

SERVICE DIRECTORY



Table of Contents

1.	INTRODUCTION TO NEOGENIX LABORATOIRE	1
2.	USE OF THE DIRECTORY.....	1
3.	GENERAL INFORMATION ON LAB SERVICES.....	2
3.1	Contact details and location	2
3.2	Service Hours	3
3.3	Lab Turnaround Time.....	3
3.4	Advisory Services	3
3.5	Lab Charges.....	3
3.6	User Feedback.....	4
3.7	Quality Control.....	4
3.8	Specimen Pick Up Service (Courier).....	4
3.9	Supplies.....	5
3.10	Laboratory Test Service Requisition	5
3.11	Reporting of Results.....	6
3.12	Personal Data Protection Statement.....	6
4.	GENERAL INFORMATION ON SAMPLE COLLECTION	6
4.1	Collection protocol/general instructions	6
4.2	Collection of Specimens.....	7
4.3	General Principles in Handling Laboratory Specimens	13
4.4	Prevention of Hemolysis and inaccurate test results	13
4.5	Packing & Storage of Specimens.....	14
4.6	General Specimen Storage.....	14
4.7	Rejection of Samples.....	14
4.8	Interfering factors	16
4.9	Disposal of Biomedical Waste.....	16
5.	SPECIAL INSTRUCTION FOR DIAGNOSTIC TESTS OFFERED IN NEOGENIX LABORATOIRE.....	17

1. INTRODUCTION TO NEOGENIX LABORATOIRE

Neogenix Laboratoire is Founded by an experienced knowledge-based operational and management team with more than 10- year experience in the field of medical diagnostics and research, in June 2016. The headquarter (HQ) of Neogenix Laboratoire is located at Kelana Square, Petaling Jaya, consisting of three main departments in its laboratory operation.

- **Molecular Diagnostic Department**
- **Genetic Hereditary & Oncology Department**
- **General Laboratory Department**

Neogenix Laboratoire vision is to be a premier diagnostic laboratory service provider in every community and region that we serve. Mission of Neogenix Laboratoire is committed to providing excellence and innovation in molecular diagnostics, education and research, positively contributing to the health and wellbeing of the community.

2. USE OF THE DIRECTORY

The purpose of this directory is to provide general information about the laboratory, tests profiles, collection and handling of primary samples. This directory shall be used in conjunction with the Neogenix Price Catalogue, which provides information on the diagnostic tests offered and to serve as a resource of test selection, requisition and specimen requirements. Optimal use of our diagnostic resources is best achieved through the use of this manual and direct communication with our professional staff.

3. **GENERAL INFORMATION ON LAB SERVICES**

3.1 **Contact details and location**

Laboratory General Line	Tel: 03-76212154	info@neogenix.org
Consultant Pathologist Dr. Mangalam Sinniah	-	-
Laboratory Director Dr. Kuan Chee Sian	Hp: 016-2783269	kuan@neogenix.org

Laboratory Location:

NEOGENIX LABORATOIRE SDN BHD (HQ)

Unit C707 Level 7, Block C Kelana Square
17 Jalan SS7/26 Kelana Jaya,
47301 Petaling Jaya,
Selangor Darul Ehsan.

NEOGENIX LABORATOIRE SDN BHD (SABAH)

G-G-22A & G-G-26,
Ground Floor, Block G,
Lor Inanam Kapital 5, Inanam Capital,
88450 Kota Kinabalu, Sabah.

Neogenix interactive website:

www.neogenix.org

3.2 Service Hours

Service hours in Neogenix Laboratoire is divided into administrative and laboratory service hours. Laboratory service hours include specimen pick up request, perform and reporting of selective tests result. The general service hours are listed below. Customers are encouraged to check with labs in their respective location as some branches may have different service hours.

Day	Administrative Service Hours	Laboratory Service Hours
Monday to Saturday*	8:45am to 5:45pm	8:45am to 5:45pm
Sunday	Off	Off
Public Holiday	Off	To be informed

* Genetic Hereditary and Oncology department only provide services from Monday to Friday. General Laboratory service hour on Saturday is on on-call basis.

3.3 Lab Turnaround Time

For all the tests, the lab turnaround time (LTAT) is the time from time sample received in Neogenix Laboratoire to result availability after signature from authorized signatories. LTAT excludes Saturday, Sunday and Public Holiday, except for certain tests. Refer to Neogenix Price Catalogue to check on the tests offered and result LTAT.

3.4 Advisory Services

Neogenix Laboratoire offers value added services to its customer by providing materials and advice regarding technical matters. Neogenix Laboratoire has established meetings for communicating with customer on choice of tests, use of services, sample requirements and limitations of examination procedures. The communication includes directory of services, brochures, request forms, results in reports and interactive meetings of Lab Director and Quality Manager with clinicians. The technical management offers opinions/suggestions to their colleagues when necessary. Should there is any major delay/deviation, customer will be informed. Any retesting/repeat sampling required for result confirmation, customer is also notified and explained.

3.5 Lab Charges

Charges for tests done in Neogenix Laboratoire are mentioned in schedule of charges available in the Neogenix Price Catalogue which are distributed to clients/hospitals. Additional charges will be applied to urgent requests as agreed prior to testing.

3.6 User Feedback

3.6.1 Feedback from Customer

Customer Review Form is available to review customer satisfaction towards laboratory service. Form will be given out to the customer one year once.

3.6.2 Complaint

If there are any complaints on the laboratory services which need to be addressed immediately, customer may fill the complaint and hand it to Neogenix Laboratoire personnel or may send it directly to Quality Manager. The laboratory also accepts complaints through email and telephone by contacting Laboratory Director or Quality Manager at 03-7621 2154; or info@neogenix.org. Feedback and complaints will be addressed, and complainant will be informed of the action taken.

3.7 Quality Control

Neogenix Laboratoire has an internal quality control incorporated for all the tests done. In addition, Neogenix Laboratoire participated external quality assurance (EQA) programs such as RCPA (Royal College of Pathologists of Australasia), QCMD (Quality Control for Molecular Diagnostics), College of American Pathologists (CAP) and Randox International Quality Assessment Scheme (RIQAS) to ensure the competency of staffs and accuracy of our diagnostic tests' procedures.

3.8 Specimen Pick Up Service (Courier)

Specimens pick up service is divided into 2 schedules daily (AM and PM trips). Customer is advised to call prior the cutoff time (refer to table below) to ensure result can be provided within customer's expected time. Arrangement of specimen collection out of scheduled time will be subjected to our team's availability. Fixed collection schedule can be arranged upon request. Kindly contact our Sales Representative for further assistance.

Trip	Cutoff time of request	Estimated collection time
AM	Before 11:00am	11:00am to 1:00pm
PM	Before 4:00pm	3:00pm to 5:00pm

3.9 Supplies

We provide the following consumables within two (2) working days upon receiving request from the clients in Klang Valley:

- a) Laboratory Test Service Request Form (NGX/FM/008 or NGX/FM/101)
- b) 10 ml Sterile Universal Bottle
- c) Sterile Swabs
- d) Blood Tubes
- e) Specimen Collection Kits
- f) Specimen Carrier Bags
- g) Viral transport media (VTM)

The supply delivery is strictly during weekdays and normal office hours only.

3.10 Laboratory Test Service Requisition

3.10.1 Test Requisition

All specimens shall be accompanied by request form filled with the following particulars:

- a) Patient's Full Name & second identifier (Government ID or Passport No/Medical Record Number)
- b) Patient's age & date of birth
- c) Date & time of specimen collection
- d) Diagnosis or Clinical History (Where Applicable)
- e) Name/signature of requesting doctor, clinic stamp and telephone number
- f) Special attention if required (Urgent/Overtime/Phone/Fax No.)
- g) Type of specimen

3.10.2 Type of Request Form

- a) Molecular Laboratory Test Service Request Form (NGX/FM/008)
- b) General Laboratory Test Request Form (NGX/FM/101)

3.10.3 Add Test

- a) Adding test to old specimen is subject to specimen availability, adequacy and nature of specimen.
- b) Please check with laboratory staff before adding new tests on same specimen and enquire on the test listing with allowable time limits for requesting additional examinations or further examinations on the same primary sample.
- c) Verbal order of adding test is not acceptable. Additional tests shall be added upon receiving the supplementary request form.

3.10.4 Urgent Test Requests

- a) Urgent test requests are available and subjected to availability of laboratory.
- b) Additional charges may be applied upon agreement with the requestor. Contact our laboratory or sales representative for any urgent cases.
- c) Indicate on the request form as 'Urgent' to ensure attention is given immediately by lab personnel upon specimen receipt.

3.11 Reporting of Results

All results are emailed to the customer once released. Printed/softcopy final report will be issued to the customer. A printed report is available upon request. Clients are encouraged to call NGX to trace report if it is beyond the promised LTAT.

3.12 Personal Data Protection Statement

Neogenix Laboratoire is committed to ensure the proper protection of all information assets within our possession and doing so in accordance with the Personal Data Protection Act 2010 (hereafter referred to as PDPA).

