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COLLEGE of AMERICAN PATHOLOGISTS

مؤسسة حمد الطبية
Hamad Medical Corporation
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دائرة المختبرات الطبيه و علم الأمراض
Department of Laboratory Medicine and Pathology

Lab Guide – 2022

Histocompatibility and Immunogenetics Section

Histocompatibility & Immunogenetics Laboratory

HOME

The Histocompatibility & Immunogenetics Laboratory provides a range of diagnostic testing in support of transplantation and disease association studies.

The testing is performed using state of the art technology and procedures.

The laboratory supports the following transplant programs: Kidney & Bone Marrow.

Laboratory Hours

7:00 am to 3:00 pm Sunday through Thursday, (the laboratory is available on-call at all other times)

Location: Hamad Medical City- building no.206

Contact Us:

Dr. Medhat Askar, MD, PhD, MSHPE, FRCPath Phone no: (+974) 44395291/44392037
Director

VISION & MISSION

Vision:

-To support the histocompatibility and immunogenetic testing needs for our clients across the county.

-To achieve the highest quality and technical performance level by implementing international quality standards.

- To serve as a scientific resource for knowledge and advice in Histocompatibility and transplantation immunology.

Mission

The mission of the Histocompatibility and Immunogenetics laboratory is to:

- Maintain delivering the high-quality services of solid organ, bone marrow transplantation, and management of immunological diseases patients and clinicians that enhance patient health.

- Shall aggressively search out and actively use the most appropriate, state-of-the-art, cost-effective technology

- Provide the laboratory staff, the education required from the latest sciences and technologies that related to the Histocompatibility services.

- Conduct innovative scientific research.

- Fostering a workplace environment that promotes a sense of pride and accomplishment through the recognition of innovation, dedication, collaboration and professionalism.

Test Offered
Flow Cross Match T & B Cells: HLA Flow Crossmatch-Donor & HLA Flow Crossmatch-Recipient
Recipient HLA Antibody Screening & Identification: HLA PRA Flow, HLA Luminex PRA Screen, HLA Luminex Single AB Class I & HLA Luminex Single AB Class II
HLA Donor Specific Antibodies
Molecular analysis of HLA Typing-Low resolution: HLA Typing - Recipient & HLA Typing - Donor
Molecular analysis of HLA Typing High resolution: HLA Hi Res Molecular Typing- Recipient & HLA Hi Res Molecular Typing- Donor
Molecular HLA typing for disease associations- HLA-B*27
Molecular HLA typing for disease associations- HLA-A*29
Molecular HLA typing for disease associations- HLA-B*51
Molecular HLA typing for disease associations- HLA-B*1502
Molecular HLA typing for disease associations- HLA-B*5701
Molecular HLA typing for disease associations- HLA-DQB1*0602
Molecular HLA typing for disease associations- HLA-DQ2/DQ8
Engraftment monitoring (Chimerism Testing)
HLA Virtual CrossMatch

Test name in Cerner	**HLA Flow Crossmatch-Donor**
	HLA Flow Crossmatch-Recipient
Specimen requirement	For Recipient: Blood in Gold tube: 5ml
	For Living Donor: 20 ml blood in ACD tube
	For Deceased Donor: Lymph node and/or spleen
Transport temperature	Room temperature.
	Routine Living donor: Sunday-Thursday "Test day should be scheduled with laboratory staff in advance"
Days test performed	Stat Livig donor/ deceased donor: 24/7
Turn around time	Routine Living donor: 1 working day after sample receipt
	Stat Livig donor/ deceased donor: 6 hours after sample receipt
Method	Flow cytometry
Interpretation	Positive flow crossmatch may indicate increased risk of antibody mediated organ rejection.
Test Usage	The lymphocyte crossmatch assesses the level of circulating antibodies in the potential recipient that are directed against HLA Class I and/or Class II molecules of the donor.
Rejection criteria	QNS, Haemolysis, Heavy lypemic, wrong collection
Performing Lab Location	Hamad Bin Khalifa Medical City- Building no.:206
Reference	American Society of Histocompatibility & Immunogenetics (ASHI)

Recipient HLA Antibody Screening & Identification	
Test name in Cerner	The laboratory is performing the below listed tests:
	HLA PRA Flow Screen
	HLA Luminex PRA
	HLA Luminex Single AB Class I
	HLA Luminex Single AB Class II
Specimen requirement	Blood in Gold tube: 5ml
Transport temperature	2-30°C
Days test performed	Routine: Sunday-Thursday
Turn around time	HLA Antibody Screening routine: 6 working days after sample receipt
	HLA Antibody Identification routine: 11 working days after sample receipt
Method	Flow cytometry and Luminex technology
Interpretation	The Anti- Class I & II screening assay is to detect the presence/absence of HLA antibodies. An anti single HLA class I & II assay is identify the specificity of the anti-HLA antibody present in the serum sample from the recipient.
Test Usage	Monitoring of Anti- HLA Ab
Rejection criteria	QNS, Haemolysis, Heavy lypemic, wrong collection
Performing Lab Location	Hamad Bin Khalifa Medical City- Building no.:206
Reference	American Society of Histocompatibility & Immunogenetics (ASHI)

