Singapore General Hospital
SingHealth

Tel: (65) 6222 3322
Fax: (65) 6224 9221
20 College Road
Academia
Singapore 169856
www.sgh.com.sg

Reg No 198703907Z

v1.0_29102024

Test name : SSTP Liquid
Specimen receipt : Only Monday – Friday; 8.45am – 4pm (excluding public holidays)
Test Set-up : Every Wednesday (Thursday if Wednesday falls on a public holiday)
Turnaround time : 10 working days from day of test set up

The SSTP Liquid assay is an amplicon-based next generation sequencing (NGS) assay incorporated with molecular tagging that allows sensitive detection of circulating cell-free tumour nucleic acids in the peripheral blood (liquid biopsy). Only SNVs and short delins are validated for this assay. This assay can be used to determine the presence of genomic alterations in circulating tumour nucleic acids in patients that would predict response of a cancer to targeted therapy (predictive testing).

Indications for testing
To determine the presence of somatic variants in plasma circulating cell-free tumour nucleic acids that would predict response of a cancer to targeted therapy (predictive testing).

Limitations
1. Only single nucleotide variants (SNVs) and small insertions / deletions (delins) are validated in this assay. Gene amplifications and fusions are tested but the sensitivity and specificity of the assay for these findings have not been validated. This assay also does not detect large insertions and deletions.
2. The absence of detectable variants in cell-free DNA/RNA may be due to tumour biology or a variant allele frequency that is below the limit of detection of this assay. It does not exclude the presence of a genomic alterations in the patient's tumour. Further evaluation with a tissue biopsy should be considered for negative cases.
3. Genomic findings may be derived from other alterations such as clonal haematopoiesis (CH).
4. This assay is not designed to assess for germline changes and the results are not definitive for the presence or absence of a germline variant.

Specimen requirements
20 mls of blood collected in K_2EDTA blood collection tubes (for example 4 tubes of blood will be required if 6 ml tubes are used). Gently invert the blood tubes multiple (8-10) times upon blood collection to prevent coagulation. The tubes should then be labelled with patient's details, placed into a specimen zip-lock bag (individual case per bag), and accompanied by a hard copy test request form with relevant clinical information or an electronic test request

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order in the Computerised Physician Order Entry system (CPOE) (for relevant SingHealth institutions). The date and time of blood draw should be indicated in the hard copy request form or CPOE order.

Specimens should be sent to 20 College Road, Academia building, Diagnostic Tower, Level 8, Client and Specimen Management (CSM) where it will then be internally transferred immediately to Anatomical Molecular Laboratory (ATOM) for testing. Specimens should reach ATOM within 2 hours from the time of blood draw, after which the specimen may be rejected. Specimens are received by ATOM only on Monday – Friday; 8.45am – 4pm (excluding public holidays).

Any other queries can be directed to the Anatomical Molecular Laboratory (ATOM) at (65) 6576 7191.

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Table 1. List of 44 genes and their corresponding exons covered by the SSTP Liquid assay for detecting single nucleotide variants (SNVs) and small insertions / deletions (delins)

Gene	RefSeq ID	Exon
AKT1	NM_005163.2	Exon 3
ALK	NM_004304.4	Exon 21 Exon 22 Exon 23 Exon 24 Exon 25
APC	NM_000038.5	Exon 16
AR	NM_000044.3	Exon 6 Exon 8
ARAF	NM_001654.4	Exon 7
BRAF	NM_004333.4	Exon 11 Exon 15
CHEK2	NM_007194.3	Exon 11
CTNNB1	NM_001904.3	Exon 3
DDR2	NM_006182.2	Exon 8 Exon 15 Exon 17
EGFR	NM_005228.3	Exon 3 Exon 7 Exon 8 Exon 10 Exon 11 Exon 12 Exon 18 Exon 19 Exon 20 Exon 21 Exon 22 Exon 24 Exon 26
ERBB2	NM_004448.3	Exon 2 Exon 3 Exon 4 Exon 5 Exon 7 Exon 8 Exon 17 Exon 19 Exon 20 Exon 21 Exon 22 Exon 24

