Expanded DNA-seq panels for solid tumor research in your lab

Invitae's VariantPlex® panels offer an easy-to-use, scalable solution for DNA sequencing in your lab. These targeted panels handle variant detection all the way from sample to data using **Anchored Multiplex PCR (AMP™)** chemistry, next-generation sequencing (NGS), and an integrated bioinformatic platform.

Choose from a suite of specialized catalog panels, including recently **expanded designs for solid tumors** curated from clinical practice guidelines, emerging biomarkers in the literature, and customer input—or create a custom panel to meet your exact needs. Our new **pan-tumor microsatellite instability (MSI) analysis** can take your sequencing to the next level.

Introducing Invitae's newest VariantPlex research assays

Now with expanded gene content and MSI reporting

VARIANTPlex®

- Solid Tumor Focus v2
- Core Solid Tumor
- Expanded Solid Tumor
- Pan Solid Tumor

Detection of multiple variant types

Key biomarkers in solid tumor genes, now including MSI reporting

- Thoughtfully designed based on guidelines, literature and customer input
- High priority SNV/indel, CNV, ITD targets
- Biomarkers of emerging significance
- Add MSI module to any custom VariantPlex panel

AMP chemistry provides a robust yet simple workflow compared to other NGS technologies

	Simple, fast workflow	Low input mass requirement	Single-tube assays	Represents true sample biology (MBC, UMI)	Easy panel customization
VariantPlex AMP chemistry (DNA)	✓	✓	✓	✓	✓
Hybrid capture (DNA)	✗ (1)	! (2)	✓	✓	✗
Opposing primer amplicon (DNA)	✓	✓	✗ (3)	✗ (4)	!

! Indicates that the methodology may not be the best choice for optimal results

1. Complex library preparation processes (Hsiao *et al.* 2019)
2. Requires more input DNA (Hsiao *et al.* 2019)
3. Reference user guides for opposing primer assays.
4. True sample biology cannot be assessed without molecular barcodes (MBCs) or unique molecular identifiers (UMIs)

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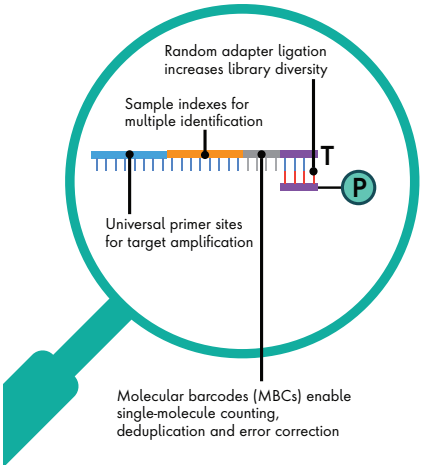
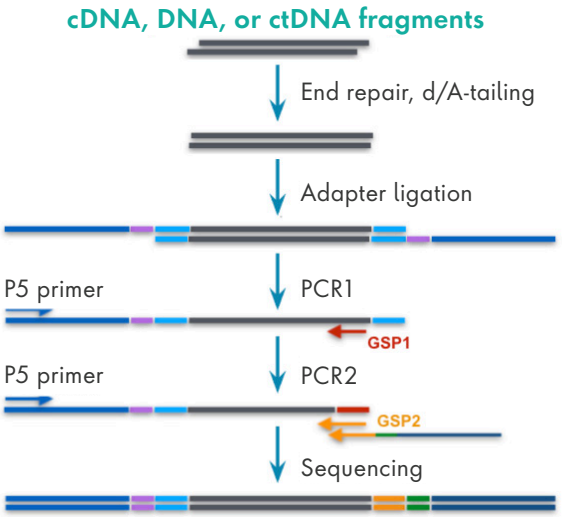
Engineered for reliability.

Patented AMP target enrichment chemistry provides robust detection of oncogenic drivers.

- Optimized for FFPE samples
- Detection of SNVs/indels, CNVs, ITDs, and MSI
- Molecular barcode (MBC)-driven error correction and unique molecule identification

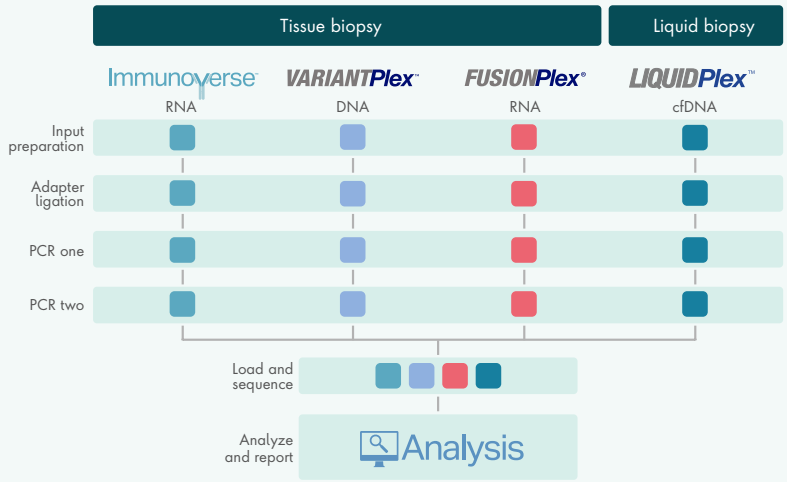




Surprisingly simple NGS workflow.

