	G6PC3	[High and Low Glucose]	Autosomal recessive severe congenital neutropenia due to G6PC3 deficiency	rs746461072:A	cctggactct	G→A	gtttccgccc	50.87	3.79	26.58	2.12	11.88	10 <sup>-6</sup>	A	↑
				rs1057518828:C	ttgcaggagt	A→C	ccaggacctg	25.7	2.7	39.32	3.12	6.46	10 <sup>-6</sup>	A	
21	GFAP	[High and Low Glucose]	Scoliosis; Alexander disease	rs797044574:C	ctggaacagc	A→C	aaacaaggcg	29.97	2.11	40.47	2.77	6.11	10 <sup>-6</sup>	A	↓
				rs886047380:G	ctgcggctta	A→G	aagggcaacc	9.87	0.82	23.31	2.17	13.79	10 <sup>-6</sup>	A	
22	GLUD1	[High Glucose]	Hyperinsulinism, dominant	rs886047380:G	ctgcggctta	A→G	aagggcaacc	9.87	0.82	23.31	2.17	13.79	10 <sup>-6</sup>	A	↓

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№	Символ гена	Статус гликемии	Заболевание	dbSNP ID:min	5'-flank, 10 bp	WT→min	3'-flank, 10 bp	<i>K<sub>D</sub></i> , nM, <i>in silico</i>		Достоверность					
								WT M <sub>0</sub>	±SEM	min M <sub>0</sub>	±SEM	z	p	ρ	Δ
23	<i>HSPG2</i>	[High Glucose]	Schwartz-Jampel syndrome; Lethal Kniest-like syndrome	rs140197256:T	ccaccatgatg	C→T	caccacgggtc	12.63	1.17	9.14	0.81	5.05	10 <sup>-6</sup>	A	↑
				rs17459139:A	tagtgcattt	G→A	cagctggatg	23.53	1.97	7.36	0.7	18.29	10 <sup>-6</sup>	A	
				rs761025182:T	gccctcagtg	C→T	tagtgcattt	23.53	1.97	11.83	1.29	10	10 <sup>-6</sup>	A	
				rs761025182:G	gccctcagtg	C→G	tagtgcattt	23.53	1.97	20.53	1.99	2.13	0.05	D	
24	<i>IL1B</i>	[High and Low Glucose] & [Low Glucose] & [High Glucose]	Gastric cancer susceptibility after H, pylori infection	rs1143627:T	ttttgaaagc	C→T	ataaaaacag	4.5	0.39	1.76	0.17	14.56	10 <sup>-6</sup>	A	↑
25	<i>INS</i>	[High and Low Glucose] & [Low Glucose] & [High Glucose]	Neonatal diabetes mellitus; Autosomal recessive DOPA responsive dystonia; Maturity onset diabetes mellitus in young; Transient Neonatal Diabetes, dominant/recessive; Maturity-onset diabetes of the young type 10	rs5505:T	agatcactgt	C→T	cttctgccat	53.29	3.56	43.36	3.16	4.17	10 <sup>-3</sup>	B	↑
26	<i>INSR</i>	[High and Low Glucose] & [High Glucose]	Insulin-resistant diabetes mellitus & acanthosis nigricans; Rabson-Mendenhall syndrome, leprechaunism syndrome	rs532052290:T	cgccctcggag	C→T	atgacccccg	62.14	4.83	17.87	1.92	18.81	10 <sup>-6</sup>	A	↑
				rs370781912:C	ggaagctctt	T→C	caccgccaac	54.24	4.15	65.33	5.02	3.43	10 <sup>-3</sup>	B	↓
27	<i>KRIT1</i>	[High and Low Glucose]	Angiokeratoma corporis diffusum with arteriovenous fistulas; Cerebral cavernous malformation	rs1437344467:A	tgcaaggcca	G→A	tgaaaaggag	32.96	2.33	19.6	1.33	10.63	10 <sup>-6</sup>	A	↑
