

HEREDITARY CANCER GENE PANEL DGD20062014

<i>Gene</i>	<i>Median coverage</i>	<i>% covered > 10x</i>	<i>% covered > 20x</i>	<i>Associated Phenotype description and OMIM ID</i>
ALK	92,6	99%	96%	{Neuroblastoma, susceptibility to, 3}, 613014
APC	142,8	100%	99%	Adenomatous polyposis coli, 175100 Gastric cancer, somatic, 613659 Adenoma, periampullary, somatic Hepatoblastoma, somatic, 114550 Desmoid disease, hereditary, 135290 Colorectal cancer, somatic, 114500 Brain tumor-polyposis syndrome 2, 175100 Gardner syndrome, 175100
ATM	115,2	100%	99%	Ataxia-telangiectasia, 208900 Lymphoma, B-cell non-Hodgkin, somatic {Breast cancer, susceptibility to}, 114480 Lymphoma, mantle cell T-cell prolymphocytic leukemia, somatic
ATR	119,6	100%	99%	Seckel syndrome 1, 210600 Cutaneous telangiectasia and cancer syndrome, familial, 614564
BAP1	85,5	100%	96%	Tumor predisposition syndrome, 614327
BARD1	111,3	100%	99%	{Breast cancer, susceptibility to}, 114480
BLM	113,4	99%	98%	Bloom syndrome, 210900
BMPR1A	54,9	77%	62%	Polyposis, juvenile intestinal, 174900 Polyposis syndrome, hereditary mixed, 2, 610069 Juvenile polyposis syndrome, infantile form, 174900
BRCA1	152,2	99%	96%	{Breast-ovarian cancer, familial, 1}, 604370 {Pancreatic cancer, susceptibility to, 4}, 614320

BRCA2	145,6	100%	99%	{Breast-ovarian cancer, familial, 2}, 612555 Fanconi anemia, complementation group D1, 605724 Prostate cancer, 176807 {Breast cancer, male, susceptibility to}, 114480 Wilms tumor, 194070 {Medulloblastoma}, 155255 {Glioblastoma 3}, 613029 {Pre-B-cell acute lymphoblastic leukemia} Pancreatic cancer, 613347
BRIP1	129,7	100%	99%	?Breast cancer, early-onset, 114480 Fanconi anemia, complementation group J, 609054
BUB1	107,7	99%	98%	Colorectal cancer with chromosomal instability
BUB1B	113,7	100%	98%	Colorectal cancer, somatic, 114500 Mosaic variegated aneuploidy syndrome 1, 257300 [Premature chromatid separation trait], 176430
BUB3	116,2	100%	100%	No OMIM phenotype Variegated aneuploidy (de Voer (2013) Gastroenterology 145, 544)
CDC73	147,1	100%	100%	Hyperparathyroidism, familial primary, 145000 Hyperparathyroidism-jaw tumor syndrome, 145001 Parathyroid adenoma with cystic changes, 145001 Parathyroid carcinoma, 608266
CDH1	114,1	100%	99%	Endometrial carcinoma, somatic, 608089 Ovarian carcinoma, somatic, 167000 {Breast cancer, lobular}, 114480 Gastric cancer, familial diffuse, with or without cleft lip and/or palate, 137215 {Prostate cancer, susceptibility to}, 176807
CDK4	116,8	98%	93%	{Melanoma, cutaneous malignant, 3}, 609048
CDKN2A	111,9	100%	100%	{Melanoma, cutaneous malignant, 2}, 155601 Melanoma and neural system tumor syndrome, 155755 Pancreatic cancer/melanoma syndrome, 606719 Orolaryngeal cancer, multiple, -3
CENPJ	130,6	100%	100%	Microcephaly 6, primary, autosomal recessive, 608393 Seckel syndrome 4, 613676

