

**Department of Clinical Laboratory Genetics**  
**Genome Diagnostics & Cancer Cytogenetics**  
**Somatic Solid Tumour Testing**

**Toronto General Hospital**

Eaton Wing 11-444, 200 Elizabeth Street  
Toronto, Ontario M5G 2C4  
Head: Tracy Stockley, PhD, FCCMG, FACMG  
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Hours of Operation (Mon-Fri) 8:30AM-4:30PM  
CAP: 7175217 CLIA: 99D1106115 IQMH: 4204-site 0141

**Patient Information or Hospital Stamp Here**

Last Name:  
  
First Name:  
  
Date of Birth (MMM/DD/YYYY):  
  
Sex assigned at birth:  
  
Health Card #:  
  
Hospital #:

**Instructions:**

**THIS REQ IS FOR SOMATIC SOLID TUMOUR TESTING ONLY – see link at bottom of page for HEREDITARY or MALIGNANT HEMATOLOGY requisitions**

1. Complete all information as requested
2. Send req with specimen to address above
3. If shipping, send same day or next day delivery
4. Label specimen with **Name, DOB, MRN#, Date Taken**

**Information For Reporting:**

Full Name of Referring Physician:  
Physician Billing #  
Hospital/Address:

Phone:

Fax:

Physician Signature: \_\_\_\_\_

Copy Report To: \_\_\_\_\_

**Specimen Requirements – Genome Diagnostics:**

- Peripheral blood** - For circulating cell-free tumour DNA (ctDNA) – **18 ml in STRECK tubes**
- Peripheral blood** - DPYD and qEBV – **5 ml in EDTA**
- Fresh/Fixed Cytology fluid:** as much as possible

**Solid Tumour:** Keep shipped PE material below 30°C

- Tissue block (PREFERRED)**  
-Recut H&E slide (slide will not be returned) and copy of the pathology report is required  
-note that a 3mm punch biopsy will be taken from block

- Unstained slides (only if BLOCK is not available)**

- Cut **8 unstained sections** @ 7µm thickness on uncoated slides
- **Air dry (not in oven)** unstained sections at room temperature.
- For all tissues we require **2 H&E** stained sections, one cut before cutting slides from block and one cut after.

- Cell Block or Paraffin Embedded Tissue (curls)**  
5x10µm sections in a sterile Eppendorf tube

**For Cytology specimens: Please provide ALL fixatives used:**

\_\_\_\_\_

- Fresh tissue:** 5mm<sup>3</sup> frozen or in 10 ml sterile medium at room temperature

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**Genome Diagnostics - Lymphoma:**

- ^B-cell Clonality
- ^T-cell Clonality
- ^MYD88
- ^Mantle Cell (TP53 sequencing only)

**Genome Diagnostics - Other:**

- DPYD** - Pharmacogenomic Testing for Gene Variants prior to Fluoropyrimidine Treatment (DPYD\*2A, DPYD\*9B, DPYD\*13, HapB3)
- ^Identity Testing/Specimen Matching** (15 STRs and Amelogenin XY loci):  
-Please provide control specimen, specimen in question and details

**Genome Diagnostics - Solid Tumour**

**Adrenal Cortical Carcinoma**

- MLH1 Promotor Methylation

**Breast Cancer – Advanced/Metastatic**

(where PIK3CA directed therapy is being considered)

- Comprehensive Sequencing (NGS) - PIK3CA, ESR1

**Breast Cancer (Secretory) - Advanced/Metastatic**

(where NTRK directed therapy is being considered)

- Comprehensive Sequencing (NGS) - NTRK1, NTRK2, NTRK3 (Fusions)

**Cholangiocarcinoma (Hepatobiliary) -**

**Advanced/Metastatic**

- Comprehensive Sequencing (NGS) - FGFR2 (fusions only)

**CNS Tumours (Primary) – Advanced/Metastatic** (where

NTRK directed therapy is being considered)

- Comprehensive Sequencing (NGS) - NTRK1, NTRK2, NTRK3 (Fusions)

**Colorectal/Small Bowel Carcinoma**

- Comprehensive Sequencing (NGS) - BRAF, ERBB2, KRAS, NRAS, PIK3CA, PTEN
- MLH1 Promoter Methylation
- ^MSI - Only performed for cases with equivocal IHC MMR results - requires normal reference (normal tissue or blood)

