

## TECHNICAL SHEET IDYLLA™ GENEFUSION PANEL

### Intended Use

The Biocartis Idylla™ GeneFusion Panel is a fully automated in vitro diagnostic test intended for the qualitative detection of specific gene fusions of ALK, ROS1, RET as well as MET exon 14 skipping. The Idylla™ GeneFusion Panel is intended for use with formalin-fixed, paraffin-embedded (FFPE) tumor tissue sections from patients with non-small cell lung cancer (NSCLC). The Idylla™ GeneFusion Panel covers the entire process from sample to result, including fully integrated RNA and DNA extraction, reverse transcription of mRNA, real-time PCR amplification and detection, data analysis, and result reporting.

### Indications for Use

The Idylla™ GeneFusion Panel is for use by healthcare professionals for identifying the panel gene rearrangements for patients with NSCLC, to predict the most appropriate treatment options. The Idylla™ GeneFusion Panel is not intended to diagnose NSCLC.

## FEATURES

Fusion specific detection		
ALK fusions (17)	EML4-ALK	EML4 exon 2; ALK exon 20
		EML4 exon 6a; ALK exon 20
		EML4 exon 6b; ALK exon 20
		EML4 exon 13; ALK exon 20
		EML4 exon 15; ALK exon 20
		EML4 exon 17; ALK exon 20
		EML4 exon 18; ALK exon 20
		EML4 exon 20; ALK exon 20
	KIF5B-ALK	KIF5B exon 15; ALK exon 20
		KIF5B exon 17; ALK exon 20
		KIF5B exon 24; ALK exon 20
	HIP1-ALK	HIP1 exon 28; ALK exon 20
		HIP1 exon 30; ALK exon 20
	KLC1-ALK	KLC1 exon 9; ALK exon 20
	TPR-ALK	TPR exon 15; ALK exon 20
	TFG-ALK	TFG exon 4; ALK exon 20
		TFG exon 6; ALK exon 20

Fusion specific detection - continued		
ROS1 fusions (13)	CD74-ROS1	CD74 exon 6; ROS1 exon 32
		CD74 exon 6; ROS1 exon 34
	SDC4-ROS1	SDC4 exon 2; ROS1 exon 32
		SDC4 exon 4; ROS1 exon 32
	SLC34A2-ROS1	SDC4 exon 4; ROS1 exon 34
		SLC34A2 exon 4; ROS1 exon 32
		SLC34A2 exon 13; ROS1 exon 32
	EZR-ROS1	EZR exon 10; ROS1 exon 34
	TPM3-ROS1	TPM3 exon 8; ROS1 exon 35
	GOPC-ROS1	GOPC exon 4; ROS1 exon 36
GOPC exon 8; ROS1 exon 35		
LRIG3-ROS1	LRIG3 exon 16; ROS1 exon 35	
RET fusions (7)	KIF5B-RET	KIF5B exon 15; RET exon 11
		KIF5B exon 15; RET exon 12
		KIF5B exon 16; RET exon 12
		KIF5B exon 22; RET exon 12
		KIF5B exon 23; RET exon 12
	KIF5B exon 24; RET exon 11	
CCDC6-RET	CCDC6 exon 1; RET exon 12	
<b>MET exon 14 skipping</b>	MET exon 14 skipping transcript detection at the exon 13-exon 15 junction	

### Expression imbalance detection

ALK expression imbalance  
 ROS1 expression imbalance  
 RET expression imbalance

Expression imbalance measures the difference between the 3' gene expression level and the 5' gene expression of the kinase gene. Expression imbalance results are only reported in case the specific fusion is not detected. A 'detected' expression imbalance result is indicative for the presence of a fusion and the result should be used in combination with an alternative gene fusion test method (e.g. IHC, FISH or NGS).

