

Results

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1: GO: Molecular Function [\[Display Chart\]](#) 201 input genes in category / 605 annotations before applied cutoff / 19963 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	GO:0030280	structural constituent of skin epidermis		4.699E-13	2.843E-10	1.985E-9	2.843E-10	11	44
2	GO:0005200	structural constituent of cytoskeleton		6.906E-10	2.089E-7	1.459E-6	4.178E-7	13	130
3	GO:0005509	calcium ion binding		4.934E-9	9.737E-7	6.800E-6	2.985E-6	28	777
4	GO:0005198	structural molecule activity		6.438E-9	9.737E-7	6.800E-6	3.895E-6	30	892
5	GO:0004252	serine-type endopeptidase activity		7.879E-8	8.225E-6	5.744E-5	4.767E-5	16	303

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2: GO: Biological Process [\[Display Chart\]](#) 201 input genes in category / 4435 annotations before applied cutoff / 20720 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	GO:0008544	epidermis development		1.012E-31	4.489E-28	4.029E-27	4.489E-28	46	500
2	GO:0043588	skin development		2.344E-28	5.197E-25	4.664E-24	1.039E-24	39	387
3	GO:0030216	keratinocyte differentiation		2.005E-27	2.964E-24	2.660E-23	8.892E-24	30	195
4	GO:0009913	epidermal cell differentiation		3.483E-26	3.861E-23	3.465E-22	1.545E-22	35	331
5	GO:0031424	keratinization		3.628E-25	3.218E-22	2.888E-21	1.609E-21	22	89

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3: GO: Cellular Component [\[Display Chart\]](#) 202 input genes in category / 412 annotations before applied cutoff / 20932 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	GO:0001533	cornified envelope		8.421E-43	3.470E-40	2.290E-39	3.470E-40	30	69
2	GO:0005911	cell-cell junction		3.551E-12	7.316E-10	4.828E-9	1.463E-9	28	590
3	GO:0070161	anchoring junction		5.250E-11	7.210E-9	4.758E-8	2.163E-8	42	1419
4	GO:0097209	epidermal lamellar body		8.501E-9	8.756E-7	5.779E-6	3.502E-6	4	4
5	GO:0005912	adherens junction		9.818E-8	8.090E-6	5.339E-5	4.045E-5	13	204

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4: Human Phenotype [\[Display Chart\]](#) 88 input genes in category / 3062 annotations before applied cutoff / 5060 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	HP:0001035	Abnormality of keratinization		3.050E-17	9.340E-14	8.037E-13	9.340E-14	29	250
2	HP:0000962	Hyperkeratosis		1.224E-15	1.874E-12	1.612E-11	3.747E-12	27	241
3	HP:0000982	Palmoplantar keratoderma		2.566E-15	2.619E-12	2.253E-11	7.856E-12	22	149
4	HP:0000972	Palmoplantar hyperkeratosis		7.980E-15	4.587E-12	3.947E-11	2.444E-11	22	157
5	HP:0011368	Epidermal thickening		8.514E-15	4.587E-12	3.947E-11	2.607E-11	31	358

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5: Mouse Phenotype [\[Display Chart\]](#) 155 input genes in category / 3232 annotations before applied cutoff / 12941 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	MP:0001216	abnormal epidermal layer morphology		7.653E-14	2.473E-10	2.142E-9	2.473E-10	23	264
2	MP:0001240	abnormal epidermis stratum corneum morphology		3.498E-11	5.652E-8	4.894E-7	1.130E-7	15	129
3	MP:0005501	abnormal skin physiology		5.281E-10	5.690E-7	4.926E-6	1.707E-6	19	270
4	MP:0002796	impaired skin barrier function		2.862E-9	2.312E-6	2.002E-5	9.248E-6	10	62
5	MP:0005023	abnormal wound healing		6.631E-9	4.286E-6	3.711E-5	2.143E-5	15	187

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6: Domain [Display Chart] 201 input genes in category / 1135 annotations before applied cutoff / 18678 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	PF01023	S 100	Pfam	6.411E-12	3.541E-9	2.696E-8	7.277E-9	9	27
2	IPR013787	S100 Ca-bd sub	InterPro	9.361E-12	3.541E-9	2.696E-8	1.062E-8	9	28
3	SM01394	S 100	SMART	9.361E-12	3.541E-9	2.696E-8	1.062E-8	9	28
4	PS00303	S100 CABP	PROSITE	2.914E-10	8.270E-8	6.295E-7	3.308E-7	8	27
5	IPR001751	S100/CaBP-9k CS	InterPro	4.043E-10	9.177E-8	6.986E-7	4.589E-7	8	28