**Endometrial Carcinoma (Invasive)**

- Comprehensive Sequencing (NGS) - CTNNB1, CCNE1, FGFR2, KRAS, PIK3CA, POLD1, POLE, PTEN, TP53
- MLH1 Promoter Methylation
- ^MSI – Only performed for cases with equivocal IHC MMR results - requires normal reference (normal tissue or peripheral blood)

**Esophageal/Gastroesophageal/Gastric Adenocarcinoma**

- MLH1 Promoter Methylation

**Gastrointestinal Stromal Tumour**

- Comprehensive Sequencing (NGS) –BRAF, KIT, PDGFRA

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**Genome Diagnostics Tests – Solid Tumour**

**Glioma**

- MGMT Promotor Methylation
- Comprehensive Sequencing (NGS) - ALK, ATRX, BRAF, CDK4, CDK6, CDKN2A, CTNNB1, EGFR, ERBB2, FGFR1, FGFR2, FGFR3, H3F3A, HIST1H3B, HRAS, IDH1, IDH2, KRAS, MDM4, MET, MYB, MYBL1, MYC, NF1, NRAS, NRG1, NTRK1, NTRK2, NTRK3, PDGFRA, PIK3CA, POLE, PTEN, RAF1, RB1, TERT Promoter, TP53

**Lung Adenocarcinoma**

- Comprehensive Sequencing (NGS) - ALK, BRAF, CTNNB1, EGFR, ERBB2, FGFR1, KRAS, MET, NRG1, NTRK1, NTRK2, NTRK3, PIK3CA, RB1, RET, ROS1, SMARCA4, STK11, TP53

Note - all requests for Lung Comprehensive Sequencing will also have PD-L1 by IHC performed. If PD-L1 testing has already been performed and/or is not required – please indicate by checking here \_\_\_\_.

- EGFR – p.T790M mutation only (solid tumour/cell block or cytology fluid)
- ^**\*EGFR – p.T790M mutation only (Circulating tumour DNA in blood) **\*peripheral blood in STRECK tube required (see pg. 1 for specimen requirements)**

**Melanoma - Cutaneous**

- Comprehensive Sequencing (NGS) - ALK, BAP1, BRAF, CCND1, CDK4, CDK6, CDKN2A, EIF1AX, ETV6, GNA11, GNAQ, HRAS, KIT, MAML2, MAP3K3, MAP3K8, MET, MYB, NF1, NFIB, NRAS, NTRK1, NTRK2, NTRK3, NUTM1, RET, ROS1, SF3B1, TERT, TRIM11, YAP1

**Melanoma - Uveal**

- Comprehensive Sequencing (NGS) - ALK, BAP1, BRAF, CCND1, CDK4, CDK6, CDKN2A, EIF1AX, GNA11, GNAQ, HRAS, KIT, MBD4, MET, NF1, NRAS, RET, ROS1, SF3B1, TERT

**Mammary Analogue Secretory Carcinoma - Advanced/Metastatic (where NTRK directed therapy is being considered)**

- Comprehensive Sequencing (NGS) - NTRK1, NTRK2, NTRK3 (Fusions)

**Nasopharyngeal Carcinoma**

- ^** Quantitative EBV detection from blood plasma

**Ovarian Carcinoma**

- High Grade Epithelial Carcinoma (Ovarian/Fallopian/Peritoneal)** - Comprehensive Sequencing (NGS) – BRCA1, BRCA2
- Epithelial and low malignant potential ovarian tumours** - MLH1 Promotor Methylation
- Sex-Cord Stromal Tumour** - Comprehensive Sequencing (NGS) - APC, CTNNB1, DICER1, FOXL2, STK11, VHL
- Small cell Carcinoma (SCCOHT)** - Comprehensive Sequencing (NGS) - SMARCA4

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**Genome Diagnostics Tests – Solid Tumour**

**Pancreatic Carcinoma - Invasive**

- MLH1 Promotor Methylation

**Prostate Carcinoma – Advanced/Metastatic**

- Comprehensive Sequencing (NGS) - ATM, BRCA1, BRCA2, MLH1, MSH2, MSH6, PALB2, PMS2

**Salivary Carcinoma - Advanced/Metastatic (where NTRK directed therapy is being considered)**

- Comprehensive Sequencing (NGS) - NTRK1, NTRK2, NTRK3 (Fusions)

