



Fetal tissue will no longer routinely be cultured for cytogenetic investigation and any testing for cytogenetic anomalies will be via a new algorithm of direct DNA-based testing.

Rapid Aneuploidy Testing (RAD) will be the first-line test to rule out aneuploidies and triploidy. DNA will be extracted for RAD testing, and residual DNA may be used for CMA testing if requested.

Chromosomal Microarray Analysis (CMA) will be a second-tier test that is available if RAD is normal and parental consent is received.

The inclusion criteria for cytogenetic testing on fetal tissue are:

- ultrasound anomaly or pathology suggestive of a chromosomal or contiguous gene disorder
- clinically significant **unexplained** growth abnormality
- unexplained stillbirth or neonatal death (\geq 20 weeks gestational age)
- family history of cytogenetic anomaly
- a third or subsequent miscarriage(s)

How to order:

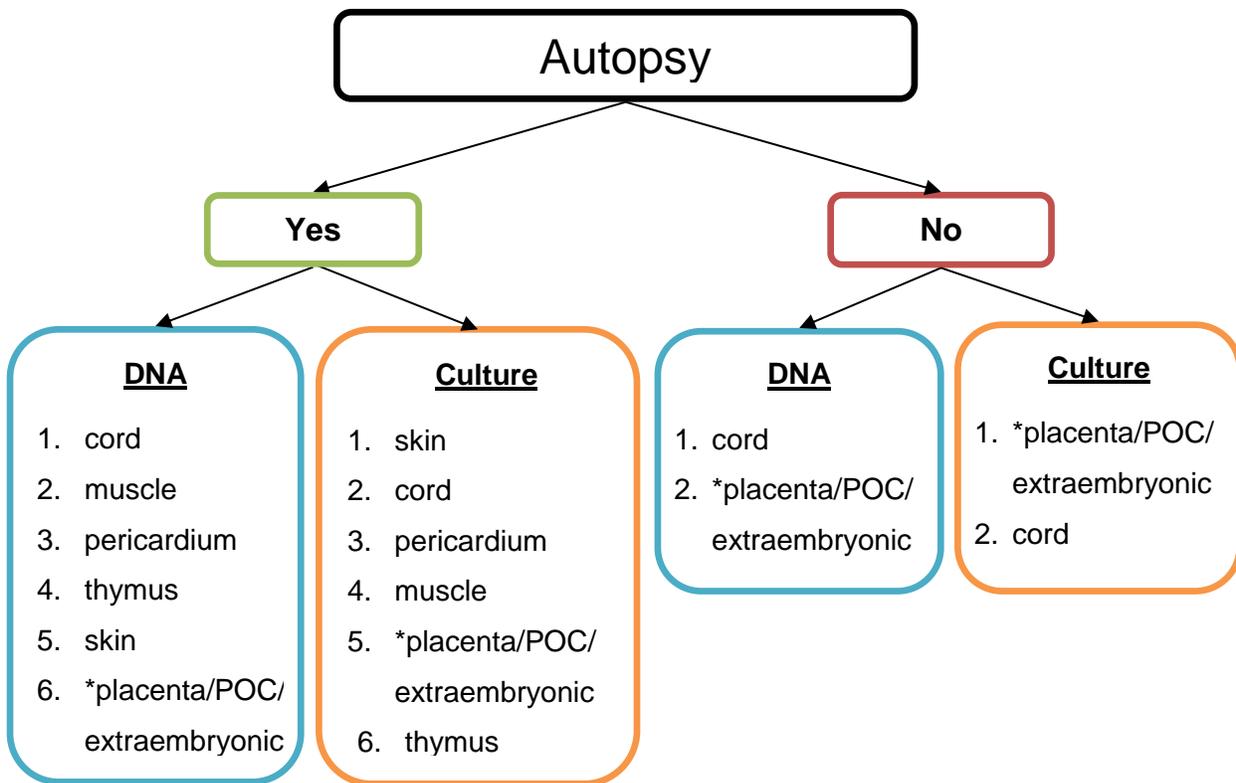
To order RAD testing <i>only</i>:
<ul style="list-style-type: none"> ▪ Fill out Cytogenetic Analysis, Constitutional Requisition and select “RAD”. Also include mother’s name. ▪ Place each sample in a separate tube of culture media. Send requisition(s) with the sample. ▪ Residual DNA will be stored short-term.
To order RAD <i>and</i> CMA testing
<ul style="list-style-type: none"> ▪ Fill out Cytogenetic Analysis, Constitutional Requisition ONLY. In particular, note all ultrasound or pathology abnormalities, as well as any family history on Page 2. Also include mother’s name. ▪ Place each sample in a separate tube of culture media. Send requisition(s) with the sample.
To activate CMA testing (on previously stored DNA)
<ul style="list-style-type: none"> ▪ Fill out Cytogenetic Analysis, Constitutional Requisition. ▪ Note any ultrasound or pathology abnormalities and relevant family history on 2nd page. ▪ FAX to Calgary Cytogenetics lab at 403-955-3000.
To order cell culturing or cryopreservation
<ul style="list-style-type: none"> ▪ Fill out Cytogenetic Analysis, Constitutional Requisition and indicate “Culture” or “Cryopreservation”. Also include mother’s name. ▪ Provide further culturing details in Indication. ▪ Place each sample in a separate tube of culture media. Send requisition(s) with the sample.
To also order long-term DNA Banking
<ul style="list-style-type: none"> ▪ Also fill out a Calgary Molecular Genetics Laboratory General Requisition. ▪ Place each sample in a separate tube of culture media. Send MDL requisition and appropriate Cytogenetics requisition (as indicated above) along with the sample to the Cytogenetics lab.



Sample requirements:

- Fetal tissues are preferred. Placenta or POC (NOS) are acceptable **only** if fetal tissue is unavailable, and a maternal blood sample for MCC is required to proceed with CMA testing.
- Each sample **MUST** be submitted in **separate** tubes with **separate** requisitions listing tissue type.
- Tissue sample types (in order of preference) are listed in Figure 1. For the new RAD-CMA tissue algorithm, please see preferred sample types for DNA.
- If culturing is required, it must be clearly indicated on the requisition. Please see preferred tissue sample types for culture in Figure 1.

Figure 1 – Preferred tissue sample types for DNA or Culture



NB: Tendon, spleen, kidney, and liver are unlikely to yield DNA and do not culture well.

* Maternal cell contamination (MCC) may be present in these samples. **Maternal blood is required if CMA testing is requested on placental, POC, or extraembryonic tissue.**

Contact Information

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