4. GENERAL INFORMATION ON SAMPLE COLLECTION

4.1 Collection protocol/general instructions

Proper specimen collection and handling is an integral part of obtaining a valid and timely laboratory test result. Specimens must be obtained using proper phlebotomy techniques, collected in the proper container, correctly. It is the policy of the laboratory to establish the specimen acceptance and requirement procedure, as well as to reject specimens when there is failure to follow these guidelines. All specimens should be handled with universal precautions, as if they are hazardous and infectious. The quality of laboratory result is very much affected by proper specimen collection, handling and transportation. The following should be adhered to:

- a) Use of appropriate specimen containers / culture media to ensure optimal recovery of microorganisms.
- b) Specimen must be accompanied by Laboratory Test Service Request Form (NGX/FM/008) and/or General Laboratory Test Request Form (NGX/FM/101).

4.2 Collection of Specimens

Correct patient identification before specimen collection is extremely important. The sections below provide general information for collection of most of the specimens, unless specified in Table 5. Specific Instruction.

- a) Identify the patient prior to specimen collection, using at least two patient identifiers and label at the specimen container.
- b) Avoid drawing blood below or from the infusion side to prevent dilution of blood specimen.
- c) Select specimen containers according to the tests requested (Refer to Neogenix Price Catalogue).
- d) Label specimen with water proof ink at the point of specimen collection.
- e) Indicate the source of specimens on containers for anatomical pathology and microbiology specimens.
- f) Verify with patient for tests that have pre-examination requirements [e.g. fasting status, sample collection at predetermined time or intervals]. For fasting test, ensure that patient has been fasting for the last 12 hours.
- g) Do not pre-label the empty specimen containers before attend to the patient.
- h) Fill up the lithium heparin, citrate and EDTA specimens to the volume mark available on the tube to ensure the correct anticoagulant to specimen ratio.
- i) Place specimens in the inner pocket of the specimen carrier bag and seal the zip.
- j) Place the request form at the outer pocket of the specimen carrier bag.

4.2.1 Blood

Blood specimen should be introduced into the specimen tube carefully, in correct order and appropriate phlebotomy techniques to ensure the specimen provides accurate results:

- i. Allow alcohol on venipuncture site to dry before inserting needle into the vein.
- ii. A 21-gauge needle is recommended for collection of blood using non-vacutainer tubes. There is a greater likelihood of hemolysis with smaller gauge needles.
- iii. During venipuncture for collection of blood using non-vacutainer tubes, the plunger of the syringe should be drawn back slowly, and the blood should flow freely. Blood forced out through the needle cause gross hemolysis.
- iv. After venipuncture for collection of blood using non-vacutainer tubes, remove the needle before allocating blood into the blood tubes and expel blood gently into the correct collection container. Fill the blood tubes according to the order as shown in Figure 4.2.1.
- v. Fill up the blood tubes to the volume mark available on the tube to ensure the correct anticoagulant to specimen ratio (Figure 4.2.2).
- vi. When using winged collection set, the air or “dead space” from the tubing should be eliminated by using a non-additive discard tube to partially drawn first.

- vii. After collecting blood into the blood tube with/without anticoagulant, immediately invert the capped blood tube gently for according to the No. of inversion required (Figure 4.2.1) to allow blood mixing with anticoagulant/clot activator thoroughly to prevent clotting. Do not shake the blood tube vigorously as this may cause hemolysis.



No. of inversion	3 to 4	5	5	8 to 10	8 to 10	10	8 to 10
------------------	--------	---	---	---------	---------	----	---------

Figure 4.2.1: Blood draw order and number of inversions

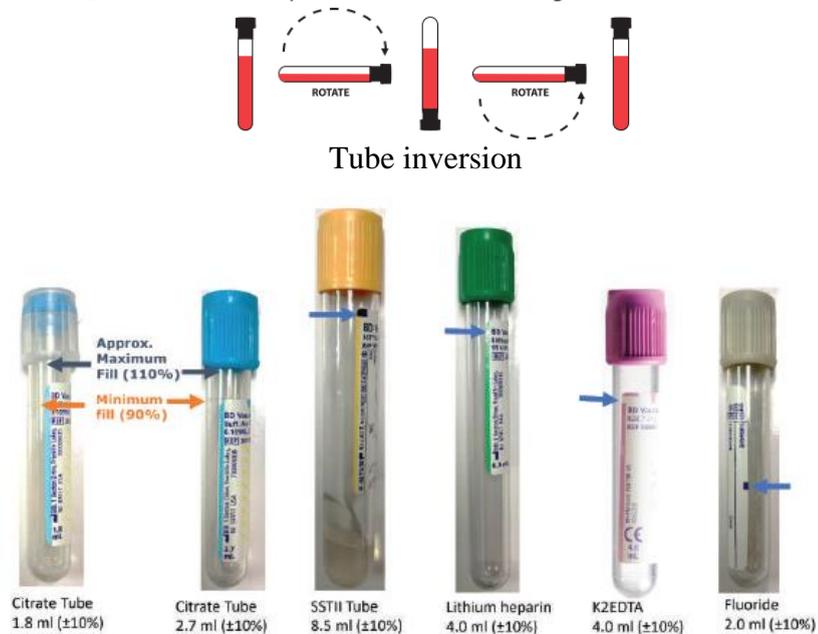


Figure 4.2.2: Indicators to fill up the blood into tubes

- viii. Following proper phlebotomy techniques will assist in preventing inaccurate test results:
- Tourniquet left on <1 minute to prevent hemolysis. A prolonged tourniquet time may lead to blood pooling at the venipuncture site, a condition called hemoconcentration. Hemoconcentration can cause falsely elevated results, mainly the potassium.
 - Incorrect Order of Draw will introduce contamination with anticoagulants and often produce inaccurate results. An example would be

increased Potassium if the EDTA tube is drawn prior to collection of plain/ gel tubes.

4.2.2 Sputum

- i. Patients must either collect samples outside in the open air or away from other people. Patients should not collect samples in confined spaces such as toilets.
- ii. Rinse mouth with water, but do not brush teeth before collecting sputum.
- iii. Patient should cough deeply and expectorate sputum directly into the container.

4.2.3 Fresh tissue

- i. Any tissue tested must be collected aseptically into a sterile container without fixatives or preservatives.
- ii. If the specimen dries, add sterile saline to keep moist.

4.2.4 Urine

Urine containers should be screwed on tightly to prevent leakage. Always keep the urine specimen in another specimen bag and seal properly if customer is sending together with other blood specimen to prevent leakage and contamination.

24 hours and other times urine collection procedures should be explained to the patients to ensure proper collection.

- i. Random urine specimen
 - a) This is the urine specimen most commonly sent to the laboratory for analysis. Random specimens can sometimes give an inaccurate view of a patient's health if the specimen is too diluted and analytes values are artificially lowered. Avoid the introduction of contaminants into the specimen by giving explicit instructions to patients so that they do not touch the inside of the cup and analytes.
- ii. First catch urine specimen (molecular test)
 - i. This is the specimen of choice for detection of organisms that causes Sexually transmitted diseases (STI-7 and GU assays).
 - ii. Patient should be advised not to urinate for at least two hours prior specimen collection.
 - iii. Collect 10~30 mL of first-catch urine in a clean container.
- iii. First morning urine specimen
 - a) This is the specimen of choice for urinalysis and microscopic analysis since the urine is more concentrated and contains relatively higher levels of cellular elements and analytes.
 - b) Empty the bladder before going to bed at night.
 - c) Collect the first morning specimen on waking in the morning.

- iv. Midstream clean catch specimen
 - a) This is the preferred type of urine specimen because of the reduced incidence of cellular and microbial contamination. The procedure significantly reduces the opportunities for contaminants to enter the urine stream.
 - b) Cleanse the urethral area.
 - c) Pass the first portion of the urine stream into the toilet.
 - d) Collect the midstream urine into the container. Any access urine should be voided into the toilet.

- v. 24 hours specimen
 - a) A 24-hour urine specimen is collected to measure the concentration in urine over a whole day. Accurate timing is critical to the calculations that are conducted to determine analyte concentrations and ratios. Interpretations based on faulty calculations can result in improper diagnosis or medical treatment. The specimen should be refrigerated during the collection period.
 - b) Empty the bladder into the toilet before beginning the collection. Record the date and time on the label of the container.
 - c) For the duration of the 24 hours, all urine **MUST** be collection and pooled into the container.
 - d) Exactly 24 hours after starting the collection, urinate one last time and add it to the container. Record the date and time onto the label of the container.

- ix. Urine for TB-PCR test
 - a) Early morning midstream specimen.
 - b) Multiple specimens over several days may be required to obtain positive specimen.