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7: Pathway [Display Chart] 168 input genes in category / 1663 annotations before applied cutoff / 13609 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	1457791	Formation of the cornified envelope	BioSystems: REACTOME	2.793E-22	2.756E-19	2.203E-18	4.645E-19	20	71
2	1457790	Keratinization	BioSystems: REACTOME	3.314E-22	2.756E-19	2.203E-18	5.512E-19	29	214
3	1270302	Developmental Biology	BioSystems: REACTOME	1.142E-11	6.332E-9	5.062E-8	1.900E-8	42	1078
4	M5889	Ensemble of genes encoding extracellular matrix and extracellular matrix-associated proteins	MSigDB C2 BIOCARTEA (v7.5.1)	3.940E-11	1.638E-8	1.309E-7	6.552E-8	40	1026
5	M5885	Ensemble of genes encoding ECM-associated proteins including ECM-affiliated proteins, ECM regulators and secreted factors	MSigDB C2 BIOCARTEA (v7.5.1)	5.825E-10	1.937E-7	1.549E-6	9.687E-7	32	751

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8: Pubmed [Display Chart] 205 input genes in category / 44618 annotations before applied cutoff / 44761 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	32989256	Suppression of DDX39B sensitizes ovarian cancer cells to DNA-damaging chemotherapeutic agents via destabilizing BRCA1 mRNA.	Pubmed	4.556E-32	2.033E-27	2.294E-26	2.033E-27	23	107
2	26644517	A keratin scaffold regulates epidermal barrier formation, mitochondrial lipid composition, and activity.	Pubmed	5.382E-26	1.201E-21	1.355E-20	2.401E-21	17	62
3	31220272	Altered keratinocyte differentiation is an early driver of keratin mutation-based palmoplantar keratoderma.	Pubmed	2.157E-22	3.208E-18	3.620E-17	9.624E-18	15	60
4	34905516	Translational implications of Th17-skewed inflammation due to genetic deficiency of a cadherin stress sensor.	Pubmed	4.945E-21	5.516E-17	6.224E-16	2.206E-16	12	30
5	19199708	Proteomic analysis of human parotid gland exosomes by multidimensional protein identification technology (MudPIT).	Pubmed	1.563E-20	1.266E-16	1.428E-15	6.972E-16	25	417

Show 45 more annotations

9: Interaction [Display Chart] 199 input genes in category / 7894 annotations before applied cutoff / 19896 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	int:CCR1	CCR1 interactions		7.640E-43	6.031E-39	5.760E-38	6.031E-39	50	360
2	int:SSUH2	SSUH2 interactions		2.236E-39	8.827E-36	8.431E-35	1.765E-35	39	199
3	int:OR2A4	OR2A4 interactions		8.705E-39	2.291E-35	2.188E-34	6.872E-35	35	145

4	int:PPP2R2B	PPP2R2B interactions		5.058E-35	9.983E-32	9.535E-31	3.993E-31	38	235
5	int:C18orf21	C18orf21 interactions		1.639E-33	2.587E-30	2.471E-29	1.293E-29	32	151

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10: Cytoband [\[Display Chart\]](#) 204 input genes in category / 154 annotations before applied cutoff / 33040 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	1q21	1q21		2.685E-10	4.135E-8	2.323E-7	4.135E-8	10	91
2	1q21-q22	1q21-q22		4.760E-9	3.665E-7	2.059E-6	7.330E-7	6	23
3	18q12.1	18q12.1		1.896E-5	9.735E-4	5.469E-3	2.920E-3	4	26
4	18q21.3	18q21.3		3.690E-5	1.136E-3	6.384E-3	5.682E-3	3	11
5	2q14	2q14		3.690E-5	1.136E-3	6.384E-3	5.682E-3	3	11

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11: Transcription Factor Binding Site [\[Display Chart\]](#) 192 input genes in category / 766 annotations before applied cutoff / 26918 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	TGANTCA V\$AP1 C	TGANTCA V\$AP1 C	TFBS	3.427E-12	2.625E-9	1.895E-8	2.625E-9	30	918
2	TATAAA V\$TATA 01	TATAAA V\$TATA 01	TFBS	3.057E-11	1.171E-8	8.452E-8	2.341E-8	31	1070
3	M30042	KMT2D TARGET GENES	MSigDB	3.186E-7	8.134E-5	5.872E-4	2.440E-4	21	801
4	GGGTGGRR V\$PAX4 03	GGGTGGRR V\$PAX4 03	TFBS	2.510E-6	4.806E-4	3.470E-3	1.923E-3	23	1068
5	TTANTCA UNKNOWN	TTANTCA UNKNOWN	TFBS	9.056E-6	1.387E-3	1.002E-2	6.937E-3	18	758