**Sebaceous Carcinoma/Neoplasms (Skin or Ocular)**

- MLH1 Promotor Methylation

**Sinonasal Carcinoma**

- Comprehensive Sequencing (NGS) – AFF2, DEK, EGFR, EWSR1, FLI1, IDH2, NUTM1, PAX3, PAX7

- MLH1 Promotor Methylation

**Soft Tissue Sarcoma - Advanced/Metastatic (where NTRK directed therapy is being considered)**

- Comprehensive Sequencing (NGS) - NTRK1, NTRK2, NTRK3 (Fusions)

**Thyroid Carcinoma**

- Metastatic Sporadic Medullary Thyroid Carcinoma - Comprehensive Sequencing (NGS) – ALK, BRAF, DICER1, HRAS, KRAS, NRAS, NTRK1, NTRK2, NTRK3, PAX8, PPARG, RET, TERT Promoter**

- Metastatic Follicular Cell-Derived Thyroid Carcinoma (including Anaplastic, Papillary, Follicular and poorly differentiated Thyroid Carcinoma) - Comprehensive Sequencing (NGS) - ALK, BRAF, DICER1, HRAS, KRAS, NRAS, NTRK1, NTRK2, NTRK3, PAX8, PPARG, RET, TERT Promoter**

- Anaplastic, Poorly differentiated, High Grade Differentiated (High Grade Papillary, High Grade Follicular, High Grade Oncocytic), or Iodide Refractory Differentiated Thyroid Carcinoma - Comprehensive Sequencing (NGS) - ALK, BRAF, DICER1, HRAS, KRAS, NRAS, NTRK1, NTRK2, NTRK3, PAX8, PPARG, RET, TERT Promoter**

**Urothelial/Urinary Tract Carcinoma - Advanced/Metastatic**

- Comprehensive Sequencing (NGS) – ERBB2, FGFR1, FGFR2, FGFR3, FGFR4

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**A Pathology report must accompany or be sent (fax/email) for all bone marrow samples and solid tumour testing. Samples will be banked and testing delayed until this information is received.**

**Clinical Diagnosis/Reason for Referral:**

**Diagnosis/Reason for Referral:** \_\_\_\_\_

**Follow up testing (reason):** \_\_\_\_\_

**Other:** \_\_\_\_\_

**Cytogenetics Specimen Requirements – Fluorescence *in situ* Hybridization (FISH):**

- Paraffin-Embedded Tissue Block**
  - H&E slide, with area for FISH circled (slide will not be returned)
- Unstained slides (FFPE)**
  - Cut **three (3) unstained sections** per probe at 4 µm thickness on positively charged slides
- Cytology Specimens**
  - Air-dried smear/touch prep (1-2 per test)
  - Cytospin slide (1-2 per test)
  - Please indicate fixative(s) used

**General Considerations for sending FFPE Tissues**

- For all tissues we require **an H&E** slide, cut one level above or below the slides sent for testing with tumour area of interest **circled** where FISH is to be performed (slide will not be returned)\*.
- Copy of pathology report is required
- **Air dry** unstained sections at room temperature
- **(DO NOT BAKE)**

**Lymphoid Disorders:**

**Large B-Cell Lymphoma Panel**

- ^Reflex Panel (BCL2 and BCL6 only when MYC Positive)

**Burkitt Lymphoma**

- ^MYC ONLY

**Follicular lymphoma / Diffuse Large B-Cell Lymphoma**

- ^IGH/BCL2 *t(14;18)(q32;q21)*
- ^BCL6

**Anaplastic large cell lymphoma**

- ^ALK

**MALT lymphoma**

- ^MALT1

**Mantle cell lymphoma**

- ^CCND1/IGH *t(11;14)(q13;q32)*

**Solid Tumour:**

**HER2 Amplification (indicate tumour primary)**

- Breast
- Gastric
- Endometrial

**Brain Cancer: Gliomas**

- 1p/19q
- CDKN2A FISH (IDH Mut)
- EGFR + PTEN FISH (IDH WT)

**Sarcoma and Carcinoma FISH**

- ^EWSR1 - EWS-Family Tumours
- ^FUS – Low Grade Fibromyxoid Sarcoma
- ^SS18 – Synovial Sarcoma
- ^MAML2 – Mucoepidermoid Carcinoma
- ^ETV6 – Secretory Carcinoma
- ^CDKN2A (p16) – Malignant Mesothelioma

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