### Internal GeneFusion controls

RNA Housekeeping gene 1	ERCC3
RNA Housekeeping gene 2	TMUB2
RNA MET Wild Type	Detection of the Wild Type MET isoform mRNA containing the MET exon 14 sequence
DNA control	KIF11

## Minimum specimen requirements

Sample type 1 x 5 µm FFPE tissue section if tissue area  $\geq 20 \text{ mm}^2$   
3 x 5 µm FFPE tissue sections if tissue area  $< 20 \text{ mm}^2$

Neoplastic cells  $\geq 10\%$ , if less macrodissection is required

## Total turnaround time

Time Approx. 180 minutes

## Analytical performance

	Gene rearrangement	LoD in copies / Cartridge
Analytical sensitivity	ALK	3 000 – 10 000
	ROS1	3 000
	RET	5 000
	METex14 skipping	3 000

Between laboratory reproducibility 99% agreement  
(648 results at 3 sites with 6 artificial FFPE samples) (645/648)

Between lot reproducibility 98.9% agreement  
(96 results on 3 lots with 4 clinical FFPE samples) (95/96)

## Clinical performance

The clinical performance evaluation compared the Idylla™ GeneFusion Panel with IHC (VENTANA ALK (D5F3) Assay, Roche Diagnostics GmbH) for ALK. ROS1, RET and METex14 were compared with NGS (OncoPrint™ Focus Assay, Thermo Fisher Scientific). PPA, NPA and OPA for ALK, ROS1 and RET were calculated based on fusion specific results only as well as by combining the fusion specific results with the expression imbalance results.

### Concordance of the Idylla™ GeneFusion Panel versus IHC for ALK.

ALK	Fusion Specific Results Only		Including Confirmed* Expression Imbalance	
	Rate	Agreement (%)	Rate	Agreement (%)
PPA	34/38	89.5%	38/38	100.0%
NPA	118/119	99.2%	118/119	99.2%
OPA	152/157	96.8%	156/157	99.4%

\* Confirmed = samples that are expression imbalance positive using the Idylla™ GeneFusion Panel and that were confirmed with the reference method. Expression imbalance results are indicative for the presence of a fusion and should be confirmed with another technology.

### Concordance of the Idylla™ GeneFusion Panel versus NGS for ROS1.

ROS1	Fusion Specific Results Only		Including Confirmed* Expression Imbalance	
	Rate	Agreement (%)	Rate	Agreement (%)
PPA	12/15**	80.0%	12/15	80.0%
NPA	187/187	100.0%	187/187	100.0%
OPA	199/202	98.5%	199/202	98.5%

\* Confirmed = samples that are expression Imbalance positive using the Idylla™ GeneFusion Panel and that were confirmed with the reference method. Expression imbalance results are indicative for the presence of a fusion and should be confirmed with another technology.

\*\* Of the 3 discordant ROS1 positive samples, the OncoPrint™ Focus Assay indicated that there was a low read count for 2 of the 3 samples. All 3 discordant samples tested negative for ROS1 with IHC.

### Concordance of the Idylla™ GeneFusion Panel versus NGS for RET.

RET	Fusion Specific Results Only		Including Confirmed* Expression Imbalance	
	Rate	Agreement (%)	Rate	Agreement (%)
PPA	13/14	92.9%	14/14	100.0%
NPA	187/188	99.5%	187/188	99.5%
OPA	200/202	99.0%	201/202	99.5%

\* Confirmed = samples that are expression Imbalance positive using the Idylla™ GeneFusion Panel and that were confirmed with the reference method. Expression imbalance results are indicative for the presence of a fusion and should be confirmed with another technology.

### Concordance of the Idylla™ GeneFusion Panel versus NGS for METex14 skipping.

METex14	Rate	Agreement (%)
PPA	48/53*	90.6%
NPA	149/149	100.0%
OPA	197/202	97.5%

\* Of the 5 discordant METex14 positive samples, the OncoPrint™ Focus Assay indicated that there was a low read count for 4 of the 5 samples.

LoD: Limit of Detection – PPA: Positive Percent Agreement – NPA: Negative Percent Agreement – OPA: Overall Percent Agreement

#### Catalog number

Idylla™ GeneFusion Panel

A0120/6



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