

VariantPlex Expanded Solid Tumor

Description

The VariantPlex Expanded Solid Tumor panel is a balanced pool of gene-specific primer (GSP) oligonucleotides that is optimized for use with VariantPlex reagents and molecular barcode (MBC) adapters to produce targeted NGS libraries. This product insert should be used in conjunction with VariantPlex HS/HGC protocol for Illumina® (RA-DOC-056).

VariantPlex Expanded Solid Tumor contains **2676** GSPs targeting **76** genes commonly mutated in solid tumors plus microsatellite instability (MSI).

Description	Part number	Storage
VariantPlex Expanded Solid Tumor GSP1, 8 reactions	SA20123081	-20°C ± 10°C
VariantPlex Expanded Solid Tumor GSP2, 8 reactions	SA20123082	
PreSeq [™] DNA QC Assay Standard, 32 µL	SA0597	
PreSeq [™] DNA QC Assay 10X Primer Mix, 120 µL	SA0598	

Required reagent volumes

Protocol reference	Protocol step	Reagent	Volume per reaction (µL)
A	Ligation Step 2 Elution	5mM NaOH	32
B	First PCR	VariantPlex Expanded Solid Tumor GSP1	8
C	First PCR	10mM Tris-HCl pH 8.0	34
D	First PCR	Purified PCR1 eluate	32
E	Second PCR	VariantPlex Expanded Solid Tumor GSP2	8

Recommended PCR cycling

	Step	Temperature (°C)	Time	Cycles
First PCR reaction	1	95	3 min	1
	2	95	30 sec	15
	3	62	10 min (100% ramp rate)	
	4	72	3 min	
	5	4	Hold	1
Second PCR reaction	1	95	3 min	1
	2	95	30 sec	20†
	3	65	10 min (100% ramp rate)	
	4	72	3 min	
	5	4	Hold	1

†The number of PCR2 cycles may be decreased if you regularly experience library yields greater than 200 nM.

Recommended reads and multiplexing

VariantPlex Expanded Solid Tumor libraries should be sequenced to a minimum of **6M reads**. Starting read depth recommendations for standard profiling may be adjusted based on user needs.

Archer™ Analysis settings

Sequencing data should be processed using Archer Analysis (7.0, or greater). The VariantPlex Expanded Solid Tumor panel requires selection of the **SNV/Indel, Structural Variation, and Copy Number Variation** pipelines, found under the **DNA** Input Type (see the Archer Analysis User Guide for more details on setting up your analysis). Selection of the DNA Target Coverage pipeline is optional.

Processing of VariantPlex Expanded Solid Tumor libraries requires a one-time upload of the Panel GTF. When performing DNA Target Coverage analysis, users must also select a Region

of Interest BED file. Users may optionally add a Targeted Mutations VCF file for targeted SNV/Indel detection. Files can be obtained by contacting archer-tech@idtdna.com

Assay targets

Gene	Accession	Exon
<i>AKT1</i>	NM_005163	2,3,6,11
<i>ALK</i>	NM_004304	21,22,23,24,25
<i>APC</i>	NM_000038	16
<i>AR</i>	NM_000044	4,5,6,7,8
<i>ATM</i>	NM_000051	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63
<i>ATRX</i>	NM_000489	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35
<i>BARD1</i>	NM_000465	1,2,3,4,5,6,7,8,9,10,11
<i>BRAF</i>	NM_004333	11,15
<i>BRCA1</i>	NM_007294	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23
<i>BRCA1</i>	NM_007300	13
<i>BRCA2</i>	NM_000059	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27
<i>BRIP1</i>	NM_032043	2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20
<i>CDK12</i>	NM_015083	1,2,3,4,5,6,7,8,9,10,11,12,13
<i>CDK12</i>	NM_016507	14
<i>CDK4</i>	NM_000075	2,3,4,5,6,7,8
<i>CDK6</i>	NM_001259	CNV Only
<i>CDKN2A</i>	NM_000077	2,3