4.2.5 Cervical/ Genital swab, Oropharyngeal (throat) swab and Anorectal swab

- i. Use only **Dacron®**-, **rayon-** **tipped plastic** or non-aluminum swabs. Do not use aluminium, cotton or wooden swabs.
- ii. Specimens can be collected and transported in:
 - eNAT PM 2mL Regular Applicator (COPAN)
 - UTM with flocced swab
- iii. If transport medium is used, leave the swab in transport medium. Close and label the sample container.

4.2.6 Stool

- i. Collect stool specimens as soon after onset of symptoms as possible.
- ii. Place fresh stool specimen in leak-proof, preservative/media-free container.
- iii. Stool: Collect freshly passed stool in a leak-proof container.
- iv. Rectal swab: Moisten a swab in sterile saline. Insert the swab tip just past the anal sphincter and rotate gently. Withdraw the swab and examine to ensure that the cotton tip is stained with faeces.

Place the swab in sterile tube/container containing the appropriate bacterial or viral transport medium. Break off the top part of the stick without touching the tube and tighten the screw cap firmly.

4.2.7 Nasopharyngeal swab

- i. Nasopharyngeal swab may be collected using nylon flocked swab and transport media as followed:
 - ESwab (COPAN)
 - Enat PM 2 mL Pernasal Applicator (COPAN)
 - UTM with Flocked swabs (COPAN)
 - UTM with Flexible Minitip Flocked swab (Diagnostic Hybrids)

4.2.8 Broncho Alveolar Lavage (BAL)/ and other respiratory samples

- ii. BAL/ and other respiratory samples: Collect specimens in sterile containers, then seal tightly with the available cap and secure with Parafilm®. Label each specimen container with the patient's name, ID number, the specimen type, and the date the specimen was collected.

4.2.9 Cytology (General Instruction on Specimen Fixation)

- i. Smears
 - a) Rapid fixation of smears is necessary to preserve cytological detail. If smears are allowed to dry on the slides prior to fixation, marked distortion of cells occurs.
 - b) Smear preparation such as cervical specimens should be fixed immediately in a solution of 95% ethyl alcohol or a coating fixative such as Cytifix; other commercial spray fixatives may be used. A minimum of fifteen to twenty minutes fixation is required in the case of ethyl alcohol fixation (although prolonged fixation will not materially alter the cytology). In the case of spray fixatives, the smear should be allowed to dry for 10 minutes prior to placing into slide holders for dispatch to the laboratory.
- ii. Cell Block
 - a) It is found that cell block preparation offers a better architectural pattern for interpretation compared to smear preparations, which will therefore help improve our accuracy in reporting malignancy. Furthermore, the samples can also be tested via immunohistochemistry and even molecular testing if necessary. As such all pleural, pericardial and peritoneal fluid samples will be automatically subject to cell block preparation before analysis.
- iii. Fine Needle Aspiration Cytology
 - a) To prepare one air dry and one alcohol fixed smear and the balance sample to be collected using SurePath / Thin Prep vial. Cell Block

preparation is needed for ancillary test which may be required; therefore, it is advisable not to prepare more than two slides.

- b) Please label each slide whether it is an air dry or alcohol fixed.

iv. Histology

- a) Routine specimens should be sent in containers with 10% buffered formalin unless otherwise stated. Appropriate containers are available from the laboratory on request. To prevent leakage, it is advised to double wrap the specimen container.
- b) Multiple small specimens, such as gastrointestinal biopsies, should be mounted on a piece of filter paper and properly labelled.
- c) Large specimens such as colon must be completely immersed in formalin. Containers must be tightly secured.
- d) Do not crush specimens with forceps, hemostats or other instruments. Avoid using cautery.
- e) Do not force a large specimen into a small container. Large specimens must be completely surrounded by formalin for proper fixation.
- f) “URGENT REPORT” request has to be clearly indicated on the request form; otherwise they will be processed according to the queue. **To ensure urgent results are conveyed timely and efficiently, kindly provide clinicians handphone or office direct line number on our request forms.**
- g) For specimens where orientation is important, mark or tag the specimen e.g. Axillary tail of mastectomy specimens, orientation of surgical margin.

4.2.10 Dried blood spot (DBS)

- i. Label the Whatman Protein Saver 903 Card with patient name and date
- ii. Gently wipe away the first drop of blood using a dry sterile gauze pad to remove the tissue fluid from the sample.
- iii. Apply blood on the card in the middle of each pre-printed circle. Do not touch the DBS circle once blood is applied.
- iv. Allow a sufficient quantity of blood to soak through to completely fill the pre-printed circle on the Whatman Protein Saver 903 Card (check both side of the Whatman Protein Saver 903 Card is soaked with blood).
- v. Allow the blood spot to air dry without the card flap covering the spots in a clean, dry place at least 4 hours.
- vi. Cards must not be stacked on top of one another while drying.
- vii. Store the DBS bag at room temperature (15 to 30 °C/59 to 86 °F).
- viii. In case of extreme temperatures (>37 °C/98.6 °F) in the presence of high humidity, store the DBS bag in a refrigerator (2 to 8 °C/35.6 to 46.4 °F) to inhibit microbial growth.
- ix. Refer to section 4.7.1 for unacceptable DBS samples.

- 4.2.11 Cerebrospinal fluid
- i. Specimen should be collected via lumbar puncture and should not be centrifuged.
 - ii. Collect specimen into a leaked proof sterile universal container.

4.3 General Principles in Handling Laboratory Specimens

Known factors significantly affect the performance of the examination or interpretation of the results as below:

- a) Secure all specimen containers' caps to prevent leakage and cross contamination.
- b) Mix plasma specimen gently by inverting the specimen tubes. Avoid vigorous shaking to prevent blood specimen hemolysis.
- c) Unless indicated, specimens should be stored at room temperature (air condition) and avoid exposing specimens to extreme heat or cold.
- d) Place specimens in the inner pocket of the specimen carrier bag and seal the zip.
- e) Place the request form at the outer pocket of the specimen carrier bag.
- f) Send specimen(s) together with request form to the laboratory for testing as soon as possible.
- g) Avoid overnight specimens as these specimens may give erroneous and misleading results. To ensure the integrity of specimens. If such incident is unavoidable, please consult our staff for sample overnight storage.
- h) Do not use expired collection container/transport media for specimen collection. Expired supplies shall be returned to us or being disposed at your end. Please give us a call for the arrangement.
- i) Fill up the blood specimens to the volume mark available on the tube to ensure the correct anticoagulant to specimen ratio.
- j) Ensure correct type specimens in used.

4.4 Prevention of Hemolysis and inaccurate test results

- a) Allow alcohol on venipuncture site to dry before inserting needle into the vein.
- b) A 21-gauge needle is recommended for collection of blood using non-vacutainer tubes. There is a greater likelihood of hemolysis with smaller gauge needles.
- c) During venipuncture for collection of blood using non-vacutainer tubes, the plunger of the syringe should be drawn back slowly, and the blood should flow freely.
- d) After venipuncture for collection of blood using non-vacutainer tubes, remove the needle before allocating blood into the blood tubes and expel blood gently into the correct collection container.
- e) After collecting blood into the blood tube containing anticoagulant, immediately invert the capped blood tube gently for several times to allow blood mixing with anticoagulant thoroughly to prevent clotting. Do not shake the blood tube vigorously as this may cause hemolysis.

- f) After venipuncture for collection of blood using non-vacutainer tubes, remove the needle before allocating blood into the blood tubes and expel blood gently into the correct collection container.
- g) After collecting blood into the blood tube containing anticoagulant, immediately invert the capped blood tube gently for several times to allow blood mixing with anticoagulant thoroughly to prevent clotting. Do not shake the blood tube vigorously as this may cause hemolysis.

4.5 Packing & Storage of Specimens

- a) Avoid exposing specimens to extreme heat or cold.
- b) Place specimen in the inner pocket of the specimen carrier bag and seal the zip.
- c) Send specimens with Laboratory Test Service Request Form (NGX/FM/008) and/ or General Laboratory Request Form (NGX/FM/101) attached.
- d) Request form shall be placed at the outer pocket of the specimen carrier bag.

4.6 General Specimen Storage

- a) All specimen collected or obtained, except for a few that require other specific instructions as indicated in Table 5. Specific Instruction are to be left at room temperature in the clinics while waiting for pick-up by the despatchers.
- b) Avoid keep the specimens overnight as these specimens may give erroneous and misleading analytical results to some tests reported.
- c) If samples are unable to be picked up on the same day, store the specimens according to the Specific Information Table. Contact NGX for specimen pick up ASAP on the next working day.
- d) Contact NGX if specimens unable to reach NGX within 48 hours to enquire on specimen stability.

4.7 Rejection of Samples

Samples are rejected in case of

- a) Incomplete Laboratory Test Service Request Form
- b) Mismatch patient details on specimen and request form
- c) Test requested is not clear
- d) Insufficient specimen
- e) Wrong specimen type
- f) Leaking specimen
- g) Clotted specimen
- h) Delayed sample
- i) Wrong specimen storage condition
- j) Improper transport condition for specimen
- k) No sample received
- l) Test is not offered
- m) Broken tube

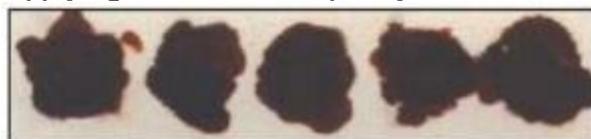
In case of a sample rejection, the customer will be informed immediately and prompt attempt is made to re-collect/re-send sample for analysis.

