

PLEASE NOTE:

THESE REAGENTS MUST NOT BE SUBSTITUTED FOR THE MANDATORY POSITIVE AND NEGATIVE CONTROL REAGENTS PROVIDED WITH MANUFACTURED TEST KITS.

NAME AND INTENDED USE

The Seraseq® Lung & Brain CNV Mixes are formulated for use with Next Generation Sequencing (NGS) assays that detect gene amplifications commonly found in lung and brain cancers, including EGFR, MET, and MYCN. This product is intended as a reference material in sequencing library preparation, sequencing run, and copy number alteration detection under a given set of bioinformatics pipeline parameters. This product is *For Research Use Only. Not for use in diagnostic procedures.*

SUMMARY

A well-designed quality control program provides added confidence in the reliability of results obtained for unknown specimens. The use of independent reference materials may provide valuable information concerning assay sensitivity and bioinformatics pipeline analysis.

REAGENTS

Table 1. Different levels of amplification are available as individual products for Seraseq Lung & Brain CNV Mix.

Part Code	Product Description
0710-0414	Seraseq Lung & Brain CNV Mix (+3 Copies)
0710-0415	Seraseq Lung & Brain CNV Mix (+6 Copies)
0710-0416	Seraseq Lung & Brain CNV Mix (+12 Copies)

WARNINGS AND PRECAUTIONS

For Research Use Only. Not for use in diagnostic procedures.
CAUTION: Handle Seraseq Lung & Brain CNV Mix as though it is capable of transmitting infectious agents. This product is formulated using genomic DNA from human cell line GM24385, which is a B-lymphocytic, male cell line from the Personal Genome Project offered by the NIGMS Human Genetic Cell Repository (<https://catalog.coriell.org/1/NIGMS>).

Safety Precautions

Use Centers for Disease Control and Prevention (CDC) recommended universal precautions for handling reference materials and human specimens¹. Do not pipette by mouth. Do not smoke, eat, or drink in areas where specimens are being handled. Clean any spillage by immediately wiping with 0.5% sodium hypochlorite solution. Dispose of all specimens and materials used in testing as though they contain infectious agents.

Handling Precautions

Do not use Seraseq Lung & Brain CNV Mix beyond the expiration date. Avoid contamination of the product when opening and closing the vial. Limit the number of freeze thaws this product is exposed to by creating single-use aliquots, if necessary.

STORAGE INSTRUCTIONS

Store Seraseq Lung & Brain CNV Mix at -20 °C. Shelf life when stored under these conditions is three years from date of manufacture.

INDICATIONS OF REAGENT INSTABILITY OR DETERIORATION

Seraseq Lung & Brain CNV Mix is a mixture of human genomic DNA purified from GM24385 cell line and synthetic DNA constructs. It should appear as a clear liquid. Alterations in this appearance may indicate instability or deterioration of the product and the vial should be discarded.

PROCEDURE

Materials Provided

Seraseq Lung & Brain CNV Mix consists of genomic DNA purified from GM24385 cell line and biosynthetic DNA constructs. The DNA is in 1 mM Tris, 0.1 mM EDTA pH 8.0 with 10 mM Potassium Chloride. 20 µL is provided per vial and the concentration is 10 ng/µL.

Materials Required but not Provided

Refer to instructions supplied by manufacturers of the test kits to be used.

Instructions for Use

Thaw the product vial on ice. Mix by vortexing to ensure a homogenous solution and spin briefly. Seraseq Lung & Brain CNV Mix may be used directly in the sequencing library preparation following the procedure as for test specimens. Refer to your sequencing assay procedures in order to determine the amount of reference material to use.

EXPECTED RESULTS & INTERPRETATION OF RESULTS

Table 2 indicates the level of amplifications of target genes in the Seraseq Lung & Brain CNV Mix reference materials. The additional copies are present in a synthetic DNA construct of approximately 130 kilobases surrounding the genes of interest. Table 3 specifies regions of the EGFR and MET genes that may be present at higher than expected number of copies. Detection of gene amplification levels (copies) may differ across different NGS targeted assays as well as different test consumable lots. While the level of amplification of the CNV targets in this product is confirmed during manufacture by orthogonal assays - digital PCR and NGS systems - there may be slight variation in amplification levels due to platform/assay differences. Each laboratory must establish an assay-specific expected value for each target CNV from each lot of the Seraseq Lung & Brain CNV Mix reference materials. If CNV calls for the Seraseq product are outside the established acceptance range, it may indicate unsatisfactory test performance. Possible sources of error may include degradation of test kit reagents, operator error, faulty performance of equipment, contamination of assay reagents, or change in bioinformatics pipeline parameters. Additional support documents are available online at www.seracare.com/oncology.

Table 2 lists the CNV targets and their levels of amplification.

LIMITATIONS OF THE PROCEDURE

Seraseq Lung & Brain CNV Mix **MUST NOT BE SUBSTITUTED FOR THE CONTROL REAGENTS PROVIDED WITH MANUFACTURED TEST KITS.** *TEST PROCEDURES* provided by manufacturers must be followed closely. Deviations from procedures recommended by test kit manufacturers may produce unreliable results. This product is offered for Research Use Only. Not for use in diagnostic procedures. Data are provided for informational purposes. SeraCare Life Sciences does not claim that others can duplicate test results exactly. Seraseq Lung & Brain CNV mix is not a calibrator and should not be used for assay calibration. These materials are not whole process controls and do not evaluate the methods used for specimen extraction.

Adverse shipping and storage conditions or use of an outdated product may produce erroneous results.

SPECIFIC PERFORMANCE CHARACTERISTICS

Seraseq Lung & Brain CNV mix has been designed for use with targeted NGS panels for the purposes of assessing assay characteristics. The product is manufactured from purified human total genomic DNA as well as synthetic constructs. Procedures for implementing a quality assurance program and monitoring test performance on a routine basis must be established by each individual laboratory.

REFERENCES

1. Siegel JD, Rhinehart E, Jackson M, Chiarello L, and the Healthcare Infection Control Practices Advisory Committee, 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings.

Table 2: Gene targets and Estimated CNVs*

Part Code	Product Description	Fold Amplification	CNV	Number of Additional Copies
0710-0414	Seraseq Lung & Brain CNV Mix (+3 Copies)	2.5	5	3
0710-0415	Seraseq Lung & Brain CNV Mix (+6 Copies)	4.0	8	6
0710-0416	Seraseq Lung & Brain CNV Mix (+12 Copies)	7.0	14	12

* Fold Amplification = (Copies of target gene) ÷ (Copies of reference genome)

CNV = (Fold Amplification) x 2

Additional copies = (Fold Amplification x 2) - 2

Table 3: Regions that may be present at two times the intended copy number

Gene	Chromosome	Start	End	Size (bp)
EGFR	7	55,213,103	55,231,755	18,652
MET	7	116,372,111	116,418,397	46,286