				rs553392669:T	gactgcaggt	C→T	cagtgaaaag	32.96	2.33	29.32	1.84	2.48	0.05	D	
				rs58075588:T	ccaccctagt	C→T	tcctagtgcg	28.89	2.57	19.7	1.77	6.06	10 <sup>-6</sup>	A	
				rs886062497:A	ttcatagcca	C→A	ggtaacggcg	11.23	1.02	9.44	0.87	2.67	10 <sup>-2</sup>	C	
28	<i>MAPT</i>	[High Glucose]	MAPT-related spectrum disorders	rs932427766:A	ccagtgaaaa	G→A	gagcaggaac	32.96	2.33	26.37	1.92	4.4	10 <sup>-3</sup>	B	↓
				rs886053025:C	cctcaggaac	G→C	cgccctcttc	77.48	5.36	92.87	7.45	3.42	10 <sup>-3</sup>	B	
				rs550530601:A	cgccccctcc	C→A	ctggggaggc	210.23	14.64	136	11.37	8.01	10 <sup>-6</sup>	A	
29	<i>MEF2C</i>	[High Glucose]	Intellectual disability, autosomal dominant; Inborn genetic diseases	rs886053025:T	cctcaggaac	G→T	cgccctcttc	77.48	5.36	66.22	5.19	3.01	10 <sup>-2</sup>	C	↑
				rs1554102556:C	ttttgttaac	A→C	gggaacgggt	10.89	1.09	20.48	1.31	10.64	10 <sup>-6</sup>	A	↓

**Продолжение приложения**

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№	Символ гена	Статус гликемии	Заболевание	dbSNP ID:min	5'-flank, 10 bp	WT→min	3'-flank, 10 bp	<i>K<sub>D</sub></i> , нМ, <i>in silico</i>				Достоверность			
								WT		min		z	p	ρ	Δ
				M <sub>0</sub>	±SEM	M <sub>0</sub>	±SEM								
30	MEN1	[High Glucose]	Multiple endocrine neoplasia, type 1; Hereditary cancer-predisposing syndrome	rs1035192873:G	gcccgccact	A→G	tttccaggct	17.12	1.38	50.35	3.72	19.73	10 <sup>-6</sup>	A	↓
				rs1060499980:G	ccagacagtc	A→G	atgccggtgt	31.88	2.66	61.32	4.47	11.81	10 <sup>-6</sup>	A	
				rs1438685841:G	cagacagtca	A→G	tgccggtgtgg	31.88	2.66	45.52	3.43	6.34	10 <sup>-6</sup>	A	
				rs1565647698:G	ggccagacag	T→G	caatgccggt	31.88	2.66	61.32	4.47	11.81	10 <sup>-6</sup>	A	
				rs1592650685:C	ggggccagac	A→C	gtcaatgccg	31.88	2.66	39.7	3.15	3.81	10 <sup>-3</sup>	B	
				rs756287855:G	aggggcccaga	C→G	agtcaatgcc	31.88	2.66	38.21	3.2	3.06	10 <sup>-2</sup>	C	
				rs1114167479:T	cctggcacgg	C→T	aaggccaacg	31.88	2.66	25.34	2.28	3.75	10 <sup>-3</sup>	B	
				rs1565647751:C	gcaggggcca	G→C	acagtcaatg	31.88	2.66	23.95	1.84	5.04	10 <sup>-6</sup>	A	
				rs1565647751:T	gcaggggcca	G→T	acagtcaatg	31.88	2.66	13.85	1.68	11.34	10 <sup>-6</sup>	A	
				rs1565647767:T	ccgcaggggc	C→T	agacagtcaa	31.88	2.66	25.43	1.98	3.97	10 <sup>-3</sup>	B	
rs1592650971:T	ggggagcaga	C→T	agctgaggtc	31.88	2.66	20.13	1.71	7.72	10 <sup>-6</sup>	A					
rs756287855:T	aggggcccaga	C→T	agtcaatgcc	31.88	2.66	19.62	1.86	7.68	10 <sup>-6</sup>	A	↑				