Test name in Cerner	**HLA Donor Specific Antibodies**
Specimen requirement	***Test ordered for Post-transplant workup***
	1. Blood in Gold tube: 5ml
	2. Previous Result of Patient & Donor HLA typing
Transport temperature	2-30°C
Days test performed	Routine: Sunday-Thursday
Turn around time	1 working day after sample recipient
Method	Flow cytometry and Luminex technology
Interpretation	The Anti- Class I & II screening assay is to detect the presence/absence of HLA antibodies. An anti single HLA class I & II assay is identify the specificity of the anti-HLA antibody present in the serum sample from the recipient.
Test Usage	Monitoring of Anti- HLA Ab
Rejection criteria	QNS, Haemolysis, Heavy lypemic, wrong collection
Performing Lab Location	Hamad Bin Khalifa Medical City- Building no.:206
Reference	American Society of Histocompatibility & Immunogenetics (ASHI)

HLA Typing Low Resolution	
Test name in Cerner	HLA Typing - Recipient
	HLA Typing - Donor
	The laboratory is performing full profile:
	HLA-A
	HLA-B
	HLA-C
	HLA-DRB1
	HLA-DRB3,4,5
	HLA-DQA1
	HLA-DQB1
	HLA-DPA1
	HLA-DPB1
Specimen requirement	Blood in EDTA tube: 4ml
Transport temperature	2-30°C
Days test performed	Routine: Sunday-Thursday
	STAT: 24/7
Turn around time	Routine: 11 working days after sample receipt
	STAT: 4 hours
Method	Sequence Specific Oligonucleotide Probes (SSOP)
Interpretation	Interpretive report will be provided.
Test Usage	No therapeutic level but because the HLA genes have more variants than any other gene system, it represents a key component in determining the compatibility between potential donors and recipients prior to transplantation
Rejection criteria	QNS, Wrong anticoagulant
Performing Lab Location	Hamad Bin Khalifa Medical City- Building no.:206
Reference	American Society of Histocompatibility & Immunogenetics (ASHI)

HLA Typing High Resolution	
Test name in Cerner	HLA Hi Res Molecular Typing- Recipient
	HLA Hi Res Molecular Typing- Donor
Specimen requirement	Blood in EDTA tube: 4ml
Transport temperature	2-30°C
Days test performed	Routine: Sunday-Thursday
Turn around time	Routine: 16 working days after sample receipt
Method	Next Generation Sequencing (NGS)
Interpretation	Interpretive report will be provided.
Test Usage	No therapeutic level but because the HLA genes have more variants than any other gene system, it represents a key component in determining the compatibility between potential donors and recipients prior to transplantation
Rejection criteria	QNS, Wrong anticoagulant
Performing Lab Location	Hamad Bin Khalifa Medical City- Building no.:206
Reference	American Society of Histocompatibility & Immunogenetics (ASHI)

Test name in Cerner	**HLA B27**
Specimen requirement	Blood in EDTA tube: 4ml
Transport temperature	2-30°C
Days test performed	Routine: Sunday-Thursday
Turn around time	Routine: 6 working days after sample receipt
Method	Sequence specific oligonucleotide probes (SSOP)
Interpretation	Interpretive report will indicate presence or absence of HLA-B27
Test usage	The presence of HLA-B27 may help to confirm the diagnosis and aid in treatment of Ankylosing Spondylitis. There is a strong association with the HLA class I molecule HLA-B27, found in 90% of patients with Ankylosing Spondylitis. This association is one of the strongest genetic associations with a common disease, although the mechanism of action remains undefined.Ankylosing Spondylitis (AS) is one of the major forms of chronic inflammatory arthritis and is the classical example of the spondyloarthropathies, a group of chronic autoimmune joint diseases.
Rejection criteria	QNS, Wrong anticoagulant
Performing Lab Location	Hamad Bin Khalifa Medical City- Building no.:206
Reference	American Society of Histocompatibility & Immunogenetics (ASHI)

