

# Unit 32: Histocompatibility and Immunogenetics in Practice

<b>Level:</b>	<b>4</b>
<b>Unit type:</b>	<b>Optional (Laboratory Science)</b>
<b>Credit value:</b>	<b>30</b>
<b>Guided learning hours:</b>	<b>240</b>

---

## Unit summary

This unit will enable learners to apply the knowledge and skills they gained in *Unit 19: General Laboratory Practice* to work in a histocompatibility and immunogenetics setting. Learners will be required to demonstrate appropriate attitudes and behaviours and to integrate their learning as they develop their professional practice.

## Unit assessment requirements

There are no specific assessment requirements for this unit, however **learners completing this unit must also complete *Unit 19: General Laboratory Practice***. Please refer to the assessment strategy in *Annexe B*.

## Additional information

All procedures must be undertaken in accordance with the Standard Operating Procedures (SOPs).

AC1.4 includes:

- serum separation
- preparation of lymphocytes from peripheral blood and other tissues
- freezing and thawing of lymphocytes
- DNA extraction.

AC1.5 – core techniques include:

- solid phase HLA antibody detection and definition
- HLA typing using polymerase chain reaction (PCR)-based techniques.

AC1.6 – specialist techniques including **one** from the following:

- complement-dependent cytotoxicity (CDC)
- flow cytometry crossmatching
- post-haematopoietic stem cell transplantation (HSCT) engraftment monitoring by short tandem repeat (STR).

AC1.7 – core techniques include:

- solid phase HLA antibody detection and definition
- HLA typing using polymerase chain reaction (PCR)-based techniques.

AC1.8 – specialist techniques includes one from the following:

- complement-dependent cytotoxicity (CDC)
- flow cytometry crossmatching
- post-haematopoietic stem cell transplantation (HSCT) engraftment monitoring by short tandem repeat (STR).

Learning outcome 2: the type of equipment that learners will be assessed using (automated/semi-automated or manual equipment) will depend on their specific area of clinical immunology.

AC2.2 includes:

- requirements for sample identification
- appropriate sample/specimen for each histocompatibility and immunogenetics investigation
- use of a laboratory information system
- understanding the importance of accurate transcription of patient/donor details.

AC2.3 includes performing the skills of:

- serum separation
- preparation of lymphocytes from peripheral blood and other tissues
- freezing and thawing of lymphocytes
- DNA extraction

and knowledge with respect to the:

- importance of accurate transcription of patient/donor details
- assessment of cell viability and purity
- preparation of correct cell concentration
- quantification of DNA and adjustment of DNA concentration.

AC2.4 includes performing the core skills of:

- solid phase HLA antibody detection and definition
- HLA typing using polymerase chain reaction (PCR)-based techniques

and knowledge with respect to the:

- preparation of reagents used in each histocompatibility and immunogenetics technique
- awareness of risk assessments for each histocompatibility and immunogenetics technique
- understanding the importance of instrument calibration
- understanding the problems of PCR contamination.

AC2.5 includes performing **one** specialist skill from the following:

- complement-dependent cytotoxicity (CDC)
- flow cytometry crossmatching
- post-haematopoietic stem cell transplantation (HSCT) engraftment monitoring by short tandem repeat (STR)

and knowledge with respect to:

- sample purity
- sample contamination
- false positive or negative reactions.

AC2.6 should be assessed for one core histocompatibility and immunogenetics laboratory technique:

- solid phase HLA antibody detection and definition
- HLA typing using polymerase chain reaction (PCR)-based techniques

and include knowledge with respect to:

- assessment of internal controls
- completion of appropriate documentation.

AC2.7 should be assessed for **one** specialist histocompatibility and immunogenetics laboratory technique:

select ONE from the following:

- complement-dependent cytotoxicity (CDC)
- flow cytometry crossmatching
- post-haematopoietic stem cell transplantation (HSCT) engraftment monitoring by short tandem repeat (STR).