31	NLRP3	[High and Low Glucose] & [High Glucose]	Chronic infantile neurological, cutaneous and articular syndrome; Familial amyloid nephropathy with urticaria AND deafness; Familial cold autoinflammatory syndrome 1	rs138900557:A	tcaaagtgct	G→A	ggattacagg	16.3	1.37	13.02	1.08	3.81	10 <sup>-3</sup>	B	↑
32	NPHS1	[High Glucose]	Congenital nephrotic syndrome; Finnish congenital nephrotic syndrome	rs140404523:T	gagaaagcca	G→T	acagacgcag	31.27	2.49	13.02	1.31	13.67	10 <sup>-6</sup>	A	↑
rs73928331:T	cagagacaca	C→T	agagagggac	31.27	2.49	12.97	1.36	13.34	10 <sup>-6</sup>	A					
33	PARK7	[Low Glucose]	Parkinson Disease, recessive	rs17523802:T	ggggctgagg	G→T	aggccggacg	61.68	4.4	47.85	5.56	3.72	10 <sup>-3</sup>	B	↑
34	PAX3	[High Glucose]	Waardenburg syndrome; Craniofacial-deafness-hand syndrome	rs45501095:T	cacaggagga	G→T	actcaggcag	42.17	2.9	28.27	2.81	6.62	10 <sup>-6</sup>	A	↑
				rs867534042:A	gactaggaac	C→A	gacagcccc	36.02	3.21	28.35	2.4	3.89	10 <sup>-3</sup>	B	
				rs867534042:T	gactaggaac	C→T	gacagcccc	36.02	3.21	31.47	2.61	2.22	0.05	D	
35	PAX4	[High Glucose]	Maturity onset diabetes mellitus in young	rs327516:T	agagttggcg	G→T	gtatgggcaa	20.01	1.64	15.75	1.43	3.91	10 <sup>-3</sup>	B	↑
36	PAX6	[High Glucose]	carboxymethyl-dextran-A2-gadolinium- DOTA; Aniridia; Cerebellar Ataxia And Intellectual Disability; Autosomal dominant keratitis; Anophthalmia-microphthalmia syndrome; Foveal hypoplasia 111p partial monosomy syndrome; Congenital aniridia	rs886048209:C	gcggagtgat		agtgggtttg	16.89	1.13	19.65	1.3	3.22	10 <sup>-2</sup>	C	↓
37	PGM1	[Low Glucose]	PGM1-congenital disorder of glycosylation, Inborn genetic diseases	rs199928376:T	tgccgccaac	G→T	gggtaaggga	46.52	3.87	36.68	3.28	3.89	10 <sup>-3</sup>	B	↑

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							WT		min		z	p	ρ	Δ	
		M <sub>0</sub>	±SEM	M <sub>0</sub>	±SEM										
38	PTEN	[High Glucose]	PTEN hamartoma tumor syndrome; Hereditary breast ovarian cancer syndrome; Hereditary cancer-predisposing syndrome; Cowden syndrome 1	rs369849061:G	agcagccatt	A→G	cccggctgcg	38.64	3.63	73.43	6.44	9.99	10 <sup>-6</sup>	A	
				rs535471450:G	ccgcagcagc	C→G	attaccggc	38.64	3.63	73.43	6.44	9.99	10 <sup>-6</sup>	A	↓
				rs587782793:C	ctttatgctc	T→C	gcggcaggat	7.97	0.7	9.01	0.8	1.96	0.05	D	---
				rs144620057:A	cgctctgcc	C→A	ctcctaccgc	45.97	4.29	27.75	2.77	7.39	10 <sup>-6</sup>	A	---
				rs1589593824:T	ccccctccta	C→T	cgccccctgc	45.97	4.29	35.03	3.27	4.12	10 <sup>-3</sup>	B	---
				rs564216039:T	cccagagcta	C→T	cgctctgccc	45.97	4.29	34.92	3.54	3.99	10 <sup>-3</sup>	B	---