CHEK2	53,6	69%	65%	Li-Fraumeni syndrome, 609265 Osteosarcoma, somatic, 259500 {Breast cancer, susceptibility to}, 114480 {Prostate cancer, familial, susceptibility to}, 176807 {Breast and colorectal cancer, susceptibility to}
CREBBP	81,7	99%	97%	Rubinstein-Taybi syndrome, 180849
CTC1	90,7	100%	97%	Cerebroretinal microangiopathy with calcifications and cysts, 612199
CTNNA1	89,5	99%	92%	No OMIM phenotype Gastric cancer, diffuse (Majewski (2012) J Pathol epub)
CYLD	112,6	100%	99%	Cylindromatosis, familial, 132700 Brooke-Spiegler syndrome, 605041 Trichoepithelioma, multiple familial, 1, 601606
DDB2	85,8	100%	95%	Xeroderma pigmentosum, group E, DDB-negative subtype, 278740
DDX11	10,6	22%	15%	Warsaw breakage syndrome, 613398
DICER1	112,5	100%	99%	Pleuropulmonary blastoma, 601200 Goiter, multinodular 1, with or without Sertoli-Leydig cell tumors, 138800
DKC1	45,1	99%	90%	Dyskeratosis congenita, X-linked, 305000
EGFR	93,2	100%	99%	Non-small cell lung cancer, response to tyrosine kinase inhibitor in, 211980 Adenocarcinoma of lung, response to tyrosine kinase inhibitor in, 211980 {Non-small cell lung cancer, susceptibility to}, 211980
ELANE	114,8	98%	94%	Neutropenia, cyclic, 162800 Neutropenia, severe congenital 1, autosomal dominant, 202700
ERCC1	79,1	100%	97%	Cerebrooculofacioskeletal syndrome 4, 610758
ERCC2	85,1	100%	94%	Xeroderma pigmentosum, group D, 278730 Trichothiodystrophy, 601675 Cerebrooculofacioskeletal syndrome 2, 610756
ERCC3	117,1	100%	99%	Xeroderma pigmentosum, group B, 610651 Trichothiodystrophy, 601675
ERCC4	146,1	98%	95%	Xeroderma pigmentosum, group F, 278760 XFE progeroid syndrome, 610965

				Fanconi anemia, complementation group Q, 615272 Xeroderma pigmentosum, type F/Cockayne syndrome, 278760
ERCC5	116,3	99%	97%	Xeroderma pigmentosum, group G, 278780 Xeroderma pigmentosum, group G/Cockayne syndrome, 278780
ERCC6	147,6	98%	97%	Cockayne syndrome, type B, 133540 Cerebrooculofacioskeletal syndrome 1, 214150 De Sanctis-Cacchione syndrome, 278800 {Macular degeneration, age-related, susceptibility to 5}, 613761 UV-sensitive syndrome 1, 600630 {Lung cancer, susceptibility to}, 211980
EXO1	118,4	95%	94%	No OMIM phenotype Colorectal cancer, non-polyposis (Wu (2001) Gastroenterology 120,1580)
EXT1	95,2	99%	98%	Exostoses, multiple, type 1, 133700 Chondrosarcoma, 215300
EXT2	113,6	100%	100%	Exostoses, multiple, type 2, 133701
FANCA	81,3	99%	97%	Fanconi anemia, complementation group A, 227650
FANCB	63,4	96%	89%	Fanconi anemia, complementation group B, 300514
FANCC	81,8	100%	98%	Fanconi anemia, complementation group C, 227645
FANCD2	98,7	88%	86%	Fanconi anemia, complementation group D2, 227646
FANCE	85	94%	88%	Fanconi anemia, complementation group E, 600901
FANCF	156,1	100%	100%	Fanconi anemia, complementation group F, 603467
FANCG	120,4	100%	96%	Fanconi anemia, complementation group G, 614082
FANCI	120,4	100%	100%	Fanconi anemia, complementation group I, 609053
FANCL	96	100%	99%	Fanconi anemia, complementation group L, 614083
FANCM	116,9	100%	99%	Fanconi anemia, complementation group M, 614087

FH	86,7	99%	91%	Fumarase deficiency, 606812 Leiomyomatosis and renal cell cancer, 150800
FLCN	98,7	99%	96%	Birt-Hogg-Dube syndrome, 135150 Pneumothorax, primary spontaneous, 173600 Renal carcinoma, chromophobe, somatic, 144700 Colorectal cancer, somatic, 114500
GDNF	156,7	100%	100%	Central hypoventilation syndrome, 209880 {Pheochromocytoma, modifier of}, 171300 {Hirschsprung disease, susceptibility to, 3}, 613711
GFI1	68,6	100%	100%	Neutropenia, severe congenital 2, autosomal dominant, 613107 Neutropenia, nonimmune chronic idiopathic, of adults, 607847
GPC3	46,1	100%	96%	Simpson-Golabi-Behmel syndrome, type 1, 312870 Wilms tumor, somatic, 194070
GREM1	147,4	100%	100%	No OMIM phenotype {Colorectal cancer, increased risk, association with}(Peters (2012) Hum Genet 131,217) Oligosyndactyly of the hands, Cenani-Linz-like (Dimitrov (2010) J Med Genet 47,569) Mixed polyposis syndrome (Jaeger (2012) Nat Genet 44,699)
HAX1	131,5	100%	100%	Neutropenia, severe congenital 3, autosomal recessive, 610738
HNF1A	79,8	99%	96%	MODY, type III, 600496 {Diabetes mellitus, noninsulin-dependent, 2}, 125853 {Diabetes mellitus, insulin-dependent}, 222100 Hepatic adenoma, somatic, 142330 Renal cell carcinoma, 144700 Diabetes mellitus, insulin-dependent, 20, 612520
KIF1B	114,8	100%	98%	Charcot-Marie-Tooth disease, type 2A1, 118210 Pheochromocytoma, 171300 {Neuroblastoma, susceptibility to, 1}, 256700
KIT	108,8	99%	95%	Piebaldism, 172800 Gastrointestinal stromal tumor, familial, 606764 Mast cell disease, 154800 Leukemia, acute myeloid, 601626 Germ cell tumors, 273300