4.7.1 Rejection criteria for dried blood spot

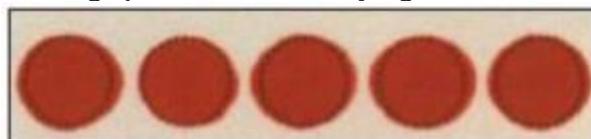
- a) Specimen quantity insufficient for testing.
- Removing the Whatman Protein Saver 903 Card before blood has completely filled circle or before blood has soaked through to other side.



- b) Specimen appears scratched or abraded.
- Applying blood with a capillary tube or other device.



- c) Specimen not dried before mailing.
- Mailing specimen before drying for a minimum of four hours



- d) Specimen appears supersaturated.
- Applying excess blood to filter paper, usually with a device.
 - Applying blood to both sides of filter paper.



- e) Specimen appears diluted, discolored or contaminated.
- Milking of area surrounding the puncture site.
 - Allowing the Whatman Protein Saver 903 Card to touch gloved or ungloved hands or substance such as alcohol, formula, antiseptic solution, water, hand lotion or power, etc.
 - Exposing blood spots to direct heat.



- f) Specimen exhibits serum rings
- Not wiping alcohol from puncture site before making kin puncture.
 - Squeezing area surrounding puncture site excessively.
 - Drying specimen improperly.



- g) Specimen appears clotted or layered
- Touching the same circle on the Whatman Protein Saver 903 Card to blood drop several times.



4.8 Interfering factors

Reasons which cause deviation in the performance of the test:

- a) Incorrect specimen handling, collection, storage or labeling.
- b) Delayed specimen delivery.
- c) Incorrect or incomplete patient preparation.
- d) Hemolysis of blood samples.
- e) Incomplete sample collection.
- f) Old or deteriorating specimens.

4.9 Disposal of Biomedical Waste

All wastes should be properly stored and disposed according to local authority guidelines.

5. SPECIAL INSTRUCTION FOR DIAGNOSTIC TESTS OFFERED IN NEOGENIX LABORATOIRE

- Please refer to the Price Catalogue for the details of each test (eg. pathogens detected).

MOLECULAR

Immunosuppression Panels

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
B	BK Virus (BKV) Viral Load	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2mL EDTA plasma • 3 to 5mL urine^β • 0.5 to 1mL cerebrospinal fluid (CSF)^β 	3 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
C	Cytomegalovirus (CMV) Viral Load	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2mL EDTA plasma • 3 to 5mL urine^β 	3 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
BC	BKV and CMV Combo Viral Load	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2mL EDTA plasma 	3 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
EBV	Epstein-Barr Virus (EBV) Viral Load	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2mL EDTA plasma 	3 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
ADE	Adenovirus (AdV) Viral Load	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2mL EDTA plasma • 3 to 5mL urine^β 	3 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
HHVI	Human Herpesvirus 6 (HHV6) Viral Load	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2mL EDTA plasma • 0.5 to 1mL cerebrospinal fluid (CSF)^β 	3 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
HHVII	Human Herpesvirus 7 (HHV7) Viral Load	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2mL EDTA plasma • 0.5 to 1mL cerebrospinal fluid (CSF)^β 	3 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
HSVL	Herpes Simplex Virus Type 1 & 2 (HSV1 &2) Viral Load	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2mL EDTA plasma • 0.5 to 1mL cerebrospinal fluid (CSF)^β • 3 to 5mL urine^β • Swab (genital, vesicular) in VTM 	3 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
VZVL	Varicella-Zoster Virus (VZV) Viral Load	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2mL EDTA plasma • 0.5 to 1mL cerebrospinal fluid (CSF)^β • Vesicular swab in VTM 	3 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
JCVL	JC Virus (JCV) Viral Load	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2mL EDTA plasma • 3 to 5mL urine^β • 0.5 to 1mL cerebrospinal fluid (CSF)^β 	3 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Bloodborne Infectious Diseases

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
HIV	Human Immunodeficiency Virus (HIV) Viral Load	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 3mL EDTA plasma 	5 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
CD4	CD4 Count and Haemoglobin Concentration Assay LTAT inclusive Saturday	<ul style="list-style-type: none"> • 1 x 3mL EDTA blood (Purple) 	2 working days	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample MUST reach lab within 24 hours • Store sample overnight at 2°C to 8°C
HCV	Hepatitis C Virus (HCV) Viral Load	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 3mL EDTA plasma 	5 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
HBV	Hepatitis B Virus (HBV) Viral Load	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2 x 3 mL blood in SST tube (Yellow)‡ • 3 mL EDTA plasma • 3 mL Serum 	4 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma/ Serum will be used for the assay • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Tuberculosis

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
TB	<p><i>Mycobacterium tuberculosis</i> PCR (TB PCR)</p> <ul style="list-style-type: none"> Detection of <i>Mycobacterium tuberculosis</i> (MTB) and non-tuberculosis mycobacteria (NTM) from symptomatic individual 	<ul style="list-style-type: none"> 5mL sputum/induced sputum ^β 5mL broncho-alveolar lavage (BAL) ^β 5mL tracheal wash ^β 3 to 5mL heparinized blood (Green) 10mL urine ^β 1 to 1.5mL lymph node aspirate ^β 1.5mL cerebrospinal fluid (CSF) ^β 1mL bone marrow aspirate ^β 3 to 5mL pus from abscess ^β 5mL synovial fluid (from joint) ^β 5mL pleural fluid ^β Min 2cm fresh tissue/ biopsy (synovial biopsy, endometrial biopsy, tissue biopsy) ^β 	3 working days	<ul style="list-style-type: none"> ^β Sample collected in sterile, leak proof container Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C
TS	<p>T-Spot TB</p> <ul style="list-style-type: none"> Indirect test for M. tuberculosis infection in symptomatic (active TB) and asymptomatic (latent TB) individual 	<ul style="list-style-type: none"> ≥ 10 years of age: 6mL heparinized blood (Green) 2 to 9 years of age: 4mL heparinized blood (Green) 2 years and below: 2mL heparinized blood (Green) 	1 working day	<ul style="list-style-type: none"> Store and transport sample at ROOM TEMPERATURE (18-25°C) DO NOT refrigerate/ freeze sample Sample MUST reach lab within 30 hours Store sample overnight at ROOM TEMPERATURE Sample accepted only from Monday to Friday
QFT	Quantiferon TB Gold Plus	<ul style="list-style-type: none"> 2 x 3mL (total 6mL) heparinized blood (Green) 	3 working days	<ul style="list-style-type: none"> Transport at 2°C to 8°C Sample MUST reach lab within 46 hours Store sample overnight at 2°C to 8°C

Sexually Transmitted Diseases Panels

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
CN	<p>Sexually Transmitted Infection Panel- Basic Screening Panel (STI-2)</p> <p>Detection of 2 pathogens:</p> <ul style="list-style-type: none"> <i>Chlamydia trachomatis</i> <i>Neisseria gonorrhoeae</i> 	<ul style="list-style-type: none"> Genital swab (urethral, vaginal, rectal and cervical) Oropharyngeal (throat) swab 1mL Semen ^β 5mL urine (First void) ^β Liquid based cytology specimen (e.g., ThinPrep and SurePath) 	3 working days	<ul style="list-style-type: none"> ^β Sample collected in sterile, leak proof container Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C
STI-7	<p>Sexually Transmitted Infection Panel- Essential Screening Panel (STI-7)</p> <p>Detection of 7 pathogens:</p> <ul style="list-style-type: none"> <i>Chlamydia trachomatis</i> <i>Neisseria gonorrhoeae</i> <i>Trichomonas vaginalis</i> <i>Mycoplasma hominis</i> <i>Mycoplasma genitalium</i> <i>Ureaplasma urealyticum</i> <i>Ureaplasma parvum</i> 	<ul style="list-style-type: none"> Genital swab (urethral, vaginal, rectal and cervical) Oropharyngeal (throat) swab 1mL Semen ^β 5mL urine (First void) ^β Liquid based cytology specimen (e.g., ThinPrep and SurePath) 	3 working days	<ul style="list-style-type: none"> ^β Sample collected in sterile, leak proof container Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C
GU	<p>Sexually Transmitted Infection Panel- Genital Ulcer Screening Panel</p> <p>Detection of 7 pathogens:</p> <ul style="list-style-type: none"> Herpes simplex virus 1 (HSV1) Herpes simplex virus 2 (HSV2) Varicella-zoster virus (VZV) Cytomegalovirus (CMV) <i>Lymphogranuloma venereum</i> <i>Haemophilus ducreyi</i> <i>Treponema pallidum</i> 	<ul style="list-style-type: none"> Genital swab (urethral, vaginal, rectal and cervical) 5mL urine (First void)^β Liquid based cytology specimen (e.g., ThinPrep and SurePath) 	3 working days	<ul style="list-style-type: none"> ^β Sample collected in sterile, leak proof container Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
SGC	Sexually Transmitted Infection Panel-Combo Panel (STI-14) Detection of 14 pathogens (STI-7 + GU)	<ul style="list-style-type: none"> Genital swab (urethral, vaginal, rectal and cervical) 5mL urine (first void) ^β Liquid based cytology specimen (e.g., ThinPrep and SurePath) 	3 working days	<ul style="list-style-type: none"> ^β Sample collected in sterile, leak proof container Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C
STIP	Sexually Transmitted Infection Panel-Premium Panel Detection of 42 pathogens 1. STI-14 2. Human papillomavirus (HPV) 19 High-risk genotypes: 16, 18, 26, 31, 33, 35, 39, 45, 51, 52, 53, 56, 58, 59, 66, 68, 69, 73, 82 3. HPV 9 Low-risk genotypes: 6, 11, 40, 42, 43, 44, 54, 61, 70	<ul style="list-style-type: none"> Genital swab (urethral, vaginal, rectal and cervical) Liquid based cytology specimen (e.g., ThinPrep) 	3 working days	<ul style="list-style-type: none"> ^β Sample collected in sterile, leak proof container Transport at 2°C to 8°C Sample should reach lab within 24 hours Urine sample is unacceptable Store sample overnight at 2°C to 8°C