Gene	Accession	Exon
<i>CDKN2A</i>	NM_058197	1
<i>CHEK1</i>	NM_001114121	1
<i>CHEK1</i>	NM_001274	3,4,5,6,7,8,9,10,11,12,13
<i>CHEK1</i>	NM_001330427	2
<i>CHEK2</i>	NM_001349956	4
<i>CHEK2</i>	NM_001005735	3
<i>CHEK2</i>	NM_007194	2,3,4,5,6,7,8,9,10,11,12,13,14,15
<i>CTNNB1</i>	NM_001904	3
<i>DDR2</i>	NM_006182	8,15,17
<i>EGFR</i>	NM_005228	3,7,12,15,18,19,20,21,22
<i>EGFR</i>	NM_201282	16
<i>EGFR</i>	NM_201283	10
<i>ERBB2</i>	NM_004448	8,10,17,19,20,21,22,24
<i>ERBB3</i>	NM_001005915	3
<i>ERBB3</i>	NM_001982	2,3,7,8,9,18,23,27,28
<i>ERBB4</i>	NM_005235	3,4,6,7,8,9,15,23
<i>ESR1</i>	NM_000125	5,6,7,8
<i>FANCA</i>	NM_000135	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43
<i>FANCA</i>	NM_001018112	11

Gene	Accession	Exon
<i>FANCL</i>	NM_001114636	7
<i>FANCL</i>	NM_018062	1,2,3,4,5,6,8,9,10,11,12,13,14
<i>FBXW7</i>	NM_001013415	1
<i>FBXW7</i>	NM_001257069	4
<i>FBXW7</i>	NM_018315	1,2,3,4,5,6,7,8,9,10,11
<i>FGFR1</i>	NM_001174064	3
<i>FGFR1</i>	NM_001174067	2
<i>FGFR1</i>	NM_015850	2,4,5,8,13,14
<i>FGFR2</i>	NM_000141	2,5,7,9,12,13,14,15
<i>FGFR2</i>	NM_022970	8
<i>FGFR3</i>	NM_000142	3,7,9,13,14,16
<i>FOXL2</i>	NM_023067	1 (p.C134)
<i>GNA11</i>	NM_002067	5
<i>GNAQ</i>	NM_002072	4,5
<i>GNAS</i>	NM_000516	6,7,8,9
<i>H3F3A</i>	NM_002107	2
<i>HIST1H3B</i>	NM_003537	1
<i>HRAS</i>	NM_005343	2,3
<i>IDH1</i>	NM_005896	3,4

Gene	Accession	Exon
<i>IDH2</i>	NM_002168	4
<i>JAK2</i>	NM_004972	6,12,14,23
<i>KIT</i>	NM_000222	2,8,9,10,11,12,13,14,15,17,18
<i>KRAS</i>	NM_004985	2,3,4,5
<i>MAP2K1</i>	NM_002755	2,3,6
<i>MAP2K2</i>	NM_030662	2,6
<i>MET</i>	NM_000245	2,11,14,15,16,19,20,21
<i>MTOR</i>	NM_004958	30,39,40,44,45,47,48,50
<i>MYC</i>	NM_002467	1,2,3
<i>NOTCH1</i>	NM_017617	24,25,26,27,28,29,34,c.*7668+371 to c.*7668+378
<i>NOTCH2</i>	NM_024408	24,25,26,27,28,29,34
<i>NOTCH3</i>	NM_000435	24,25,26,27,28,29,33
<i>NOTCH4</i>	NM_004557	26,27,28,29,30
<i>NRAS</i>	NM_002524	2,3,4,5
<i>NTRK1</i>	NM_002529	14,15
<i>NTRK2</i>	NM_006180	18,19
<i>NTRK3</i>	NM_002530	16,17
<i>PALB2</i>	NM_024675	1,2,3,4,5,6,7,8,9,10,11,12,13
<i>PDGFRA</i>	NM_006206	7,10,11,12,14,15,16,18,23

Gene	Accession	Exon
<i>PIK3CA</i>	NM_006218	2,3,5,7,8,9,10,14,19,21
<i>POLD1</i>	NM_001308632	14
<i>POLD1</i>	NM_002691	2,3,4,5,6,7,8,9,10,11,12,13,14,16,17,18,19,20,21,22,23,24,25,26,27
<i>POLE</i>	NM_006231	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49
<i>PTEN</i>	NM_000314	1,2,3,4,5,6,7,8,9
<i>RAD51B</i>	NM_001321809	12
<i>RAD51B</i>	NM_001321810	11
<i>RAD51B</i>	NM_001321814	11
<i>RAD51B</i>	NM_001321818	11
<i>RAD51B</i>	NM_001321819	11
<i>RAD51B</i>	NM_002877	2,3,4,5,6,7,8,9,10,11
<i>RAD51B</i>	NM_133509	11
<i>RAD51B</i>	NM_133510	11
<i>RAD51C</i>	NM_002876	1,2
<i>RAD51C</i>	NM_058216	3,4,5,6,7,8,9
<i>RAD51D</i>	NM_001142571	3
<i>RAD51D</i>	NM_002878	1,2,3,4,5,6,7,8,9,10
<i>RAD54L</i>	NM_003579	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18
<i>RAF1</i>	NM_002880	3,7,10,14

