

**COMPETENCES REQUIRED FOR APPLICANTS
TO ATTAIN STATE REGISTRATION AS CLINICAL SCIENTISTS**

SPECIALTY :

**HISTOCOMPATIBILITY &
IMMUNOGENETICS**



This document comprises a discipline-specific version of the general competence document and provides additional guidance as to how to complete the general document, Appendix 1 of the Guidelines, that you must submit with your application.

Remember that the aim of the process is for the candidate to satisfy the assessor that he or she has the appropriate basic qualifications and length of experience for issue of the Certificate of Attainment, and that the training programme/period of supervised practice has enabled the candidate to achieve the basic level of competence required for registration as a clinical scientist.

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GENERIC COMPETENCES		SPECIFIC COMPETENCES
HPC standards of Proficiency Code – Clinical Scientist	1-SCIENTIFIC	Be able to demonstrate the rigorous application of scientific methods in his/her experience to date
3a.1	<ul style="list-style-type: none"> understanding the science that underpins the specialty (modality) and the broader aspects of medicine and clinical practice 	<ul style="list-style-type: none"> must understand the principles of the techniques and methods employed in histocompatibility and immunogenetics must be able to advise on appropriate choice of investigation and sample preparation must be familiar with the evidence for, and limitations of, common procedures used in the diagnosis and management of patients must have a basic knowledge of related disciplines in order to be able to integrate relevant diagnostic results into an interpretation must be familiar with information on developments and needs in histocompatibility and immunogenetics
3a.1	<ul style="list-style-type: none"> demonstrating a strong base of knowledge appropriate to the specialty and to the investigations and therapeutic options available 	
2b.1	<ul style="list-style-type: none"> experience of searching for knowledge, critical appraisal of information and integration into the knowledge base 	
2b.4	<ul style="list-style-type: none"> ability to apply knowledge to problems associated with the routine provision, and development, of the service 	
2a.1	<ul style="list-style-type: none"> ability to identify the clinical decision which the test/intervention will inform 	
2a.3, 2c.1	<ul style="list-style-type: none"> ability to make judgements on the effectiveness of procedures 	
2a.2	<ul style="list-style-type: none"> application of the knowledge base to the specialty (modality) and to the range of procedures/investigations available 	
<i>Achievement of:</i>	<ul style="list-style-type: none"> an understanding of the processes and methods employed in the practice of histocompatibility and immunogenetics a critical understanding of the application of investigative protocols and diagnostic tests in the assessment of the immunogenetics status of the patient in application to transplantation and disease associations a critical understanding of the integration and interpretation of histocompatibility and immunogenetics parameters with other diagnostic parameters (eg heamatological or chemical) in the overall clinical assessment of the patient a critical understanding of scientific method and the tools required to successfully evaluate, develop and/or modify both current and emerging technologies as routine diagnostic tools in histocompatibility and immunogenetics developed research skills and expertise sufficient to support supervised and collaborative research initiatives in histocompatibility and immunogenetics 	
<i>Achieved through:</i>	<ul style="list-style-type: none"> a structured taught element (eg approved MSc course, lecture programme) and completion of the BSHI Cert. participation in local research meetings and evidence of supervised and collaborative research initiatives the presentation of outcomes of method evaluations, protocol development and clinical research initiatives of a standard suitable for publication self-endeavour (eg critical literature search and evaluation) under the tutelage of an appropriate accredited specialist in histocompatibility and immunogenetics 	
<i>Assessed by:</i>	<ul style="list-style-type: none"> the local BSHI training manager (usually a registered accredited specialist) and a BSHI nominated national assessor 	