Women Health Screening

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
HPVG	<p>Human papillomavirus (HPV) DNA Genotyping</p> <ul style="list-style-type: none"> • 19 High-risk genotypes: 16, 18, 26, 31, 33, 35, 39, 45, 51, 52, 53, 56, 58, 59, 66, 68, 69, 73, 82 • 9 Low-risk genotypes: 6, 11, 40, 42, 43, 44, 54, 61, 70 	<ul style="list-style-type: none"> • Cervical swab/brush specimen ^β • Liquid based cytology specimen (e.g., ThinPrep) 	3 working days	<ul style="list-style-type: none"> • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Urine sample is not acceptable • Store sample overnight at 2°C to 8°C

Gastrointestinal Panels

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
RPGPP	<p>Rapid PCR for Gastrointestinal Pathogen Panel (RPGPP) Detection of 22 target pathogens:</p> <p>Bacteria</p> <ul style="list-style-type: none"> • <i>Campylobacter</i> (<i>C. jejuni</i>, <i>C. coli</i> & <i>C. upsaliensis</i>) • <i>Clostridium difficile</i> (Toxin A/B) • <i>Plesiomonas shigelloides</i> • <i>Salmonella</i> • <i>Yersinia enterocolitica</i> • <i>Vibrio</i> (<i>parahaemolyticus</i> & <i>vulnificus</i>) • <i>Vibrio cholerae</i> <p>Diarrheagenic <i>Escherichia coli</i>/ <i>Shigella</i></p> <ul style="list-style-type: none"> • <i>E. coli</i> O157 • Enteroaggregative <i>E. coli</i> (EAEC) • Enteropathogenic <i>E. coli</i> (EPEC) • Enterotoxigenic <i>E. coli</i> (ETEC) <i>lt/st</i> • Shiga-like toxin-producing <i>E. coli</i> (STEC) <i>stx1/stx2</i> • <i>Shigella</i>/ Enteroinvasive <i>E. coli</i> (EIEC) <p>uses</p> <ul style="list-style-type: none"> • Adenovirus F 40/41 • Astrovirus • Norovirus GI/GII • Rotavirus A • Sapovirus (I, II, IV and V) <p>Parasites</p> <ul style="list-style-type: none"> • <i>Cryptosporidium</i> • <i>Cyclospora cayetanensis</i> • <i>Entamoeba histolytica</i> • <i>Giardia lamblia</i> <p style="color: red;">LTAT inclusive Saturday</p>	<ul style="list-style-type: none"> • 1-3mL Stool in sterile, leak proof container 	6 hours	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
GPP	<p>Gastrointestinal Pathogen Panel Assay-25 (GPP-25)</p> <p>Detection of 25 target pathogens:</p> <p>Bacteria</p> <ul style="list-style-type: none"> • <i>Campylobacter</i> spp. • <i>Clostridium difficile</i> Toxin B • <i>Salmonella</i> spp. • <i>Yersinia enterocolitica</i> • <i>Vibrio</i> spp. • <i>Shigella</i>/Enteroinvasive <i>Escherichia coli</i> (EIEC) • <i>Aeromonas</i> spp. • <i>E. coli</i> O157 • <i>C. difficile</i> hypervirulent • Enteroaggregative <i>E. coli</i> (EAEC) • Enteropathogenic <i>E. coli</i> (EPEC) • Enterotoxigenic <i>E. coli</i> (ETEC) • Enterohemorrhagic <i>E. coli</i> (EHEC) <p>Viruses</p> <ul style="list-style-type: none"> • Adenovirus 40/41 • Astrovirus • Norovirus GI • Norovirus GII • Rotavirus • Sapovirus <p>Parasites</p> <ul style="list-style-type: none"> • <i>Cryptosporidium</i> spp. • <i>Cyclospora cayetanensis</i> • <i>Entamoeba histolytica</i> • <i>Giardia lamblia</i> • <i>Blastocystis hominis</i> • <i>Dientamoeba fragilis</i> 	<ul style="list-style-type: none"> • 1-3mL Stool in sterile, leak proof container 	1 working day	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
GPPBI	Gastrointestinal Pathogen Assay- Bacteria I Panel Detection of 7 target pathogens <ul style="list-style-type: none"> • <i>Campylobacter</i> spp. • <i>Clostridium difficile</i> Toxin B • <i>Salmonella</i> spp. • <i>Yersinia enterocolitica</i> • <i>Vibrio</i> spp. • Shigella/ Enteroinvasive <i>E. coli</i> (EIEC) • <i>Aeromonas</i> spp. 	<ul style="list-style-type: none"> • 1-3mL Stool in sterile, leak proof container 	1 working day	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
GPPBII	Gastrointestinal Pathogen Assay- Bacteria II Panel Detection of 6 target pathogens <ul style="list-style-type: none"> • <i>E. coli</i> O157 • <i>Clostridium difficile</i> hypervirulent • Enteroaggregative <i>E. coli</i> (EAEC) • Enteropathogenic <i>E. coli</i> (EPEC) • Enterotoxigenic <i>E. coli</i> (ETEC) • Enterohemorrhagic <i>E. coli</i> (EHEC) 	<ul style="list-style-type: none"> • 1-3mL Stool in sterile, leak proof container 	1 working day	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
GPPV	Gastrointestinal Pathogen Assay- Virus Panel Detection of 6 target pathogens <ul style="list-style-type: none"> • Adenovirus • Astrovirus • Norovirus GI • Norovirus GII • Rotavirus • Sapovirus 	<ul style="list-style-type: none"> • 1-3mL Stool in sterile, leak proof container 	1 working day	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
GPPP	Gastrointestinal Pathogen Assay- Parasite Panel Detection of 6 target pathogens <ul style="list-style-type: none"> • <i>Cryptosporidium</i> spp. • <i>Cyclospora cayetanensis</i> • <i>Entamoeba histolytica</i> • <i>Giardia lamblia</i> • <i>Blastocystis hominis</i> • <i>Dientamoeba fragilis</i> 	<ul style="list-style-type: none"> • 1-3mL Stool in sterile, leak proof container 	1 working day	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Respiratory Panels