				rs587779989:A	cagcgcctgt	G→A	agcagccgcg	83.24	6.54	23.25	2.81	17.71	10 <sup>-6</sup>	A	---
				rs587781501:T	tctgccccct	C→T	ctaccgcccc	45.97	4.29	21.51	2.08	11.31	10 <sup>-6</sup>	A	---
				rs587781871:T	tgcgctcgca	C→T	ccagagctac	45.97	4.29	37.02	3	3.5	10 <sup>-3</sup>	B	↑
				rs587781981:T	tggcgggact	C→T	tttatgcgct	7.97	0.7	5.26	0.47	6.65	10 <sup>-6</sup>	A	---
				rs587782079:C	ctcgcaccca	G→C	agtaaccgct	45.97	4.29	31.27	2.88	5.88	10 <sup>-6</sup>	A	---
				rs587782230:T	gcgctcgcac	C→T	cagagctacc	45.97	4.29	24.09	1.86	10.66	10 <sup>-6</sup>	A	---
				rs587782230:A	gcgctcgcac	C→A	cagagctacc	45.97	4.29	25.24	2.01	9.77	10 <sup>-6</sup>	A	---
rs786204920:T	gcggcttggg	G→T	actctgcgct	45.97	4.29	30.29	3.14	5.98	10 <sup>-6</sup>	A	---				
39	RUNX2	[High and Low Glucose]	Cleidocranial dysostosis	rs886061492:T	gtatttaca	C→T	agagggtaca	4.65	0.48	3.84	0.41	2.58	10 <sup>-2</sup>	C	↑
40	RYR2	[High Glucose]	Catecholaminergic polymorphic ventricular tachycardia 1	rs373127797:C	gaaaccactt	T→C	atttattatg	2.99	0.26	3.47	0.26	2.56	0.05	D	↓
41	SERPINF1	[High Glucose]	Osteogenesis Imperfecta, recessive	rs541151948:T	gagtgcaggt	C→T	gctttaagaa	10.24	0.88	8.51	0.77	2.97	10 <sup>-2</sup>	C	↑
42	SLC16A1	[Low Glucose]	Exercise-induced hyperinsulinism	rs886045087:T	cctgcgccac	C→T	acgtcacgca	61.19	4.18	35.72	2.89	10.18	10 <sup>-6</sup>	A	↑
43	SLC2A1	[High and Low Glucose] & [Low Glucose] & [High Glucose]	Dystonic disorder; GLUT1 deficiency syndrome	rs561646847:T	gtcctataaa	C→T	gctacggtcc	4.31	0.56	2.51	0.25	6.57	10 <sup>-6</sup>	A	↑
44	SMAD3		Familial thoracic aortic aneurysm and aortic dissection	rs1555413991:T	atctctgtag	G→T	aagaggcgtg	6.31	0.86	4.45	0.47	4.07	10 <sup>-3</sup>	B	↑
				rs773943578:T	tctactacat	C→T	ggaggggagg	6.31	0.86	4.85	0.85	2.38	0.05	D	↑
45	SMPD1	[High Glucose]	Niemann-Pick disease, types A and B; Sphingomyelin/cholesterol lipidosis	rs750779804:C	gggcgaatac	A→C	gcaagtgtga	20.15	1.69	34.31	3.25	8.41	10 <sup>-6</sup>	A	↓
				rs1423504237:T	gcgaatacag	C→T	aagtgtgacc	20.15	1.69	7.52	0.64	16.56	10 <sup>-6</sup>	A	---
				rs1423504237:A	gcgaatacag	C→A	aagtgtgacc	20.15	1.69	13.83	1.18	6.29	10 <sup>-6</sup>	A	---
				rs200763423:T	atactggggc	G→T	aatacagcaa	20.15	1.69	6.5	0.9	13.96	10 <sup>-6</sup>	A	↑
				rs200763423:A	atactggggc	G→A	aatacagcaa	20.15	1.69	11.98	1.54	6.77	10 <sup>-6</sup>	A	---
rs200763423:C	atactggggc	G→C	aatacagcaa	20.15	1.69	16.43	2.06	2.71	10 <sup>-2</sup>	C	---				