KLLN	101	100%	100%	Cowden syndrome 4, 615107
MAX	73,9	90%	86%	{Pheochromocytoma, susceptibility to}, 171300

MEN1	108,4	99%	95%	Multiple endocrine neoplasia 1, 131100 Carcinoid tumor of lung Parathyroid adenoma, somatic Lipoma, somatic Angiofibroma, somatic Adrenal adenoma, somatic
MLH1	99,4	100%	98%	Colorectal cancer, hereditary nonpolyposis, type 2, 609310 Mismatch repair cancer syndrome, 276300 Muir-Torre syndrome, 158320
MLH3	161,5	99%	98%	Colorectal cancer, somatic, 114500 Colorectal cancer, hereditary nonpolyposis, type 7, 614385 Endometrial cancer, 608089
MPL	108	100%	93%	Thrombocytopenia, congenital amegakaryocytic, 604498 Thrombocythemia 2, 601977 Myelofibrosis with myeloid metaplasia, somatic, 254450
MRE11A	90,7	100%	100%	Ataxia-telangiectasia-like disorder, 604391
MSH2	100,5	99%	97%	Colorectal cancer, hereditary nonpolyposis, type 1, 120435 Muir-Torre syndrome, 158320 Mismatch repair cancer syndrome, 276300
MSH6	145,2	100%	100%	Colorectal cancer, hereditary nonpolyposis, type 5, 614350 Endometrial cancer, familial, 608089 Mismatch repair cancer syndrome, 276300
MUTYH	109,5	100%	100%	Adenomas, multiple colorectal, 608456 Gastric cancer, somatic, 613659 Colorectal adenomatous polyposis, autosomal recessive, with pilomatricomas, 132600

NF1	80	83%	80%	Neurofibromatosis, type 1, 162200 Leukemia, juvenile myelomonocytic, 607785 Melanoma, desmoplastic neurotrophic (2) Neurofibromatosis, familial spinal, 162210 Neurofibromatosis-Noonan syndrome, 601321 Watson syndrome, 193520
NF2	81,5	99%	94%	Neurofibromatosis, type 2, 101000 Meningioma, NF2-related, somatic, 607174 Schwannomatosis, 162091
NHP2	47,6	100%	92%	Dyskeratosis congenita, autosomal recessive 2, 613987
NOP10	160,8	100%	100%	Dyskeratosis congenita, autosomal recessive 1, 224230
NSD1	117,3	100%	99%	Sotos syndrome 1, 117550 Leukemia, acute myeloid, 601626 (1) Beckwith-Wiedemann syndrome, 130650
OGG1	88,5	99%	95%	Renal cell carcinoma, clear cell, somatic, 144700
PALB2	128	99%	98%	Fanconi anemia, complementation group N, 610832 {Breast cancer, susceptibility to}, 114480 {Pancreatic cancer, susceptibility to, 3}, 613348
PHOX2B	59,7	100%	88%	Central hypoventilation syndrome, congenital, with or without Hirschsprung disease, 209880 {Neuroblastoma, susceptibility to, 2}, 613013 Neuroblastoma with Hirschsprung disease, 613013
PMS1	115,1	100%	100%	No OMIM phenotype Colorectal cancer, non-polyposis (Nicolaidis (1994) Nature 371,75)
PMS2	62,2	56%	54%	Mismatch repair cancer syndrome, 276300 Colorectal cancer, hereditary nonpolyposis, type 4, 614337
POLD1	78,5	95%	90%	{Colorectal cancer, susceptibility to, 10}, 612591 Mandibular hypoplasia, deafness, progeroid features, and lipodystrophy syndrome, 615381
POLE	99,5	100%	98%	{Colorectal cancer, susceptibility to, 12}, 615083 FILS syndrome, 615139
PRF1	85,5	100%	99%	Hemophagocytic lymphohistiocytosis, familial, 2, 603553 Lymphoma, non-Hodgkin, 605027