Designed with simplicity in mind, Invitae makes it easy to implement NGS research assays in any lab.

- 1.5 day library prep with minimal hands-on time
- Input requirements as low as 10ng DNA
- Lyophilized reagents to minimize error and eliminate the need for master mixes
- Single-use reactions reduce contamination
- Parallel workflow for RNA, DNA and ctDNA analysis



One powerful platform. Endless potential.

All VariantPlex assays are supported by an integrated analysis platform, Archer® Analysis, providing a turnkey solution to complex genomic solutions.

- Simple and intuitive web-based interface
- In-line visualization for clear reporting
- Dynamic variant filtering
- Integrates LIMS data and third party providers
- Deploys securely to a cloud or local server

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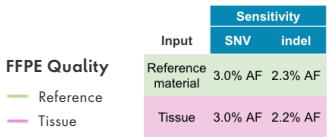
Sensitive variant detection even with limited sample input

Input mass*	Sensitivity**	Specificity***
10-200ng	• ≥95% of targeted§ SNVs powered to ≥3% allele frequency • ≥95% of targeted§ indel powered to ≥2.5% allele frequency • 97.8% positive percent agreement (PPA) for MSI	• 100% negative percent agreement (NPA) for targeted§ SNV/indel detection • 100% NPA for MSI

Pan-tumor VariantPlex panels

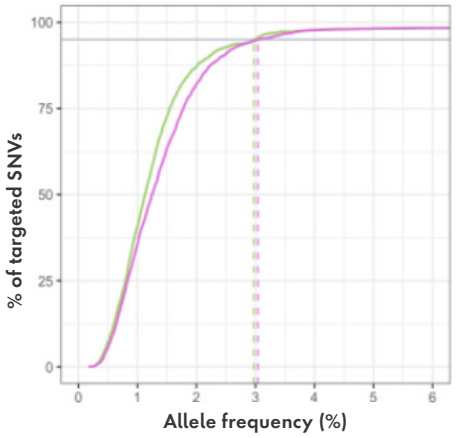
VariantPlex assays enable sensitive variant detection ≤3% allelic frequency (AF)

Based on unique coverage depth and position-specific noise profiles, 95% of targeted variants are powered to ≥3% AF (SNV) and ≥2.5% AF (indel) in both FFPE reference material and tissue samples.

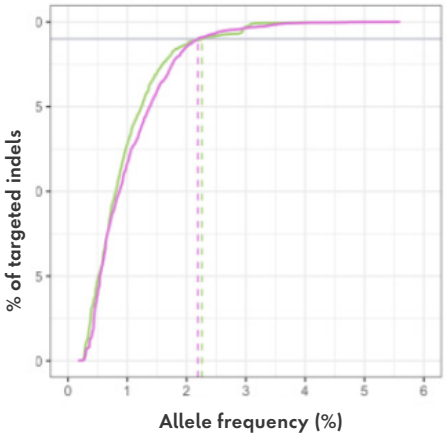


Input	Sensitivity	
	SNV	indel
Reference material	3.0% AF	2.3% AF
Tissue	3.0% AF	2.2% AF

Sensitivity across targeted SNVs



Sensitivity across targeted indels



VariantPlex assays now include microsatellite instability (MSI) detection†

MSI status is a critical biomarker across solid tumors. Assays that enable MSI detection in the context of solid tumor genomic profiling make the most of precious FFPE-derived nucleic acid.

Panel coverage:

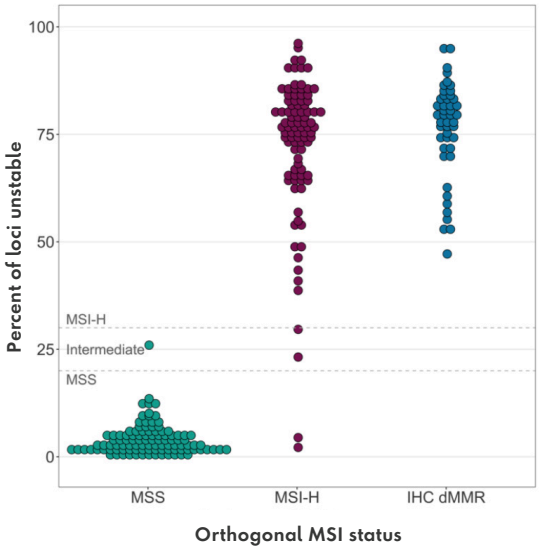
- 114 microsatellite loci targeted across the genome