Test name in Cerner	**HLA-A*29**
Specimen requirement	Blood in EDTA tube: 4ml
Transport temperature	2-30°C
Days test performed	Routine: Sunday-Thursday
Turn around time	Routine: 6 working days after sample receipt
Method	Sequence specific oligonucleotide probes (SSOP)
Interpretation	Interpretive report will indicate presence or absence of HLA-A29
Test Usage	Birdshot retinopathy is a rare form of posterior uveitis and accounts for 1-3% of uveitis cases in general. Birdshot retinopathy causes severe, progressive inflammation of both the choroid and the retina. Birdshot retinopathy is the disease with the strongest association to a HLA class I antigen, with more than 95% of patients carrying the HLA-A29 antigen. HLA-A*29:02, which is the most frequent A29 allele in the Caucasian population is also the allele most frequently associated with Birdshot retinopathy in Caucasians. The disease has however been observed in HLA*29:01 Caucasian patients. The presence of HLA-A29 alone is not sufficient for a diagnosis of Birdshot retinopathy, as there are many cases of patients who do not carry HLA-A29.
Rejection criteria	QNS, Wrong anticoagulant
Performing Lab Location	Hamad Bin Khalifa Medical City- Building no.:206
Reference	American Society of Histocompatibility & Immunogenetics (ASHI)

Test name in Cerner	**HLA-B*51**
Specimen requirement	Blood in EDTA tube: 4ml
Transport temperature	2-30°C
Days test performed	Routine: Sunday-Thursday
Turn around time	Routine: 6 workings day after sample receipt
Method	Sequence specific oligonucleotide probes (SSOP)
Interpretation	Interpretive report will indicate presence or absence of HLA-B51
Test Usage	Behcet's disease is a systemic inflammatory vasculitis, characterised by oral ulcers, genital ulcers, skin lesions and ocular lesions. It can affect the blood vessels of almost any system involving the gastrointestinal and neurological systems. The association of HLA-B51 and Behcet's disease has been reported in patients of many ethnic groups. Approximately 20% of healthy individuals of various ethnic origins are HLA-B51 positive, compared to 50 to 80% of patients with Behcet's disease. The principal hypothesis is thus the generating of an immune response by a specific microbial or environmental antigen in a genetically susceptible HLA-B51 individual, causing in the systemic manifestations of Behcet's disease.
Rejection criteria	QNS, Wrong anticoagulant
Performing Lab Location	Hamad Bin Khalifa Medical City- Building no.:206
Reference	American Society of Histocompatibility & Immunogenetics (ASHI)

Test name in Cerner	**HLA-B*1502**
Specimen requirement	Blood in EDTA tube: 4ml
Transport temperature	2-30°C
Days test performed	Routine: Sunday-Thursday
Turn around time	Routine: 6 working days after sample receipt
Method	Sequence specific oligonucleotide probes (SSOP)
Interpretation	Interpretive report will indicate presence or absence of HLA-B*1502
Test Usage	A severe or even fatal skin reaction has been associated with carbamazepine therapy. Carbamazepine hypersensitivity is significantly more common in patients with HLA-B*1502. This allele is frequent in patients with ancestry from Asia, including South Asian Indians. Patients with ancestry or from these areas should be screened for the HLA-B*1502 allele before treatment with carbamazepine. Treatment with carbamazepine is not recommended for HLA-B*1502 positive patients.
Rejection criteria	QNS, Wrong anticoagulant
Performing Lab Location	Hamad Bin Khalifa Medical City- Building no.:206
Reference	American Society of Histocompatibility & Immunogenetics (ASHI)

Test name in Cerner	**HLA-B*5701**
Specimen requirement	Blood in EDTA tube: 4ml
Transport temperature	2-30°C
Days test performed	Routine: Sunday-Thursday
Turn around time	Routine: 6 working days after sample receipt
Method	Sequence specific oligonucleotide probes (SSOP)
Interpretation	Interpretive report will indicate presence or absence of HLA-B*5701.
Test Usage	Abacavir hypersensitivity has been shown to be associated with HLA-B*5701. The FDA has issued a recommendation that all patients should be screened for the HLA-B*5701 allele before starting or restarting treatment with Abacavir (Ziagen) or Abacavir-containing medications. Treatment with an Abacavir-containing regimen is not recommended for HLA-B*5701 positive patients. Serious and sometimes fatal hypersensitivity reactions caused by Abacavir therapy are significantly more common in patients with the HLA-B*5701 allele. Abacavir hypersensitivity is a multi-organ syndrome characterized by two or more clinical signs or symptoms that can include fever, rash, gastrointestinal symptoms, respiratory symptoms and constitutional symptoms. Clinicians should discontinue Abacavir therapy permanently if the patient becomes seriously ill and hypersensitivity cannot be ruled out, regardless of HLA-B*5701 status.
Rejection criteria	QNS, Wrong anticoagulant
Performing Lab Location	Hamad Bin Khalifa Medical City- Building no.:206
Reference	American Society of Histocompatibility & Immunogenetics (ASHI)

