

Optimal Specimen Requirements

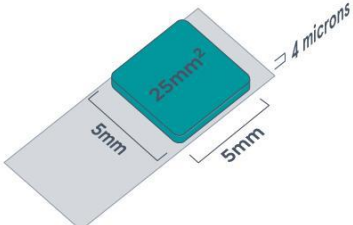
Specimen types:

- Tissue resections
- Small diagnostic biopsies
- Core-needle biopsies
- Fine-needle aspirations (guided by CT, EBUS or EUS)
- Fluid samples with high tumour cellularity

Age of the sample:

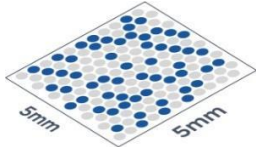
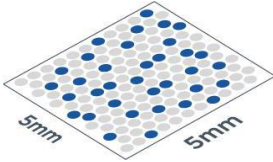
Archival FFPE samples that are ≥ 5 years old may yield suboptimal RNA/DNA for testing, and interval treatment may have generated new resistance mutations of clinical significance. Samples ≥ 5 years old may be accepted for CGP, provided the referring clinician acknowledges that the CaSP policy is one sequencing event per patient.

Surface area and volume:

	<p>Surface area: Optimal: 25mm^2 Minimum: 5mm^2</p>	<p>Volume: Optimal: 1mm^3 Minimum: 0.6mm^3</p>
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Volume = Surface area of tissue x thickness of section x number of slides.
e.g. $5\text{mm} \times 5\text{mm}$ ($= 25\text{mm}^2$) x 4 microns ($= 0.1\text{mm}^3$) x 10 slides = 1mm^3

Tumour Nuclei Percentage:

OPTIMAL ($\geq 35\%$)	ACCEPTABLE (20% - 35%)
 <p>Nucleated tumour cells are present in entire sample with a ratio of more than 35:100 (nucleated:normal)</p>	 <p>Nucleated tumour cells present over entire sample with a ratio of more than 1:5.</p>

Please note, for liver samples we require $\geq 40\%$ tumour content.

Prior treatment with a targeted therapy:

If a patient has received a targeted therapy (e.g. Osimertinib or imatinib), it is recommended to perform CGP on a post exposure sample to account for resistance mutations. Pre-exposure samples may be considered on a case-by-case availability, or a liquid biopsy assay may be offered in some cases.

Liquid biopsy assays:

In cases where there is inadequate solid tumour for CGP, a liquid biopsy assay may be suitable for patients with certain cancer types, provided there is sufficient total body tumour burden.

Different cancers have different probabilities of yielding a meaningful signal using a liquid biopsy (Husain et al., npj Precision Oncology, 2022). The top 6 cancer types most likely to yield a result are lung, colorectal, bladder, prostate, CUP, and breast. The bottom 8 least likely to yield a result are brain, appendix, pancreas, thyroid, renal, sarcoma/GIST and cholangiocarcinoma.

After the CaSP study team has confirmed suitability for a liquid biopsy assay with a patient's referring clinician, the CaSP study will contact the patient to arrange a fresh blood collection.

A liquid test is considered a sequencing event for the patient. The CaSP policy is one sequencing event per patient.

Mixed morphology samples:

Examples of mixed morphology samples may include:

- Well differentiated adenocarcinoma and undifferentiated carcinoma, or
- Mixed morphology neuroendocrine carcinoma and adenocarcinoma

In some cases, it is more clinically relevant to macro dissect the higher-grade tumour of a mixed morphology sample. To request microdissection for a patient, please make note when submitting an [online referral](#), or email casp@omico.org.au

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