**Продолжение приложения**

Интернет-портал Glucogenes® (эта работа)			База данных ClinVar (Landrum et al., 2014)	База данных dbSNP (Day, 2010)				База данных Human_SNP_TATAdb (Филонов и др., 2023)							
№	Символ гена	Статус гликемии	Заболевание	dbSNP ID:min	5'-flank, 10 bp	WT→min	3'-flank, 10 bp	$K_D$ , нМ, <i>in silico</i>				Достоверность			
								WT		min		z	p	ρ	Δ
				M <sub>0</sub>	±SEM	M <sub>0</sub>	±SEM								
46	SNCA	[High Glucose]	Parkinson Disease, dominant	rs757451373:A	ggacggcgac	G→A	accagaaggg	43.79	3.04	36.74	2.28	3.77	10 <sup>-3</sup>	B	↑
47	SOD1	[High and Low Glucose] & [High Glucose]	Amyotrophic lateral sclerosis type 1	rs7277748:G	ggctctggcct	A→G	taaagtagtc	2.44	0.23	6.97	0.59	16.67	10 <sup>-6</sup>	A	↓
48	STAT3	[High Glucose]	Hyper-IgE recurrent infection syndrome 1, autosomal dominant	rs780393027:A	ggagccgggg	G→A	ttccgacgtc	105.37	7.43	72.66	4.84	7.66	10 <sup>-6</sup>	A	↑
				rs902564848:T	gcgcgactg	G→T	gagggggagc	105.37	7.43	37.34	2.77	20.27	10 <sup>-6</sup>	A	
49	STK11	[High Glucose]	Peutz-Jeghers syndrome; Hereditary cancer-predisposing syndrome	rs2080796950:C	tgtggtgccg	T→C	acttggagga	17.1	1.96	26.24	2.08	6.14	10 <sup>-6</sup>	A	↑
				rs773049570:C	ctgtggtgcc	G→C	tacttggagg	17.1	1.96	25.1	2.82	4.78	10 <sup>-3</sup>	B	
				rs876658160:C	gccgtacttg	G→C	aggacctgca	17.1	1.96	26.24	2.08	6.14	10 <sup>-6</sup>	A	
				rs1057521267:T	ggtggcgag	C→T	atgactgtgg	17.1	1.96	8.58	0.86	9.04	10 <sup>-6</sup>	A	
				rs1323638467:T	tttttcttt	G→T	taaaattttg	8.04	0.82	5.9	0.47	4.8	10 <sup>-3</sup>	B	
				rs1407068597:A	tttcttttt	C→A	tttgtaaaat	8.04	0.82	4.39	0.29	9.94	10 <sup>-6</sup>	A	
				rs1407068597:T	tttcttttt	C→T	tttgtaaaat	8.04	0.82	6.29	0.52	3.73	10 <sup>-3</sup>	B	
				rs1555739243:T	ggcgcagcat	G→T	actgtggtgc	17.1	1.96	10.28	0.77	7.43	10 <sup>-6</sup>	A	
				rs1555739243:A	ggcgcagcat	G→A	actgtggtgc	17.1	1.96	6.8	0.61	12.65	10 <sup>-6</sup>	A	
				rs187744790:A	tcttcgacat	C→A	gaggatgaca	17.1	1.96	12.01	1.1	4.82	10 <sup>-3</sup>	B	
50	TP53	[High and Low Glucose] & [High Glucose]	Li-Fraumeni syndrome; Hereditary cancer-predisposing syndrome	rs2080662705:A	acgtttgcgg	G→A	gagggggggc	59.52	5.44	51.84	4.76	2.13	0.05	D	↑
				rs769644352:T	gactgtggtg	C→T	cgtacttggg	17.1	1.96	13.96	1.45	2.62	10 <sup>-2</sup>	C	
				rs786202471:T	tggtgccgta	C→T	ttggaggacc	17.1	1.96	12.34	1.27	4.23	10 <sup>-3</sup>	B	
				rs1457582183:T	TCTTTCCTAG	C→T	actgcccaac	7.46	0.63	6.04	0.61	3.22	10 <sup>-2</sup>	C	
				rs34361146:A	TTGCCCTCTT	C→A	ctagcactgc	7.46	0.63	4.96	0.51	6.17	10 <sup>-6</sup>	A	