AC2.8 should be assessed for the **two** core histocompatibility and immunogenetics laboratory techniques:

- solid phase HLA antibody detection and definition
- HLA typing using polymerase chain reaction (PCR)-based techniques.

AC2.9 should be assessed for **one** specialist histocompatibility and immunogenetics laboratory technique from the following:

- complement-dependent cytotoxicity (CDC)
- flow cytometry crossmatching
- post haematopoietic stem cell transplantation (HSCT) engraftment monitoring by short tandem repeat (STR).

AC2.10 should be assessed for **one** core histocompatibility and immunogenetics laboratory technique:

- solid phase HLA antibody detection and definition
- HLA typing using polymerase chain reaction (PCR)-based techniques.

AC2.11 should be assessed for **one** specialist histocompatibility and immunogenetics laboratory technique from the following:

- complement-dependent cytotoxicity (CDC)
- flow cytometry crossmatching
- post haematopoietic stem cell transplantation (HSCT) engraftment monitoring by short tandem repeat (STR).

AC3.1, 3.2 and 3.3 include **three** from the following:

- patient referred from solid organ transplantation
- patient referred for haematopoietic stem cell transplantation
- patient referred for investigation of platelet refractoriness
- patient referred for immunogenetics testing for disease association or drug hypersensitivity.

## Learning outcomes and assessment criteria

To pass this unit, learners need to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet **in own area of work and in accordance with Standard Operating Procedures (SOPs)** to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the principles and practice of histocompatibility and immunogenetics (H&I) in support of transplantation and immunogenetic services	1.1	Explain the range of services provided by the H&I laboratory			
		1.2	Explain the organisation and flow of samples within the H&I laboratory			
		1.3	Explain how samples are received in the H&I laboratory and their safe handling			
		1.4	Explain the principles of sample preparation in the H&I laboratory			
		1.5	Explain the principles of core techniques undertaken in the H&I laboratory			
		1.6	Explain the principles of a specialist technique undertaken in the H&I laboratory			
		1.7	Explain the common indications for the use of core H&I techniques			
		1.8	Explain the common indications for the use of a specialist H&I technique			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.9	Explain the role of audit and laboratory accreditation			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Be able to perform routine analysis on equipment in histocompatibility and immunogenetics setting (H&I) to specified quality standards	2.1	Explain the principles and practice of quality control, external quality assessment and quality management in H&I			
		2.2	Carry out sample reception procedures for samples received in the H&I laboratory			
		2.3	Carry out the preparation of samples for use in H&I laboratory techniques			
		2.4	Carry out core H&I laboratory techniques			
		2.5	Carry out a specialist H&I laboratory technique			
		2.6	Explain the use of internal test controls for a core H&I laboratory technique			
		2.7	Explain the use of internal test controls for a specialist H&I laboratory technique			
		2.8	Resolve common problems in routine H&I laboratory techniques			
		2.9	Resolve common problems with procedures for a specialist H&I laboratory technique			
		2.10	Analyse the results of core H&I laboratory techniques			
		2.11	Analyse the results of a specialist H&I laboratory technique			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Understand the impact of Histocompatibility and Immunogenetics (H&I) on patients and the work of the multidisciplinary team	3.1	Describe patient pathways where H&I services contribute to patient management and/or long-term monitoring			
		3.2	Explain how the results of H&I tests contribute to H&I patient pathways			
		3.3	Explain the common symptoms experienced by a person in H&I patient pathways			
		3.4	Describe how multidisciplinary teams work in H&I settings as part of the delivery of a high-quality, safe, patient-centred service			
		3.5	Discuss how personalised medicine is/could be used in the diagnosis and recommended treatment of H&I conditions appropriate to own area of work			

Learner name: \_\_\_\_\_

Date: \_\_\_\_\_

Learner signature: \_\_\_\_\_

Date: \_\_\_\_\_

Assessor signature: \_\_\_\_\_

Date: \_\_\_\_\_

Internal verifier signature: \_\_\_\_\_

Date: \_\_\_\_\_

*(if sampled)*