Gene	Accession	Exon
<i>RB1</i>	NM_000321	1,2,3,4,5,6,7,8,9,10,11,12, 13,14,15, 16,17, 18,19,20,21,22,23,24,25,26, 27
<i>RET</i>	NM_020630	10,11,13,14,15,16
<i>RICTOR</i>	NM_152756	CNV Only
<i>ROS1</i>	NM_002944	36,37,38,39,40,41,42
<i>SMAD4</i>	NM_005359	2,3,4,5,6,7,8,9,10,11,12
<i>SMO</i>	NM_005631	1,2,3,4,5,6,7,8,9,10,11,12
<i>STK11</i>	NM_000455	1,2,3,4,5,6,7,8,9
<i>TERT</i>	NM_198253	3,6,10
<i>TERT</i>	NM_198253	Promoter (chr5:1295148-1295374)
<i>TP53</i>	NM_000546	1,2,3,4,5,6,7,8,9,10,11
<i>TP53</i>	NM_001276696	10
<i>VHL</i>	NM_000551	1,2,3

Genes targeted for CNV

<i>AKT1</i>	<i>BRCA2</i>	<i>EGFR</i>	<i>JAK2</i>	<i>PIK3CA</i>
<i>ALK</i>	<i>BRIP1</i>	<i>ERBB2</i>	<i>KIT</i>	<i>PTEN</i>
<i>AR</i>	<i>CDK12</i>	<i>ERBB3</i>	<i>KRAS</i>	<i>RAD51B</i>
<i>ATM</i>	<i>CDK4</i>	<i>ESR1</i>	<i>MET</i>	<i>RAF1</i>
<i>BARD1</i>	<i>CDK6</i>	<i>FGFR1</i>	<i>MYC</i>	<i>RET</i>
<i>BRAF</i>	<i>CHEK1</i>	<i>FGFR2</i>	<i>NRAS</i>	<i>RICTOR</i>
<i>BRCA1</i>	<i>CHEK2</i>	<i>FGFR3</i>	<i>PDGFRA</i>	<i>STK11</i>
				<i>TERT</i>

Please contact archer-tech@idtdna.com to inquire about enabling additional genes for CNV detection.

SNPs and sites targeted for sample tracking

rs560681	rs430046	rs987640	rs10776839	rs12393891
rs740598	rs8078417	rs6444724	rs6530357	chrX:4429309
rs1498553	rs9951171	rs6811238	rs5971553	chrX:11314433
rs10773760	rs576261	rs13182883	rs5953060	chrY:6738552
rs1058083	rs1109037	rs214955	rs6524626	chrY:19490214
rs4530059	rs1523537	rs321198	rs5940270	
rs1821380	rs221956	rs4606077	rs722847	

SNPs may be used in combination to uniquely tag and track samples over time. Please contact archer-tech@idtdna.com to inquire about enabling additional genes for CNV detection.

Limitations of use

For research use only. Not for use in diagnostic procedures. Unless otherwise agreed to in writing, IDT does not intend these products to be used in clinical applications and does not warrant their fitness or suitability for any clinical diagnostic use. Purchaser is solely responsible for all decisions regarding the use of these products and any associated regulatory or legal obligations.

Safety data sheets pertaining to this product are available upon request.

This product or service is licensed under one or more of the following U.S. Patents: 8,835,358; 9,290,808; 9,290,809; 9,315,857; 9,708,659; and 9,816,137 owned by BD and is licensed solely for the use described in the associated product literature. No other rights, implied or otherwise, are granted to purchaser hereunder. Purchaser agrees, by way of example and not limitation, not to use this product to trace back the origin of a nucleic acid to an individual cell as a discrete entity (e.g., single cell analysis).

© 2023 Integrated DNA Technologies, Inc. All rights reserved. FusionPlex, VariantPlex, LiquidPlex, Immunoverse, Archer Analysis, and Archer Assay Marketplace are trademarks of Integrated DNA Technologies, Inc. All other marks are the property of their respective owners. For specific trademark and licensing information, see www.idtdna.com/trademarks.