

Annex 5: Multiplex genetic testing panel, example - BROCA cancer risk panel

Gene	Function/Pathway	Heterozygote Cancer risk*	Associated syndrome
AKT1	AKT signaling	Breast, Thyroid	Cowden-like
APC	WNT signaling	Colon	Familial adenomatous polyposis
ATM	Double stranded break repair	Breast, Pancreatic	Ataxia telangiectasia (recessive)
ATR	Double stranded break repair	Oropharyngeal	Seckel (recessive)
BAP1	BRCA1-associated protein complex	Uveal Melanoma, Mesothelioma	
BARD1	BRCA1-associated protein complex	Breast, Ovarian	
BMPR1A	TGF-beta signaling	Colon	Juvenile polyposis
BRCA1	BRCA1-associated protein complex	Breast, Ovarian	Hereditary breast and ovarian cancer
BRCA2	Fanconi/BRCA	Breast, Ovarian	Hereditary breast and ovarian cancer, Fanconi anaemia FA-D1 (recessive)
BRIP1	Fanconi/BRCA	Breast, Ovarian	Fanconi anaemia FA-J (recessive)
CDH1	Cell adhesion	Breast, Gastric	Hereditary diffuse gastric cancer
CDK4	Cell cycle	Melanoma	
CDKN2A	Cell cycle	Pancreatic, Melanoma	
CHEK1	Double stranded break repair	Unknown	
CHEK2	Double stranded break repair	Breast	
CTNNA1	Beta-catenin, e-cadherin complex	Gastric	Hereditary diffuse gastric cancer
FAM175A/Abraxas	Double stranded break repair	Breast	
GALNT12	O-glycosylation	Colon	
GEN1	Double stranded break repair	Breast	
GREM1	BMP antagonist	Colon	Hereditary mixed polyposis syndrome
HOXB13	transcription factor	Prostate	
MEN1	Gene expression regulation	Endocrine	Multiple endocrine neoplasia type 1
MLH1	Mismatch DNA repair	Colon, Ovarian,	Lynch syndrome

Endometrial				
MRE11A	Double stranded break repair	Breast		Ataxia-telangiectasia-like disorder (recessive)
MSH2 (+EPCAM)	Mismatch DNA repair	Colon, Endometrial	Ovarian,	Lynch syndrome
MSH6	Mismatch DNA repair	Colon, Endometrial		Lynch syndrome
MUTYH	DNA repair	Colon (homozygotes)		MUTYH-associated polyposis
NBN	Double stranded break repair	Breast		Nijmegen breakage syndrome (recessive)
PALB2	Fanconi/BRCA	Breast, Pancreatic		Fanconi anaemia FA-N (recessive)
PIK3CA	AKT signaling	Breast, Thyroid		Cowden-like
PMS2	Mismatch DNA repair	Colon, Endometrial		Lynch syndrome
POLD1	DNA Polymerase	Colon, Endometrial		Familial polyposis, colorectal cancer
POLE	DNA Polymerase	Colon		Familial polyposis, colorectal cancer
PRSS1	Digestion (Trypsin 1)	Pancreatic		Pancreatitis
PTEN	PI3K/MAPK Signaling	Breast		Cowden syndrome
RAD51B	Double stranded break repair	Unknown		
RAD51C	Fanconi/BRCA	Ovarian, Breast		Fanconi anaemia FA-O (recessive)
RAD51D	Fanconi/BRCA	Ovarian, Breast		Fanconi anaemia (recessive)
RET	Receptor Tyrosine Kinase	Endocrine		Multiple endocrine neoplasia type 2
SDHB	Succinate dehydrogenase complex	Pheochromocytoma, Paranganglioma		Hereditary paraganglioma-pheochromocytoma
SDHC	Succinate dehydrogenase complex	Pheochromocytoma, Paranganglioma		Hereditary paraganglioma-pheochromocytoma
SDHD	Succinate dehydrogenase complex	Pheochromocytoma, Paranganglioma		Hereditary paraganglioma-pheochromocytoma
NEW SLX4	Fanconi/BRCA	Unknown		Fanconi anaemia (recessive)
SMAD4	TGF-beta signaling	Colon		Juvenile polyposis
STK11	Cell Cycle/p53 regulation	Breast, Pancreatic		Peutz-Jeghers syndrome
TP53	Cell growth	Breast, Ovarian		Li-Fraumeni syndrome
VHL	p53 regulation	Kidney, Neuroendocrine		von Hippel-Lindau syndrome
XRCC2	Double stranded break repair	Breast		Fanconi anaemia (recessive)