51	VHL	[High and Low Glucose] & [Low Glucose]	Squamous cell carcinoma of the head and neck	rs1597400604:A	CAGTCAGGAG	C→A	TTACCCAATC	47.8	4.43	34.32	2.52	5.61	10 <sup>-6</sup>	A	↑
				rs1034934219:T	cgggagcgcg	C→T	acgcagctcc	85.18	7.05	41.72	4.85	10	10 <sup>-6</sup>	A	
				rs1192379474:A	tggtctggat	C→A	gcggagggaa	85.18	7.05	40.3	4.07	11.47	10 <sup>-6</sup>	A	
				rs1192379474:G	tggtctggat	C→G	gcggagggaa	85.18	7.05	66.48	5.34	4.3	10 <sup>-3</sup>	B	
				rs1696106670:T	gttccatcct	C→T	taccgagcgc	31.82	2.87	24.85	2.55	3.61	10 <sup>-3</sup>	B	
				rs886057700:A	cgagcgcgtt	C→A	catcctctac	31.82	2.87	9.42	0.88	18.71	10 <sup>-6</sup>	A	
rs886057701:A	cccgcggcgt	C→A	cggcccgggt	85.18	7.05	67.81	7.47	3.31	10 <sup>-3</sup>	B					

**Продолжение приложения**

Интернет-портал GlucosGenes® (эта работа)			База данных ClinVar (Landrum et al., 2014)	База данных Human_SNP_TATAdb (Филонов и др., 2023)										
№	Символ гена	Статус гликемии	Ассоциации с SNP	База данных dbSNP (Day, 2010)				$K_D$ , нМ, <i>in silico</i>				Достоверность		
			Заболевание	dbSNP ID:min	5'-flank, 10 bp	WT→min	3'-flank, 10 bp	WT		min		z	$\rho$	$\rho$
				rs1449727037:C	ctcctccctg	T→C	accagtcacg	21.96	2.54	39.18	2.93	8.41	10 <sup>-6</sup>	A
				rs1555496967:C	cggtcgcgga	T→C	ctgttgacgc	48.4	3.9	59.07	4.25	3.69	10 <sup>-3</sup>	B
				rs1555496967:A	cggtcgcgga	T→A	ctgttgacgc	48.4	3.9	56.45	3.96	2.88	10 <sup>-2</sup>	C
				rs1555512861:G	cctccctgta	C→G	cagtcacgct	21.96	2.54	27.41	2.86	2.85	10 <sup>-2</sup>	C
				rs1596404506:C	tccctgtacc	A→C	gtccagctgc	21.96	2.54	28.17	2.92	3.21	10 <sup>-2</sup>	C
				rs2090259818:G	ctctttctcc	T→G	ccctgtacca	21.96	2.54	34.58	5.51	4.61	10 <sup>-3</sup>	B
				rs45493394:G	tgatctccta	T→G	agagcgcagt	8.19	1.04	36.94	3.54	18.98	10 <sup>-6</sup>	A
				rs45493394:C	tgatctccta	T→C	agagcgcagt	8.19	1.04	22.44	2.44	12.09	10 <sup>-6</sup>	A
				rs45493394:A	tgatctccta	T→A	agagcgcagt	8.19	1.04	25.37	1.97	15.23	10 <sup>-6</sup>	A
				rs761713908:T	tggcctcttt	C→T	tcctccctgt	21.96	2.54	27.26	4.05	2.3	0.05	D
				rs766029525:C	tctcctccct	G→C	taccagtcca	21.96	2.54	39.18	2.93	8.41	10 <sup>-6</sup>	A
				rs774727624:C	ctgatctcct	A→C	tagagcgcag	8.19	1.04	25.53	2.88	13.41	10 <sup>-6</sup>	A
				rs1190158836:A	gaaggcggtc	G→A	cggatctgtt	48.4	3.9	41.44	3.53	2.65	10 <sup>-2</sup>	C
				rs1325874616:T	acctgatctc	C→T	tatagagcgc	8.19	1.04	4.47	0.48	7.3	10 <sup>-6</sup>	A
				rs1325874616:G	acctgatctc	C→G	tatagagcgc	8.19	1.04	5.87	0.79	3.62	10 <sup>-3</sup>	B