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12: Gene Family [\[Display Chart\]](#) 156 input genes in category / 109 annotations before applied cutoff / 18084 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	459	S100 calcium binding proteins EF-hand domain containing	genenames.org	4.736E-12	5.162E-10	2.722E-9	5.162E-10	8	21
2	1353	Small proline rich proteins	genenames.org	1.668E-10	9.091E-9	4.794E-8	1.818E-8	6	11
3	616	Kallikreins	genenames.org	2.790E-9	1.014E-7	5.346E-7	3.041E-7	6	16
4	1188	Desmosomal cadherins	genenames.org	1.828E-7	4.981E-6	2.626E-5	1.992E-5	4	7
5	609	Keratins, type II	genenames.org	3.102E-6	6.763E-5	3.566E-4	3.382E-4	5	27

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13: Coexpression [\[Display Chart\]](#) 204 input genes in category / 8142 annotations before applied cutoff / 26258 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	M40004	BUSSLINGER ESOPHAGEAL LATE SUPRABASAL CELLS	MSigDB C8: Cell Type Signatures (v7.5.1)	8.665E-71	7.055E-67	6.760E-66	7.055E-67	50	140
2	M40122	DESCARTES MAIN FETAL SQUAMOUS EPITHELIAL CELLS	MSigDB C8: Cell Type Signatures (v7.5.1)	3.990E-57	1.263E-53	1.210E-52	3.249E-53	42	130
3	M4306	ONDER CDH1 TARGETS 2 DN	MSigDB C2: CGP Curated Gene Sets (v7.5.1)	4.653E-57	1.263E-53	1.210E-52	3.788E-53	61	472
4	M10702	JAEGER METASTASIS DN	MSigDB C2: CGP Curated Gene Sets (v7.5.1)	1.401E-55	2.851E-52	2.732E-51	1.140E-51	50	259
5	M40299	DESCARTES FETAL STOMACH SQUAMOUS EPITHELIAL CELLS	MSigDB C8: Cell Type Signatures (v7.5.1)	1.199E-54	1.952E-51	1.870E-50	9.759E-51	34	67

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14: Coexpression Atlas [\[Display Chart\]](#) 204 input genes in category / 3315 annotations before applied cutoff / 21235 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	esophagus	esophagus	Human Protein Atlas	1.171E-115	3.882E-112	3.371E-111	3.882E-112	86	247
2	PCBC ctl BronchioEpithel 500	Progenitor-Cell-Biology-Consortium reference BronchioEpithel top-relative-expression-ranked 500	PCBC	4.020E-99	6.663E-96	5.786E-95	1.333E-95	94	496
3	PCBC ctl BronchioEpithel 1000	Progenitor-Cell-Biology-Consortium reference BronchioEpithel top-relative-expression-ranked 1000	PCBC	1.245E-91	1.375E-88	1.194E-87	4.126E-88	110	990
4	PCBC ctl BronchioEpithel 100	Progenitor-Cell-Biology-Consortium reference BronchioEpithel top-relative-expression-ranked 100	PCBC	2.468E-78	2.046E-75	1.776E-74	8.182E-75	51	98
5	BM Top 100 - esophagus	BM Top 100 - esophagus	Body Map	1.748E-73	1.159E-70	1.006E-69	5.795E-70	47	86

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15: ToppCell Atlas [Display Chart] 204 input genes in category / 22198 annotations before applied cutoff / 45195 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	eb18aa179db1818f408c38e442ecfed8582d7dbc	TCGA-Head and Esophagus World / Sample Type by Project: Shred V9	TCGA OncoMap	2.133E-143	4.734E-139	5.011E-138	4.734E-139	79	172
2	3188c7bd225cbcf46a21e2fb784336cdd9665995	TCGA-Skin-Primary Tumor-Melanoma-Skin Cutaneous Melanoma TCGA-Skin / Sample Type by Project: Shred V9	TCGA OncoMap	6.040E-139	3.352E-135	3.548E-134	1.341E-134	79	190
3	e2b26a03c6ab24d9b0f4150c47597be37767d86e	TCGA-Skin-Primary Tumor TCGA-Skin / Sample Type by Project: Shred V9	TCGA OncoMap	6.040E-139	3.352E-135	3.548E-134	1.341E-134	79	190
4	01fb45add4661bc86cd0a34fac35177907152dbb	TCGA-Skin-Primary Tumor-Melanoma TCGA-Skin / Sample Type by Project: Shred V9	TCGA OncoMap	6.040E-139	3.352E-135	3.548E-134	1.341E-134	79	190
5	03de28e1c963e99623e8b0e33bf2e8ef67dc3baa	Smart-seq2-tissue-resident (Smart-seq2)-myeloid-myeloid monocytic tissue-resident (Smart-seq2) / Per Platform+tissue group, by lineage subgroup, cell group, cell type	Immune and Hematologic Cells from 24 tissues of the Tabula Sapiens: a multiple organ single cell transcriptomic atlas of humans.	1.207E-116	5.358E-113	5.671E-112	2.679E-112	70	196