PRKAR1A	101,1	97%	92%	Carney complex, type 1, 160980 Myxoma, intracardiac, 255960 Thyroid carcinoma, papillary, somatic, 188550 Pigmented nodular adrenocortical disease, primary, 1, 610489 Adrenocortical tumor, somatic, Acrodysostosis 1, with or without hormone resistance, 101800
PTCH1	83,8	99%	94%	Basal cell nevus syndrome, 109400 Basal cell carcinoma, somatic, 605462 Holoprosencephaly-7, 610828

PTEN	121,7	100%	97%	Cowden syndrome 1, 158350 Lhermitte-Duclos syndrome, 158350 Bannayan-Riley-Ruvalcaba syndrome, 153480 {Meningioma}, 607174 {Glioma susceptibility 2}, 613028 Macrocephaly/autism syndrome, 605309 PTEN hamartoma tumor syndrome VATER association with macrocephaly and ventriculomegaly, 276950 {Prostate cancer, somatic}, 176807 Thyroid carcinoma, follicular, somatic, 188470 Malignant melanoma, somatic, 155600 Endometrial carcinoma, somatic, 608089 Squamous cell carcinoma, head and neck, somatic, 275355
PTPRJ	111,4	97%	96%	Colon cancer, somatic, 114500
RAD50	110,8	100%	99%	Nijmegen breakage syndrome-like disorder, 613078
RAD51C	99	100%	100%	Fanconi anemia, complementation group O, 613390 {Breast-ovarian cancer, familial, susceptibility to, 3}, 613399
RAD51D	64,7	98%	90%	{Breast-ovarian cancer, familial, susceptibility to, 4}, 614291
RB1	112,8	99%	98%	Retinoblastoma, 180200 Osteosarcoma, somatic, 259500 Bladder cancer, somatic, 109800 Small cell cancer of the lung, somatic, 182280 Retinoblastoma, trilateral, 180200

RECQL4	90,1	98%	97%	Rothmund-Thomson syndrome, 268400 RAPADILINO syndrome, 266280 Baller-Gerold syndrome, 218600
RET	87,3	96%	92%	Multiple endocrine neoplasia IIA, 171400 Medullary thyroid carcinoma, 155240 Multiple endocrine neoplasia IIB, 162300 Central hypoventilation syndrome, congenital, 209880 Pheochromocytoma, 171300 Renal agenesis, 191830 {Hirschsprung disease, susceptibility to, 1}, 142623
RPL11	70,9	96%	89%	Diamond-Blackfan anemia 7, 612562
RPL35A	29,8	84%	60%	Diamond-Blackfan anemia 5, 612528
RPL5	32,7	72%	57%	Diamond-Blackfan anemia 6, 612561
RPS10	33	88%	72%	Diamond-Blackfan anemia 9, 613308
RPS17	0	0%	0%	Diamond-Blackfan anemia 4, 612527
RPS19	33,7	48%	42%	Diamond-Blackfan anemia 1, 105650
RPS24	87,5	100%	92%	Diamond-blackfan anemia 3, 610629
RPS26	37	73%	57%	Diamond-Blackfan anemia 10, 613309
RPS7	19,7	74%	43%	Diamond-Blackfan anemia 8, 612563
RTEL1	84,5	99%	94%	Dyskeratosis congenita, autosomal recessive 5, 615190 Dyskeratosis congenita, autosomal dominant 4, 615190
RUNX1	66,3	96%	86%	Leukemia, acute myeloid, 601626 Platelet disorder, familial, with associated myeloid malignancy, 601399
SBDS	71,4	99%	91%	Shwachman-Bodian-Diamond syndrome, 260400

SDHA	10,9	29%	17%	Leigh syndrome, 256000 Mitochondrial respiratory chain complex II deficiency, 252011 Cardiomyopathy, dilated, 1GG, 613642 Parangliomas 5, 614165
SDHAF2	92,8	100%	100%	Parangliomas 2, 601650
SDHB	96,5	100%	100%	Parangliomas 4, 115310 Pheochromocytoma, 171300 Paranglioma and gastric stromal sarcoma, 606864 Cowden syndrome 2, 612359 Gastrointestinal stromal tumor, 606764