Performance:

- Sensitivity: 97% PPA (95% CI=92.2-99.7%)
- Specificity: 100% NPA (95% CI=96.2-100%)

Analysis outputs:

- % unstable loci + MSS, intermediate, and MSI-H classifications



*Input mass requirements vary depending on type and quality. Unless the tumor cellularity and sample quality are high, 50ng of FFPE-derived nucleic acid should be considered the minimum recommendation. If input is of low quality, 200ng is recommended for optimal results.
**Values listed are based on performance testing for VariantPlex® Expanded Solid Tumor using 50ng Seraseq® FFPE WT (DNA/RNA) Reference Material (0710-0137), Seraseq® Compromised FFPE Tumor DNA RM (0710-1492), Horizon™ OncoSpan FFPE (HD832) sequenced to 6M reads on Illumina® NextSeq.
***Values listed are based on performance testing for VariantPlex® Expanded Solid Tumor using 150ng Seraseq® FFPE WT (DNA/RNA) Reference Material (0710-0137)
§Targeted variants are those present in the targeted mutations file for this assay.
†Internal Invitae data

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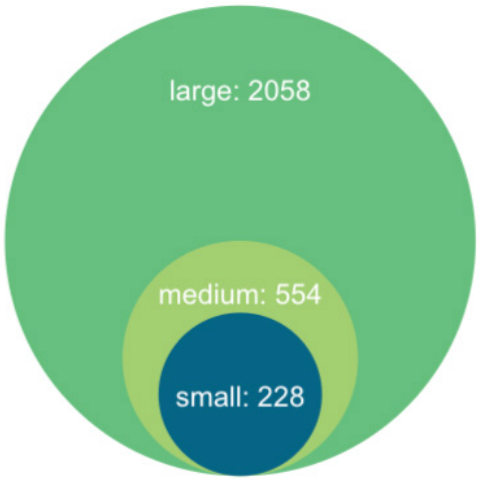
Adaptable assays for tomorrow's needs

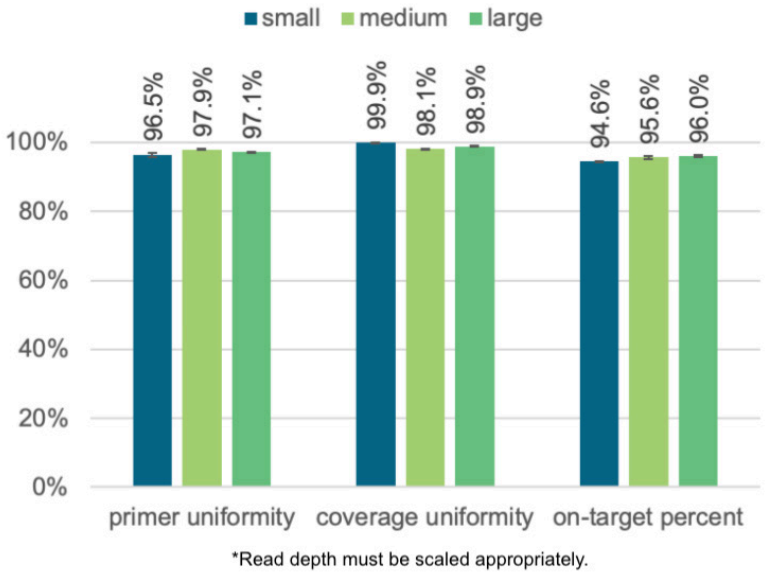
Assay marketplace

- Find the right assay by browsing our catalog of targeted panels, or build your own using an intuitive web interface
- Run your assays with confidence by leveraging our predesigned, functionally tested primers for your targets of interest
- Scale your assays by iterating and updating your designs with additional targets as your needs grow

AMP primers function independently, meaning new gene content can easily be added to existing panels without compromising assay performance.*

Panel size by primer number:





*Read depth must be scaled appropriately.

VariantPlex panels for solid tumor research

Compatible with Illumina® sequencers.

New expanded panels	Size	Read depth	Product #
VariantPlex Solid Tumor Focus v2	20 genes + MSI	1.5M	AB0139
VariantPlex Core Solid Tumor	60 genes + MSI	4.5M	AB0140
VariantPlex Expanded Solid Tumor	76 genes + MSI	6M	AB0141
VariantPlex Pan Solid Tumor	185 genes + MSI	25M	AB0142

Go custom: Design your own panel or add to an existing one. It's your panel, your way.

ASSAY MARKETPLACE

Learn more at **www.invitae.com/solid-tumor-research**
or email us at **adx-sales@invitae.com**

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