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ERBB3	NM_001982.3	Exon 3 Exon 7 Exon 8 Exon 9 Exon 23
ESR1	NM_000125.3	Exon 5 Exon 7 Exon 8
FBXW7	NM_018315.4	Exon 8 Exon 9 Exon 10 Exon 11
FGFR1	NM_015850.3	Exon 4 Exon 5 Exon 7 Exon 9 Exon 10 Exon 13 Exon 14 Exon 15 Exon 16 Exon 18
FGFR2	NM_000141.4	Exon 2 Exon 5 Exon 6 Exon 7 Exon 9 Exon 10 Exon 11 Exon 12 Exon 13 Exon 14 Exon 15 Exon 16
FGFR3	NM_000142.4	Exon 4 Exon 7 Exon 8 Exon 9 Exon 13 Exon 14 Exon 16
FGFR4	NM_002011.4	Exon 13
FLT3	NM_004119.2	Exon 20
GNA11	NM_002067.4	Exon 5
GNAQ	NM_002072.4	Exon 5
GNAS	NM_000516.5	Exon 8

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		Exon 9
HRAS	NM_005343.3	Exon 2 Exon 3
IDH1	NM_005896.3	Exon 4
IDH2	NM_002168.3	Exon 4
KIT	NM_000222.2	Exon 8 Exon 9 Exon 10 Exon 11 Exon 13 Exon 14 Exon 17 Exon 18
KRAS	NM_004985.4	Exon 2 Exon 3 Exon 4
MAP2K1	NM_002755.3	Exon 2 Exon 3 Exon 6
MAP2K2	NM_030662.3	Exon 2 Exon 6
MET	NM_000245.3	Exon 2 Exon 3 Exon 4 Exon 11 Exon 14 Exon 16 Exon 17 Exon 18 Exon 19 Exon 20
MTOR	NM_004958.3	Exon 30 Exon 39 Exon 40 Exon 43 Exon 44 Exon 45 Exon 47 Exon 48 Exon 50
NRAS	NM_002524.4	Exon 2 Exon 3 Exon 4
NTRK1	NM_002529.3	Exon 14 Exon 15
NTRK3	NM_002530.3	Exon 16

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PDGFRA	NM_006206.4	Exon 7 Exon 10 Exon 11 Exon 12 Exon 14 Exon 14 Exon 16 Exon 18
PIK3CA	NM_006218.3	Exon 2 Exon 3 Exon 5 Exon 8 Exon 10 Exon 14 Exon 21
PTEN	NM_000314.6	Exon 1 Exon 2 Exon 5 Exon 6 Exon 7 Exon 8 Exon 9
RAF1	NM_002880.3	Exon 7
RET	NM_020630.4	Exon 10 Exon 11 Exon 13 Exon 14 Exon 15 Exon 16
ROS1	NM_002944.2	Exon 36 Exon 37 Exon 38 Exon 39 Exon 42
SF3B1	NM_012433.3	Exon 15
SMAD4	NM_005359.5	Exon 3 Exon 9 Exon 10 Exon 12
SMO	NM_005631.4	Exon 3 Exon 5 Exon 6 Exon 8 Exon 9 Exon 11
TP53	NM_000546.5	Exon 2

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		Exon 3 Exon 4 Exon 5 Exon 6 Exon 7 Exon 8 Exon 9 Exon 10 Exon 11

In addition, the genes below are tested for gene amplifications and fusions but the sensitivity and specificity of the assay for gene amplification and fusion have not been validated. Any gene amplification / fusion found is recommended to have orthogonal confirmation with another assay or correlation with findings from molecular profiling of tumour tissue:
- Gene amplification: *CCND1, CCND2, CCND3, CDK4, CDK6, EGFR, ERBB2, FGFR1, FGFR2, FGFR3, MET, MYC*
- Gene fusion: *ALK, BRAF, ERG, ETV1, FGFR1, FGFR2, FGFR3, MET, NTRK1, NTRK3, RET, ROS1*