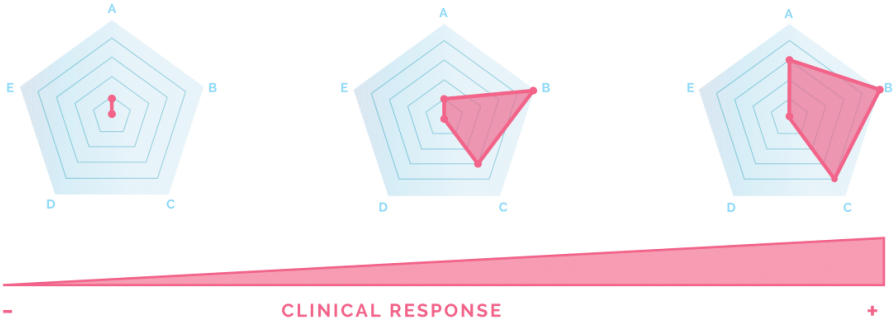
Assess immunotherapy response with OncoDEEP

PERSONALIZED IMMUNOGRAM



A *PD-L1 (%) (FDA)*

An approved companion diagnostic in some cancers and some treatments. Nonetheless, the predictive value of PD-L1 is still under questioning, as a definite role has been limited by the expression assays and the cutoffs used in the different studies. And although studies support a predictive role of PD-L1 expression, around 5-10% of patients negative for PD-L1 expression have achieved response.

APPROVED BIOMARKER IN SOME CANCERS AND FOR SOME TREATMENTS, BUT SOLO NOT ENOUGH, ITS EXPRESSION LEVEL IS VERY DYNAMIC AND SENSITIVE TO TUMOR HETEROGENEITY

B *TMB (Tumor Mutational Burden; ASCO 2017) / 15% of TMB are MSI-H*

Overall, TMB has been shown to be a predictive biomarker for immunotherapy. High, intermediate, and low TMB were defined as ≥20 mut/Mb, ≥6 and <20 mut/Mb, or <6 mut/Mb, respectively. It has been reported that a minimum of 1.1 Mb of coding genome can accurately assess this TMB compared with sequencing of the whole exome.

NOT ENOUGH SINCE TUMOR MIGHT CARRY SOME MUTATIONS OF RESISTANCE OR MIGHT NOT HAVE THE RIGHT ENVIRONMENT FOR A GOOD IMMUNE RESPONSE

C *CD8 T cell infiltrate (ASCO 2017)*

Studies have shown that increased numbers of tumour-infiltrating CD8+ T-lymphocytes are associated with better clinical outcome.

SOLO NOT ENOUGH SINCE LIKE THE EXPRESSION OF PD-L1, IT IS HIGHLY DYNAMIC AND SENSITIVE TO HETEROGENEITY

D *MSI high (FDA)*

For patients with metastatic solid tumours that have progressed following prior treatment and who have no satisfactory alternative treatment options.

APPROVED BUT RARE IN MOST CANCERS

E *Resistances (ASCO 2017)*

Mutations in JAK1, JAK2, POLE, STK11, PD-L1, higher number of CNVs, Met-ex14 have been associated with resistance to immunotherapy.

First test gathering the power of 5 independents predictors to improve the potential clinical benefit of immunotherapy through its personalized immunogram.

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ADDITIONAL THERAPIES

In addition to the personalized immunogram. OncoDEEP gathers other molecular insights through its comprehensive analysis of DNA, RNA and proteins to provide the patient with the best options in

TARGETED THERAPY
EGFR TKI (Tyrosine Kinase Inhibitors)
ALK inhibitors
MEK inhibitors
Combination BRAF & MEK inhibitor
ROS1 inhibitors
MET inhibitors
RET inhibitors
HER2 inhibitors
mTOR inhibitors
...

CHEMO THERAPY
Antimetabolites (5-FU)
Anthracyclines (doxorubicin)
Alkylating agents (temozolomide)
Nucleoside analog (gemcitabine)
Platinum agents (cisplatin)
Taxanes (docetaxel)
Topoisomerase inhibitors (irinotecan)

HORMONE THERAPY
Hormone therapy
Androgen deprivation therapy

ONCODEEP GENE PANEL

GENES									
AKT1	ALK	APC	APLNR	AR	**ARID1A**	**ATM**	BRAF	**BRCA1**	**BRCA2**
CCND1	CCNE1	CDH1	CDK4	CDKN2A	cKIT	CSF1R	CTNNB1	DDR2	DPYD
EGFR	ERBB2	ERBB3	ERBB4	ESR1	EZH2	FBXW7	FGFR1	FGFR2	FGFR3
FOXL2	GNA11	GNAQ	GNAS	H3F3A	HNF1A	HRAS	IDH1	IDH2	JAK1
JAK2	JAK3	KRAS	MAP2K1	MAP2K2	MET	**MLH1**	MPL	**MSH2**	**MSH6**
mTOR	NPM1	NRAS	PDGFRA	PDGFRB	**PIK3CA**	**PMS2**	**POLE**	**PTEN**	PTPN11
RAC1	RAF1	**RB1**	RET	ROS1	**SMAD4**	SMARCB1	**SMO**	SRC	**STK11**
TERT (prom)	**TP53**	TPMT	UGT1A1	**VHL**					

GENES **: The complete coding sequence (CDS) is analysed for the genes highlighted in blue.**

We improved OncoDEEP® by adding :

1. Genes mainly dedicated to immuno and targeted therapies
2. MSI (Microsatellite Instability) testing for Immunotherapy and resistance to 5-FU based chemotherapies
3. Sequences required to perform TMB (Tumor Mutational Burden) analysis for Immunotherapy
4. Highly polymorphic SNPs to detect hemizygosity or LOH (Loss of Heterozigosity) for targeted therapies or prognosis

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