				rs1330915229:T	tctttctcct	C→T	cctgtaccag	21.96	2.54	15.45	1.5	4.65	10 <sup>-3</sup>	B
				rs1369594860:A	aaggcggctg	C→A	ggatctgttg	48.4	3.9	41.36	3.57	2.66	10 <sup>-2</sup>	C
52	TSC2	[High Glucose]	Tuberous sclerosis 2; Hereditary cancer-predisposing syndrome	rs1410163756:A	gccttccctt	G→A	cagtggcctc	21.96	2.54	12.06	1.23	7.78	10 <sup>-6</sup>	A
				rs142580483:T	gcagtggaag	C→T	actctggaag	48.4	3.9	22.17	1.95	13.09	10 <sup>-6</sup>	A
				rs1466279830:A	tcgcgatctt	G→A	ttgcagccgg	48.4	3.9	18.06	1.76	15.59	10 <sup>-6</sup>	A
				rs1567394860:A	aagcactctg	G→A	aaggcggctg	48.4	3.9	25.59	1.86	11.73	10 <sup>-6</sup>	A
				rs202187148:T	tcctatagag	C→T	gcagtccatc	8.19	1.04	5.92	0.69	3.78	10 <sup>-3</sup>	B
				rs2085359439:T	cacgcagtgg	A→T	agcactctgg	48.4	3.9	37.1	2.75	4.86	10 <sup>-3</sup>	B
				rs2085359793:A	cgcagtggaa	G→A	cactctggaa	48.4	3.9	36.7	3.48	4.44	10 <sup>-3</sup>	B
				rs2086770532:C	atctcctata	G→C	agcgcagctc	8.19	1.04	6.1	0.93	2.98	10 <sup>-2</sup>	C
				rs374146919:T	tttctcctcc	C→T	tgtaccagtc	21.96	2.54	9.79	1	10.49	10 <sup>-6</sup>	A
				rs397514912:A	aggcggctgc	G→A	gatctgttgc	48.4	3.9	35.31	3.07	5.32	10 <sup>-6</sup>	A
				rs397514933:A	gaagcactct	G→A	gaaggcggtc	48.4	3.9	16.83	1.61	16.87	10 <sup>-6</sup>	A
				rs45485999:T	ggtcgcggat	C→T	tgttgacgcc	48.4	3.9	20.94	1.54	15.37	10 <sup>-6</sup>	A
				rs45485999:G	ggtcgcggat	C→G	tgttgacgcc	48.4	3.9	28.17	2.53	8.97	10 <sup>-6</sup>	A
				rs45517099:T	ggatctgttg	C→T	agccggagcg	48.4	3.9	12.83	1.17	21.86	10 <sup>-6</sup>	A
				rs543752709:A	ggtgcgcctt	T→A	ctccgcctcg	47.51	3.28	29.99	2.39	8.73	10 <sup>-6</sup>	A
				rs761713908:A	tggcctcttt	C→A	tcctccctgt	21.96	2.54	8.51	0.74	13.08	10 <sup>-6</sup>	A
				rs766029525:A	tctcctccct	G→A	taccagtcca	21.96	2.54	9.39	1.61	8.23	10 <sup>-6</sup>	A
				rs770054036:T	ccttcccttg	C→T	agtggcctct	21.96	2.54	10.04	1.02	10.17	10 <sup>-6</sup>	A

Примечание. WT и min – анцестральный (норма) и минорный (патология) аллели SNP;  $K_D$  – равновесная константа диссоциации комплекса TBP-промотор, выраженная в наномолях на литр, (нМ/л);  $M_0$  и SEM – контекстно-зависимая оценка *in silico* и ее стандартизованная ошибка; z,  $\rho$  и  $\rho$  – значение z-статистики Фишера и уровень ее значимости, а также эвристическая приоритизация оценок *in silico* от наилучшей (A) до наихудшей (D) в алфавитном порядке;  $\Delta$  – экспрессия выше (↑) или ниже (↓).

## Окончание приложения

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