Test name in Cerner	**HLA-DQB1*0602**
Specimen requirement	Blood in EDTA tube: 4ml
Transport temperature	2-30°C
Days test performed	Routine: Sunday-Thursday
Turn around time	Routine: 6 working days after sample receipt
Method	Sequence specific oligonucleotide probes (SSOP)
Interpretation	Interpretive report will indicate presence or absence of DRB1*1501 & HLA-DQB1*0602.
Test Usage	Narcolepsy is a chronic, debilitating sleep disorder. One of the most important associated genetic factors is the HLA-DQB1*06:02. Persons homozygous for HLA-DQB1*06:02 carry a greater risk than heterozygous persons. The detection of HLA-DQB1*06:02 typing is useful as an aid to diagnosis in patients with cataplexy.
Rejection criteria	QNS, Wrong anticoagulant
Performing Lab Location	Hamad Bin Khalifa Medical City- Building no.:206
Reference	American Society of Histocompatibility & Immunogenetics (ASHI)

Test name in Cerner	**HLA-DQ2/DQ8**
Specimen requirement	Blood in EDTA tube: 4ml
Transport temperature	2-30°C
Days test performed	Routine: Sunday-Thursday
Turn around time	Routine: 6 working days after sample receipt
Method	Sequence specific oligonucleotide probes (SSOP)
Interpretation	Interpretive report will indicate presence or absence of HLA-DQ2 and DQ8.
Test Usage	The HLA class II antigens DQ2 (DQA1*05/DQB1*02) and DQ8 (DQA1*0301/DQB1*0302) are the major risk factors predisposing individuals to Celiac Disease and account for over 35% of the genetic risk. Close to 90% of patients with Celiac Disease express the HLA-DQ2 molecules with most of the remainder expressing the HLA-DQ8 molecule.
	Celiac disease is a type of chronic inflammatory disease. It is characterized by diarrhea, abdominal distension, poor weight gain and short stature. The diseases have multifactorial etiologies that involve environmental components and genetic factors including HLA genes. Celiac disease patients exposed to a gluten-containing diet develop antibodies specific to various antigens, including gluten and the autoantigen tissue transglutaminase (TG). Celiac disease is a lifelong condition, with the only effective treatment being complete exclusion of gluten from diet.
Rejection criteria	QNS, Wrong anticoagulant
Performing Lab Location	Hamad Bin Khalifa Medical City- Building no.:206
Reference	American Society of Histocompatibility & Immunogenetics (ASHI)

Engraftment monitoring (Chimerism Testing)	
Test name in Cerner	STR Pre BMT Recipient STR Pre BMT Donor STR Chimerism Post BMT
Specimen requirement	Blood in EDTA tube: 4ml or Bone Marrow: 2ml **Note:** Buccal swab sample from recipient can be accepted if the pre-BMT blood sample is not availabe. **Buccal swab collecting procedures:** 1. Obtain two new swabs for each patient 2.Pull swab pouch & remove the swab 3. Insert the swab into patient's mouth & Rub vigorously inside each cheek & over the gum for 1 minute 4. place the swab back in the original pouch 5. Repeat the steps from 2-4 with second swab 6. Label samples with patient's identifications label 7.Send the samples at RT to (QRI-CP)
Transport temperature	2-30°C
Days test performed	Routine: Sunday-Thursday
Turn around time	Routine: 11 Days
Method	Short Tandem repeat (STR) loci Sequence
Interpretation	An interpretive report is provided, which includes whether chimerism is detected or not and, if detected, that approximate percentage of donor and recipient cells.
Test Usage	Chimerism test evaluates the success of a hematopietic stem cell transplant by measuring the relative ratio of the recipient and the donor cell population in the recipient's post-transplant specimen. Engraftment monitoring test provides important information on the progress of donor engraftment following allogeneic stem cell transplant.
Rejection criteria	QNS, Wrong anticoagulant
Performing Lab Location	Hamad Bin Khalifa Medical City- Building no.:206
Reference	American Society of Histocompatibility & Immunogenetics

Test name in Cerner	**HLA Virtual CrossMatch**
Specimen requirement	***Test ordered for Pre-transplant workup***
	1. Previous Result of Patient & Donor HLA typing
	2. Recent results of antibody identification
Transport temperature	Not applicable
Days test performed	Routine: Sunday-Thursday
Turn around time	Routine: 1 day working day
Method	Not applicable
Interpretation	An interpretive report is provided
Test Usage	Virtual crossmatching refers to the comparison of the anti-HLA antibodies of the recipient, as defined by Luminex, with the HLA of the donor. If there is a DSA present this would represent a positive virtual crossmatch. Antibodies are defined against HLA class I and II antigens.
Rejection criteria	Missing information of Dornor or Recipient
Performing Lab Location	Hamad Bin Khalifa Medical City- Building no.:206
Reference	American Society of Histocompatibility & Immunogenetics (ASHI)