SDHC	22,8	46%	31%	Parangliomas 3, 605373 Paranglioma and gastric stromal sarcoma, 606864 Gastrointestinal stromal tumor, 606764
SDHD	14,5	42%	20%	Parangliomas 1, with or without deafness, 168000 Pheochromocytoma, 171300 Carcinoid tumors, intestinal, 114900 Merkel cell carcinoma, somatic Paranglioma and gastric stromal sarcoma, 606864 Cowden syndrome 3, 615106
SLX4	128,2	97%	94%	Fanconi anemia, complementation group P, 613951
SMAD4	129,6	100%	93%	Pancreatic cancer Polyposis, juvenile intestinal, 174900 Juvenile polyposis/hereditary hemorrhagic telangiectasia syndrome, 175050 Myhre syndrome, 139210
SMARCA4	81,6	97%	91%	Rhabdoid tumor predisposition syndrome 2, 613325 Mental retardation, autosomal dominant 16, 614609
SMARCB1	117	100%	100%	Rhabdoid tumors, somatic, 609322 Rhabdoid predisposition syndrome 1, 609322 Mental retardation, autosomal dominant 15, 614608
SQSTM1	79,4	99%	97%	Paget disease of bone, 602080

STK11	74,8	100%	99%	Peutz-Jeghers syndrome, 175200 Melanoma, malignant, somatic Pancreatic cancer, 260350 Testicular tumor, somatic, 273300
SUFU	86,2	94%	85%	Medulloblastoma, desmoplastic, 155255 {Meningioma, familial, susceptibility to}, 607174
TERT	106,7	100%	98%	{Bone marrow failure, telomere-related, 1}, 614742 {Dyskeratosis congenita, autosomal recessive 4}, 613989 {Dyskeratosis congenita, autosomal dominant 2}, 613989 {Coronary artery disease} {Pulmonary fibrosis, telomere-related, 1}, 614742 {Leukemia, acute myeloid}, 601626 {Melanoma, cutaneous malignant, 9}, 615134
TINF2	165	100%	100%	Dyskeratosis congenita, autosomal dominant 3, 613990 Revesz syndrome, 268130
TMEM127	67,4	100%	94%	{Pheochromocytoma, susceptibility to}, 171300
TNFRSF11A	97,2	95%	92%	Osteolysis, familial expansile, 174810 Paget disease of bone, 602080 Osteopetrosis, autosomal recessive 7, 612301
TP53	79,3	100%	100%	Colorectal cancer, 114500 Li-Fraumeni syndrome, 151623 Hepatocellular carcinoma, 114550 Osteosarcoma, 259500 Choroid plexus papilloma, 260500 Nasopharyngeal carcinoma, 607107 Pancreatic cancer, 260350 Adrenal cortical carcinoma, 202300 Breast cancer, 114480 {Basal cell carcinoma 7}, 614740 {Glioma susceptibility 1}, 137800
TSC1	85,1	99%	96%	Tuberous sclerosis-1, 191100 Lymphangioliomyomatosis, 606690 Focal cortical dysplasia, Taylor balloon cell type, 607341

TSC2	81,7	99%	95%	Tuberous sclerosis-2, 613254 Lymphangioliomyomatosis, somatic, 606690
VHL	115,6	100%	100%	von Hippel-Lindau syndrome, 193300 Renal cell carcinoma, somatic, 144700 Pheochromocytoma, 171300 Hemangioblastoma, cerebellar, somatic Erythrocytosis, familial, 2, 263400
WAS	30,2	91%	72%	Wiskott-Aldrich syndrome, 301000 Thrombocytopenia, X-linked, 313900 Neutropenia, severe congenital, X-linked, 300299 Thrombocytopenia, X-linked, intermittent, 313900
WRAP53	131,3	100%	98%	Dyskeratosis congenita, autosomal recessive 3, 613988
WRN	138,5	100%	100%	Werner syndrome, 277700
WT1	53,1	100%	95%	Wilms tumor, type 1, 194070 Denys-Drash syndrome, 194080 Nephrotic syndrome, type 4, 256370 Frasier syndrome, 136680 Meacham syndrome, 608978 Mesothelioma, somatic, 156240
XPA	81,5	100%	90%	Xeroderma pigmentosum, group A, 278700
XPC	114	100%	98%	Xeroderma pigmentosum, group C, 278720
XRCC2	182	100%	100%	No OMIM phenotype Breast cancer (Park (2012) Am J Hum Genet 90, 734)

Gene symbols used follow HGCN guidelines Genomics 79(4):464-470 (2002) updated October 2013

Median Coverage describes the average number of reads seen across 50 exomes

% Covered 10x describes the percentage of a gene's coding region that is covered at least 10x

% Covered 20x describes the percentage of a gene's coding region that is covered at least 20x

OMIM release used for OMIM disease identifiers and descriptions : 15 october 2013

Ad 1. "No OMIM phenotype" signifies a gene without a current OMIM association Ad 2. OMIM phenotype descriptions between {} signify risk factors