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
RT	<p>Respiratory Pathogens 33 Panel Assay (RP33)</p> <p>Detection of 33 target pathogens:</p> <p>Viruses</p> <ul style="list-style-type: none"> • Adenovirus (AdV) • Bocavirus • Coronavirus 229E • Coronavirus HKU1 • Coronavirus NL63 • Coronavirus OC43 • Enterovirus • Influenza A • Influenza A H1N1 2009 Pandemic strain • Influenza B • Influenza C • Metapneumovirus A/B • Parainfluenza virus 1 • Parainfluenza virus 2 • Parainfluenza virus 3 • Parainfluenza virus 4 • Parechovirus • Respiratory syncytial virus A/B • Rhinovirus <p>Bacteria</p> <ul style="list-style-type: none"> • <i>Bordetella</i> spp. • <i>Chlamydomphila pneumoniae</i> • <i>Haemophilus influenzae</i> • <i>Haemophilus influenzae</i> B • <i>Klebsiella pneumoniae</i> • <i>Legionella pneumophila/ Legionella longbeachae</i> • <i>Moraxella catarrhalis</i> • <i>Mycoplasma pneumoniae</i> • <i>Salmonella</i> spp. • <i>Staphylococcus aureus</i> • <i>Streptococcus pneumoniae</i> <p>Fungus</p> <ul style="list-style-type: none"> • <i>Pneumocystis jirovecii</i> 	<ul style="list-style-type: none"> • Throat swab in VTM • Nasal swab in VTM • Nasopharyngeal swab in VTM • Bronchoalveolar lavage (BAL) ^β • Sputum ^β 	1 working day	<ul style="list-style-type: none"> • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
RP26	<p>Respiratory Panel Assay (RP26)</p> <p>Detection of 26 target pathogens:</p> <p>Viruses</p> <ul style="list-style-type: none"> • Influenza A virus (Flu A) • Influenza B virus (Flu B) • Flu A-H1 • Flu A-H1 pdm09 • Flu A-H3 • Respiratory syncytial virus A (RSVA) • Respiratory syncytial virus B (RSVB) • Adenovirus (AdV) • Enterovirus (HEV) • Parainfluenza virus 1 (PIV 1) • Parainfluenza virus 2 (PIV 2) • Parainfluenza virus 3 (PIV 3) • Parainfluenza virus 4 (PIV 4) • Metapneumovirus (MPV) • Bocavirus (HBoV) • Rhinovirus (HRV) • Coronavirus NL63 (CoV NL63) • Coronavirus 229E (CoV 229E) • Coronavirus OC43 (CoV OC43) <p>Bacteria</p> <ul style="list-style-type: none"> • <i>Mycoplasma pneumoniae</i> • <i>Chlamydomphila pneumoniae</i> • <i>Legionella pneumophila</i> • <i>Haemophilus influenzae</i> • <i>Streptococcus pneumoniae</i> • <i>Bordetella pertussis</i> • <i>Bordetella parapertussis</i> <p>LTAT inclusive Saturday</p>	<ul style="list-style-type: none"> • Nasopharyngeal aspirate^β • Nasopharyngeal swab in VTM • Bronchoalveolar lavage (BAL)^β • Sputum^β 	1 working day	<ul style="list-style-type: none"> • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
RPI	Respiratory Panel Assay- Virus Panel I (Flu PCR Panel) Detection of 7 target pathogens: <ul style="list-style-type: none"> • Influenza A virus (Flu A) • Influenza B virus (Flu B) • Flu A-H1 • Flu A-H1 pdm09 • Flu A-H3 • Respiratory syncytial virus A (RSVA) • Respiratory syncytial virus B (RSVB) LTAT inclusive Saturday	<ul style="list-style-type: none"> • Nasopharyngeal aspirate^β • Nasopharyngeal swab in VTM • Bronchoalveolar lavage (BAL)^β • Sputum^β 	1 working day	<ul style="list-style-type: none"> • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
RPII	Respiratory Panel Assay- Virus Panel II Detection of 7 target pathogens: <ul style="list-style-type: none"> • Adenovirus (AdV) • Enterovirus (HEV) • Parainfluenza virus 1 (PIV 1) • Parainfluenza virus 2 (PIV 2) • Parainfluenza virus 3 (PIV 3) • Parainfluenza virus 4 (PIV 4) • Metapneumovirus (MPV) LTAT inclusive Saturday	<ul style="list-style-type: none"> • Nasopharyngeal aspirate^β • Nasopharyngeal swab in VTM • Bronchoalveolar lavage (BAL)^β • Sputum^β 	1 working day	<ul style="list-style-type: none"> • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
RPIII	Respiratory Panel Assay- Virus Panel III Detection of 5 target pathogens: <ul style="list-style-type: none"> • Bocavirus (HBoV) • Rhinovirus (HRV) • Coronavirus NL63 (CoV NL63) • Coronavirus 229E (CoV 229E) • Coronavirus OC43 (CoV OC43) LTAT inclusive Saturday	<ul style="list-style-type: none"> • Nasopharyngeal aspirate^β • Nasopharyngeal swab in VTM • Bronchoalveolar lavage (BAL)^β • Sputum^β 	1 working day	<ul style="list-style-type: none"> • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
RV19	Respiratory Panel Assay- Viral Panel (RV19) Detection of 19 target pathogens: <ul style="list-style-type: none"> • Influenza A virus (Flu A) • Influenza B virus (Flu B) • Flu A-H1 • Flu A-H1 pdm09 • Flu A-H3 • Respiratory syncytial virus A (RSVA) • Respiratory syncytial virus B (RSVB) • Adenovirus (AdV) • Enterovirus (HEV) • Parainfluenza virus 1 (PIV 1) • Parainfluenza virus 2 (PIV 2) • Parainfluenza virus 3 (PIV 3) • Parainfluenza virus 4 (PIV 4) • Metapneumovirus (MPV) • Bocavirus (HBoV) • Rhinovirus (HRV) • Coronavirus NL63 (CoV NL63) • Coronavirus 229E (CoV 229E) • Coronavirus OC43 (CoV OC43) 	<ul style="list-style-type: none"> • Nasopharyngeal aspirate^β • Nasopharyngeal swab in VTM • Bronchoalveolar lavage (BAL)^β • Sputum^β 	1 working day	<ul style="list-style-type: none"> • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
RB7	Respiratory Panel Assay- Bacteria Panel (RB7) Detection of 7 target pathogens: <ul style="list-style-type: none"> • <i>Mycoplasma pneumoniae</i> • <i>Chlamydomphila pneumoniae</i> • <i>Legionella pneumophila</i> • <i>Haemophilus influenzae</i> • <i>Streptococcus pneumoniae</i> • <i>Bordetella pertussis</i> • <i>Bordetella parapertussis</i> LTAT inclusive Saturday	<ul style="list-style-type: none"> • Nasopharyngeal aspirate^β • Nasopharyngeal swab in VTM • Bronchoalveolar lavage (BAL)^β • Sputum^β 	1 working day	<ul style="list-style-type: none"> • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
COV	Severe Acute Respiratory Syndrome- Coronavirus-2 (SARS-CoV-2) Real-Time PCR Assay <ul style="list-style-type: none"> Coronavirus disease (COVID-19) detection <p>LTAT inclusive Saturday</p>	<ul style="list-style-type: none"> Nasopharyngeal and oropharyngeal swab in VTM 	<ul style="list-style-type: none"> Sample in AM trip, report at 7pm Sample in PM trip, report at 10pm 	<ul style="list-style-type: none"> ^β Sample collected in sterile, leak proof container Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C
MCOV	Middle East Respiratory Syndrome-Coronavirus (MERS-CoV) Real-Time PCR Assay	<ul style="list-style-type: none"> Nasopharyngeal and oropharyngeal swab in VTM Sputum^β Bronchoalveolar lavage (BAL)^β 	1 working day	<ul style="list-style-type: none"> ^β Sample collected in sterile, leak proof container Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C

Meningitis/Encephalitis Panels

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
ME	<p>Rapid PCR for Meningitis/ Encephalitis Panel (ME14)</p> <p>Detection of 14 target pathogens:</p> <p>Bacteria</p> <ul style="list-style-type: none"> • <i>Escherichia coli</i> K1 • <i>Haemophilus influenzae</i> • <i>Listeria monocytogenes</i> • <i>Neisseria meningitidis</i> • <i>Streptococcus agalactiae</i> • <i>Streptococcus pneumoniae</i> <p>Viruses</p> <ul style="list-style-type: none"> • Cytomegalovirus • Enterovirus • Herpes simplex virus 1 • Herpes simplex virus 2 • Human herpesvirus 6 • Human parechovirus • Varicella zoster virus <p>Yeast</p> <ul style="list-style-type: none"> • <i>Cryptococcus neoformans/ gattii</i> <p style="color: red;">LTAT inclusive Saturday</p>	<ul style="list-style-type: none"> • 0.5 to 1mL cerebrospinal fluid in sterile, leak proof container 	6 hours	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
MF	<p>Meningitis/ Encephalitis 22 Panel Assay (ME22)</p> <p>Detection of 22 target pathogens:</p> <p>Bacteria</p> <ul style="list-style-type: none"> • <i>Escherichia coli</i> K1 • <i>Haemophilus influenzae</i> • <i>Listeria monocytogenes</i> • <i>Neisseria meningitidis</i> • <i>Streptococcus agalactiae</i> • <i>Streptococcus pneumoniae</i> • <i>Staphylococcus aureus</i> • <i>Borrelia burgdorferi</i> sensu lato/ <i>Borrelia miyamotoi</i> <p>Viruses</p> <ul style="list-style-type: none"> • Mumps virus • Measles virus • Human enterovirus • Parechovirus • Herpes simplex virus 1 • Herpes simplex virus 2 • Varicella zoster virus • Epstein-Barr virus • Cytomegalovirus • Human herpesvirus 6 • Human herpesvirus 7 • Human herpesvirus 8 <p>Yeast</p> <ul style="list-style-type: none"> • <i>Cryptococcus neoformans</i> sensu lato • <i>Cryptococcus gattii</i> sensu lato 	<ul style="list-style-type: none"> • 0.6 to 1 mL cerebrospinal fluid in sterile, leak proof container 	1 working day	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
MEI	<p>Meningitis/ Encephalitis Package I Assay (ME27)</p> <p>Detection of 27 target pathogens:</p> <p>Bacteria</p> <ul style="list-style-type: none"> • <i>Escherichia coli</i> K1 • <i>Haemophilus influenzae</i> • <i>Listeria monocytogenes</i> • <i>Neisseria meningitidis</i> • <i>Streptococcus agalactiae</i> • <i>Streptococcus pneumoniae</i> • <i>Staphylococcus aureus</i> • <i>Borrelia burgdorferi</i> sensu lato/ <i>Borrelia miyamotoi</i> • <i>Mycobacterium tuberculosis</i> • Non-tuberculosis <i>Mycobacteria</i> (NTM) <p>Viruses</p> <ul style="list-style-type: none"> • Mumps virus • Measles virus • Human enterovirus • Parechovirus • Herpes simplex virus 1 • Herpes simplex virus 2 • Varicella zoster virus • Epstein-Barr virus • Cytomegalovirus • Human herpesvirus 6 • Human herpesvirus 7 • Human herpesvirus 8 • Dengue • Chikungunya • Zika <p>Yeast</p> <ul style="list-style-type: none"> • <i>Cryptococcus neoformans</i> sensu lato • <i>Cryptococcus gattii</i> sensu lato 	<ul style="list-style-type: none"> • 0.6 to 1mL cerebrospinal fluid in sterile, leak proof container 	1 working day	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Eye Infection (Uveitis) Panels