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16: Computational [Display Chart] 137 input genes in category / 365 annotations before applied cutoff / 10012 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	M2266 GNF2 SPRR1B	Neighborhood of SPRR1B	MSigDb: C4 - CGN: Cancer Gene Neighborhood (v7.2)	1.124E-29	4.101E-27	2.657E-26	4.101E-27	18	24
2	M4992 MODULE 297	Genes in the cancer module 297.	MSigDb: C4 - CM: Cancer Modules (v7.2)	1.973E-26	2.400E-24	1.555E-23	7.200E-24	24	80
3	M9185 MODULE 357	Intermediate filaments and keratins.	MSigDb: C4 - CM: Cancer Modules (v7.2)	1.973E-26	2.400E-24	1.555E-23	7.200E-24	24	80
4	M18170 MODULE 154	Intermediate filaments.	MSigDb: C4 - CM: Cancer Modules (v7.2)	4.899E-24	4.470E-22	2.896E-21	1.788E-21	22	75

5	M9365 GN2 SERPINB5	Neighborhood of SERPINB5	MSigDb: C4 - CGN: Cancer Gene Neighborhood (v7.2)	6.675E- 16	4.873E- 14	3.157E- 13	2.436E-13	12	28
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17: MicroRNA [\[Display Chart\]](#) 205 input genes in category / 8181 annotations before applied cutoff / 59110 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	hsa-miR-4289:mirSVR lowEffect	hsa-miR-4289:mirSVR nonconserved lowEffect-0.1-0.5	MicroRNA.org	6.663E-14	3.033E-10	2.908E-9	5.451E-10	31	1715
2	hsa-miR-325-3p:TargetScan	hsa-miR-325-3p	TargetScan	7.415E-14	3.033E-10	2.908E-9	6.067E-10	31	1722
3	hsa-miR-499-3p:mirSVR highEffect	hsa-miR-499-3p:mirSVR nonconserved highEffect-0.5	MicroRNA.org	3.580E-13	9.762E-10	9.358E-9	2.929E-9	26	1249
4	hsa-miR-124-3p:Functional MTI (Weak)	Functional MTI (Weak)	miRTarbase	1.514E-12	3.096E-9	2.968E-8	1.239E-8	27	1446
5	hsa-miR-30a:mirSVR highEffect	hsa-miR-30a:mirSVR conserved highEffect-0.5	MicroRNA.org	2.652E-12	4.338E-9	4.159E-8	2.169E-8	30	1849

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18: Drug [\[Display Chart\]](#) 204 input genes in category / 21031 annotations before applied cutoff / 22767 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	ctd:D012906	Smoke	CTD	3.455E-18	7.267E-14	7.653E-13	7.267E-14	42	937
2	ctd:D004054	Diethylstilbestrol	CTD	2.525E-17	2.655E-13	2.796E-12	5.309E-13	48	1304
3	CID000128831	CK17	Stitch	2.828E-15	1.983E-11	2.088E-10	5.948E-11	13	57
4	CID000005538	9cRA	Stitch	1.967E-14	1.034E-10	1.089E-9	4.138E-10	51	1735
5	ctd:C002202	4-oxoretinoic acid	CTD	1.252E-13	5.268E-10	5.548E-9	2.634E-9	15	115

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19: Disease [\[Display Chart\]](#) 194 input genes in category / 5883 annotations before applied cutoff / 19383 genes in category

	ID	Name	Source	pValue	FDR B&H	FDR B&Y	Bonferroni	Genes from Input	Genes in Annotation
1	C0037274	Dermatologic disorders	DisGeNET BeFree	1.779E-21	1.047E-17	9.688E-17	1.047E-17	38	544
2	C0870082	Hyperkeratosis	DisGeNET BeFree	1.469E-19	4.322E-16	4.001E-15	8.644E-16	19	97
3	C0033860	Psoriasis	DisGeNET BeFree	3.643E-19	7.143E-16	6.613E-15	2.143E-15	49	1105
4	C0013595	Eczema	DisGeNET BeFree	4.482E-14	6.592E-11	6.102E-10	2.637E-10	33	680
5	C0011615	Dermatitis, Atopic	DisGeNET BeFree	1.497E-13	1.761E-10	1.631E-9	8.807E-10	32	666

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