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
UP	<p>Eye Infection (Uveitis) Panel I</p> <p>Detection of 5 target pathogens:</p> <p>Viruses (quantitative)</p> <ul style="list-style-type: none"> • Cytomegalovirus • Herpes simplex virus 1 • Herpes simplex virus 2 • Varicella zoster virus <p>Parasite (qualitative)</p> <ul style="list-style-type: none"> • <i>Toxoplasma gondii</i> 	<ul style="list-style-type: none"> • At least 0.2 mL eye fluid in sterile and leak proof container 	1 working day	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
UPII	<p>Eye Infection (Uveitis) Panel II</p> <p>Detection of 7 target pathogens:</p> <p>Viruses (quantitative)</p> <ul style="list-style-type: none"> • Cytomegalovirus • Herpes simplex virus 1 • Herpes simplex virus 2 • Varicella zoster virus <p>Parasite (qualitative)</p> <ul style="list-style-type: none"> • <i>Toxoplasma gondii</i> <p>Bacteria (qualitative)</p> <ul style="list-style-type: none"> • <i>Mycobacterium tuberculosis</i> (MTB) • Non-tuberculosis mycobacteria (NTM) 	<ul style="list-style-type: none"> • At least 0.2 mL eye fluid in sterile and leak proof container 	1 working day	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Other Panels

Mycology

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
AG	<i>Aspergillus</i> Galactomannan Assay <ul style="list-style-type: none"> Qualitative 	<ul style="list-style-type: none"> 1 x 3 mL blood in SST tube (Yellow) ‡ 600 µL serum 1 mL BAL^β 	1 working day	<ul style="list-style-type: none"> ‡ Serum will be used for the assay β Sample collected in sterile, leak proof container Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C

Tropical Diseases

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
DCZ	Dengue, Chikungunya and Zika Real-Time PCR Assay	<ul style="list-style-type: none"> 2 x 3 mL EDTA blood (Purple) ‡ 1 x 3 mL blood in SST tube (Yellow) ‡ 2 mL EDTA plasma 1 mL Serum 3 mL urine^β 	2 working days	<ul style="list-style-type: none"> ‡ EDTA plasma/ Serum will be used for the assay β Sample collected in sterile, leak proof container Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C
DGCK	Dengue and Chikungunya Real-Time PCR Assay	<ul style="list-style-type: none"> 2 x 3 mL EDTA blood (Purple) ‡ 1 x 3 mL blood in SST tube (Yellow) ‡ 2 mL EDTA plasma 1 mL Serum 3 mL urine^β 	2 working days	<ul style="list-style-type: none"> ‡ EDTA plasma/ Serum will be used for the assay β Sample collected in sterile, leak proof container Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
DEN	Dengue Real-Time PCR Assay	<ul style="list-style-type: none"> • 2 x 3 mL EDTA blood (Purple) ‡ • 1 x 3 mL blood in SST tube (Yellow) ‡ • 2 mL EDTA plasma • 1 mL Serum • 3 mL urine ^β 	2 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma/ Serum will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
CK	Chikungunya Real-Time PCR Assay	<ul style="list-style-type: none"> • 2 x 3 mL EDTA blood (Purple) ‡ • 1 x 3 mL blood in SST tube (Yellow) ‡ • 2 mL EDTA plasma • 1 mL Serum • 3 mL urine ^β 	2 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma/ Serum will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
ZK	Zika Real-Time PCR Assay	<ul style="list-style-type: none"> • 2 x 3 mL EDTA blood (Purple) ‡ • 1 x 3 mL blood in SST tube (Yellow) ‡ • 2 mL EDTA plasma • 1 mL Serum • 3 mL urine ^β 	2 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma/Serum will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Qualitative Viral Panels

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
HSV	Herpes Simplex Virus 1 & 2 PCR	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2mL EDTA plasma • 0.5 to 1mL cerebrospinal fluid (CSF) ^β • Genital swab in VTM • Vesicular swab in VTM • 3 to 5mL urine ^β 	3 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
VZV	Varicella-Zoster Virus PCR	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2mL EDTA plasma • 0.5 to 1mL cerebrospinal fluid (CSF) ^β • Vesicular swab in VTM 	3 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
CMV	Cytomegalovirus PCR	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2mL EDTA plasma • 3 to 5mL urine ^β 	3 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
HVIQ	Human Herpesvirus 6 (HHV6) PCR	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2mL EDTA plasma • 0.5 to 1mL cerebrospinal fluid (CSF) ^β 	3 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
HVIIQ	Human Herpesvirus 7 (HHV7) PCR	<ul style="list-style-type: none"> • 2 x 3mL EDTA blood (Purple) ‡ • 2mL EDTA plasma • 0.5 to 1mL cerebrospinal fluid (CSF) ^β 	3 working days	<ul style="list-style-type: none"> • ‡ EDTA plasma will be used for the assay • ^β Sample collected in sterile, leak proof container • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Therapeutic Drug Monitoring Panels

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
INF	Infliximab Trough Level Assay LTAT inclusive Saturday	<ul style="list-style-type: none"> • 1 x 3mL blood in SST (Yellow) ‡ • 0.3 mL serum 	1 working day	<ul style="list-style-type: none"> • ‡ Serum will be used for the assay • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C
ADL	Adalimumab Trough Level Assay LTAT inclusive Saturday	<ul style="list-style-type: none"> • 1 x 3mL blood in SST (Yellow) ‡ • 0.3 mL serum 	1 working day	<ul style="list-style-type: none"> • ‡ Serum will be used for the assay • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
AINF	Anti-Infliximab Antibody Level Assay LTAT inclusive Saturday	<ul style="list-style-type: none"> 1 x 3mL blood in SST (Yellow)‡ 0.3 mL serum 	1 working day	<ul style="list-style-type: none"> ‡ Serum will be used for the assay Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C
AADL	Anti-Adalimumab Antibody Level Assay LTAT inclusive Saturday	<ul style="list-style-type: none"> 1 x 3mL blood in SST (Yellow)‡ 0.3 mL serum 	1 working day	<ul style="list-style-type: none"> ‡ Serum will be used for the assay Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C
INF/AINF	Infliximab Trough Level and Anti-Infliximab Antibody Combo Assay LTAT inclusive Saturday	<ul style="list-style-type: none"> 1 x 3mL blood in SST (Yellow)‡ 0.3 mL serum 	1 working day	<ul style="list-style-type: none"> ‡ Serum will be used for the assay Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C
ADL/AADL	Adalimumab Trough Level and Anti-Adalimumab Antibody Combo Assay LTAT inclusive Saturday	<ul style="list-style-type: none"> 1 x 3mL blood in SST (Yellow)‡ 0.3 mL serum 	1 working day	<ul style="list-style-type: none"> ‡ Serum will be used for the assay Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C

Others

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
FCP	Fecal Calprotectin Assay	<ul style="list-style-type: none"> 1-3 mL Stool in sterile, leak proof container 	1 working day	<ul style="list-style-type: none"> Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C
HFM	Hand-Foot-and-Mouth Disease (HFMD) Real-Time PCR Assay <ul style="list-style-type: none"> Detection of Coxsackievirus A16 and Enterovirus 71 	<ul style="list-style-type: none"> Oropharyngeal swab in VTM 	1 working day	<ul style="list-style-type: none"> Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C
MPX	Monkeypox virus Real-Time PCR Assay	<ul style="list-style-type: none"> Lesion/ Vesicle fluid swab in VTM Throat/ Oropharyngeal swab in VTM Nasopharyngeal swab in VTM 	1 working day (3 to 4 days MOH verification)	<ul style="list-style-type: none"> Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C
TXG	<i>Toxoplasma gondii</i> Real-Time PCR Assay	<ul style="list-style-type: none"> 0.6 to 1mL cerebrospinal fluid (CSF) in sterile, leak proof container 2 x 3mL EDTA blood (Purple) 	3 working days	<ul style="list-style-type: none"> Transport at 2°C to 8°C Sample should reach lab within 24 hours Store sample overnight at 2°C to 8°C

GENETIC HEREDITARY AND ONCOLOGY

Hereditary Health Predisposition Panels

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
KCP	<p>Cancer Susceptibility Genetic Test Panel</p> <p>Male: 7 cancer types</p> <ul style="list-style-type: none"> • Lung • Gastric • Liver • Colorectal • Thyroid • Pancreatic • Prostate <p>Female: 9 cancer types</p> <ul style="list-style-type: none"> • Lung • Gastric • Liver • Colorectal • Thyroid • Pancreatic • Breast • Ovarian • Cervical 	<ul style="list-style-type: none"> • 1 x 3mL EDTA blood (Purple) <p>Out of Malaysia</p> <ul style="list-style-type: none"> • 1 x Protein Saver Card with 5 dried blood spots 	14 working days	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C <p>Out of Malaysia</p> <ul style="list-style-type: none"> • Ensure sufficient quantity of blood to soak through the card • Ensure blood spot dry completely without the card flap covering the spots in clean, dry place • Transport at ambient temperature (18°C to 25°C)
KCD	<p>Chronic Disease Susceptibility Genetic Test Panel</p> <p>4 types of diseases</p> <ul style="list-style-type: none"> • Alzheimer's disease • Parkinson disease • Myocardial • Stroke 	<ul style="list-style-type: none"> • 1 x 3mL EDTA blood (Purple) <p>Out of Malaysia</p> <ul style="list-style-type: none"> • 1 x Protein Saver Card with 5 dried blood spots 	14 working days	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C <p>Out of Malaysia</p> <ul style="list-style-type: none"> • Ensure sufficient quantity of blood to soak through the card • Ensure blood spot dry completely without the card flap covering the spots in clean, dry place • Transport at ambient temperature (18°C to 25°C)

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
KSH	Skin and Hair Care Genetic Test Panel <ul style="list-style-type: none"> • Skin aging • Skin pigmentation • Vitamin C level • Hair loss • Hair thickness 	<ul style="list-style-type: none"> • 1 x 3mL EDTA blood (Purple) Out of Malaysia <ul style="list-style-type: none"> • 1 x Protein Saver Card with 5 dried blood spots 	14 working days	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C Out of Malaysia <ul style="list-style-type: none"> • Ensure sufficient quantity of blood to soak through the card • Ensure blood spot dry completely without the card flap covering the spots in clean, dry place • Transport at ambient temperature (18°C to 25°C)
HIP	Hearing Impairment Genetic Test Panel For Newborn <ul style="list-style-type: none"> • GJB2 • GJB3 • SLC26A4 • MTRNR1/ 12S Rna • GJB6 • POU3F4 • COCH/LOC100506071 • TMIE • KCNQ4 	<ul style="list-style-type: none"> • 1 x 3mL EDTA blood (Purple) Out of Malaysia <ul style="list-style-type: none"> • 1 x Protein Saver Card with 5 dried blood spots 	10 working days	<ul style="list-style-type: none"> • Transport at 2°C to 8°C • Sample should reach lab within 24 hours • Store sample overnight at 2°C to 8°C Out of Malaysia <ul style="list-style-type: none"> • Ensure sufficient quantity of blood to soak through the card • Ensure blood spot dry completely without the card flap covering the spots in clean, dry place • Transport at ambient temperature (18°C to 25°C)
	Alpha and Beta Thalassemia Panel	<ul style="list-style-type: none"> • 1 x 3mL EDTA blood (Purple) 	Development	

Oncology Panels

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
MALG	<p>MAHS Lung Cancer & Lung Fusion Panel Assay</p> <ul style="list-style-type: none"> 70 mutations & 3 fusion genes <p>Mutations</p> <ol style="list-style-type: none"> BRAF G469A/V, D594G, V600E EGFR E709A/G/K/V, G719A/C/D/S, S768I/N/T, D770N, T790M, C797S, L858R, L861QR, exon 19 insertion/deletion, exon 20 insertion ERBB2 Exon 20 insertions KRAS G12A/C/D/R/S/V, G13V/C/D, Q61E/H/K/L/P/R PIK3CA E542K, E545K, H1047L, H1047R <p>Fusion genes</p> <ol style="list-style-type: none"> <i>ALK</i> <i>RET</i> <i>ROS1</i> 	<ul style="list-style-type: none"> FFPE tissue section in tube 2x 10µm, at least >40% tumor cell percentage of FFPE section. <p>If below standards: macro dissection needed</p>	10 to 14 working days	<ul style="list-style-type: none"> Sample must be transported at ambient temperature (18°C to 25°C) Macro-dissection is needed if tumor cell percentage of FFPE section is not achievable to prevent false negative result Image of H&E stain, percentage of tissue/tumor content must be submitted together with the specimen

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
MALC	<p>MAHS Lung Cancer Panel Assay</p> <ul style="list-style-type: none"> 70 mutations & 3 fusion genes <p>Mutations</p> <ol style="list-style-type: none"> BRAF G469A/V, D594G, V600E EGFR E709A/G/K/V, G719A/C/D/S, S768I/N/T, D770N, T790M, C797S, L858R, L861QR, exon 19 insertion/deletion, exon 20 insertion ERBB2 Exon 20 insertions KRAS G12A/C/D/R/S/V, G13V/C/D, Q61E/H/K/L/P/R PIK3CA E542K, E545K, H1047L, H1047R 	<ul style="list-style-type: none"> FFPE tissue section in tube <p>2x 5µm, at least >20% tumor cell percentage of FFPE section.</p> <p>If below standards: macro dissection needed</p>	10 to 14 working days	<ul style="list-style-type: none"> Sample must be transported at ambient temperature (18°C to 25°C) Macro-dissection is needed if tumor cell percentage of FFPE section is not achievable to prevent false negative result Image of H&E stain, percentage of tissue/tumor content must be submitted together with the specimen
MALF	<p>MAHS Lung Fusion Cancer Panel Assay</p> <ul style="list-style-type: none"> 3 fusion genes <p>Fusion genes</p> <ol style="list-style-type: none"> <i>ALK</i> <i>RET</i> <i>ROS1</i> 	<ul style="list-style-type: none"> FFPE tissue section in tube <p>2x 10µm, at least >40% tumor cell percentage of FFPE section.</p> <p>If below standards: macro dissection needed</p>	10 to 14 working days	<ul style="list-style-type: none"> Sample must be transported at ambient temperature (18°C to 25°C) Macro-dissection is needed if tumor cell percentage of FFPE section is not achievable to prevent false negative result Image of H&E stain, percentage of tissue/tumor content must be submitted together with the specimen

Code	Test Name	Sample Requirement	Lab Turnaround Time (LTAT)	Special Instructions
MACR	<p>MAHS Colon Cancer Panel Assay</p> <ul style="list-style-type: none"> 86 mutations <p>Mutations</p> <ol style="list-style-type: none"> BRAF G469E, D594G, V600E EGFR S492R KRAS G12A/C/D/E/F/I/L/R/S/V/W/Y, G13A/C/D/E/F/R/S/V, A59E/G/S/T, Q61E/H/K/L/P/R, K117N/R, A146G/P/T/V NRAS G12A/C/D/R/S/V, G13A/C/D/R/S/V, A59G/T, Q61E/H/K/L/P/R, K117E/N/R, A146G/P/S/T/V PIK3CA E542K, E545K, H1047L, H1047R 	<ul style="list-style-type: none"> FFPE tissue section in tube <p>2x 10µm, at least >40% tumor cell percentage of FFPE section.</p> <p>If below standards: macro dissection needed</p>	10 to 14 working days	<ul style="list-style-type: none"> Sample must be transported at ambient temperature (18°C to 25°C) Macro-dissection is needed if tumor cell percentage of FFPE section is not achievable to prevent false negative result Image of H&E stain, percentage of tissue/tumor content must be submitted together with the specimen

GENERAL LABORATORY

Sample Type	Storage	
	Facility without centrifuge	Facility with centrifuge
Blood in SST (yellow capped) and plain (red capped) tubes	Keep at room temperature	Separate serum from blood cells and store the tube at refrigerator (2°C to 8°C)
Blood in EDTA (purple capped) tube	Keep at refrigerator (2°C to 8°C)	Keep at refrigerator (2°C to 8°C)
Blood in fluoride (grey capped) tube		
Urine		
Swab		
Blood tube in citrate (blue capped) tube	To reschedule blood taking during weekdays. Consult Genlab on sample requirement.	To reschedule blood taking during weekdays. Consult Genlab on sample requirement.