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GENERIC COMPETENCES		SPECIFIC COMPETENCES
HPC standards of Proficiency Code – Clinical Scientist	2-CLINICAL	Be able to demonstrate the following relevant to the contribution of his/her specialty to patient care:
2a.4, 2b.2, 2c.1	<ul style="list-style-type: none"> ability to provide interpretation of data and a diagnostic (therapeutic) opinion, including any further action to be taken by the individual directly responsible for the care of the patient 	<ul style="list-style-type: none"> must understand the underlying mechanisms of the pathology of disease must be able to advise on choice of investigation must be able to interpret data and recommend further course of action within the wider context of the clinical situation must be able to relate data from other disciplines to the overall clinical situation must be aware of the strengths and weaknesses of the evidence base for commonly used procedures and investigations must be able to contribute to monitoring of patients as appropriate within the field of histocompatibility and immunogenetics must have sufficient ‘clinical knowledge’ to be able to communicate effectively with clinical and other professional colleagues
2b.3, 3a.1	<ul style="list-style-type: none"> understanding of the wider clinical situation relevant to the patients presenting to his/her specialty 	
2b.3	<ul style="list-style-type: none"> ability to develop/devise an investigation strategy taking into account the complete clinical picture 	
1a.5, 3a.2	<ul style="list-style-type: none"> understanding of the clinical applications of his/her specialty and the consequences of decisions made upon his/her actions/advice 	
3a.2	<ul style="list-style-type: none"> awareness of the evidence base that underpins the use of the procedures employed by the service 	
<i>Achievement of:</i>	<ul style="list-style-type: none"> an understanding of general immunology and its application to clinical transplantation and HLA disease associations an understanding of human histocompatibility and immunogenetics and the processes of transplantation an understanding of the effectiveness of therapies and drug interactions on metabolic processes and of the mechanisms by which they modulate disease processes in clinical medicine an understanding of the effects of pre-and post-analytical variables required for the appropriate clinical interpretation and assessment of diagnostic procedures in histocompatibility and immunogenetics 	
<i>Achieved through:</i>	<ul style="list-style-type: none"> a structured taught element (eg approved MSc course, lecture programme) and completion of the BSHI Cert. participation in local seminars, clinical meetings attendance at grand rounds and ward rounds, clinical audit and clinical report evaluation and signing self-endeavour (eg literature awareness) under the tutelage of an appropriate accredited specialist in histocompatibility and immunogenetics 	
<i>Assessed by:</i>	<ul style="list-style-type: none"> the local BSHI training manager (usually a registered accredited specialist) and a BSHI nominated national assessor 	

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GENERIC COMPETENCES		SPECIFIC COMPETENCES
HPC Standards of Proficiency Code – Clinical Scientist	3-TECHNICAL	Be able to demonstrate the following, relevant to the modality or area of specialisation in which he/she wishes to be recognised
3a.2	<ul style="list-style-type: none"> understanding of the principles associated with a range of techniques employed in the modality 	<ul style="list-style-type: none"> be able to demonstrate an understanding and practical experience of principles and common techniques used in histocompatibility and immunogenetics must be able to perform analytical procedures to the required technical standard must understand selection of the appropriate diagnostic tests for each patient must be able to use knowledge of basic analytic principles to resolve problems associated with methods due to sample or reagent problems or limitations must have an understanding of the principles of quality management, their practical application to monitoring tests used in histocompatibility and immunogenetics and their use to ensure that procedures remain in control must understand underlying principles and practice with respect to health and safety aspects of work
2b.4	<ul style="list-style-type: none"> knowledge of the standards of practice expected from these techniques 	
2b.4	<ul style="list-style-type: none"> experience of performing these techniques 	
2b.4	<ul style="list-style-type: none"> the ability to solve problems that might arise during the routine application of these techniques (troubleshooting) 	
2c.1, 2c.2	<ul style="list-style-type: none"> understanding of the principles of quality control and quality assurance 	
2c.1, 2c.2	<ul style="list-style-type: none"> experience of the use of quality control and quality assurance techniques including restorative action when performance deteriorates 	
<i>Achievement of:</i>	<ul style="list-style-type: none"> an ability to perform common technical procedures detailed in the BSHI training log book in histocompatibility and immunogenetics to the required standards of an operational protocol as defined for the purposes of laboratory accreditation under CPA (UK) Limited or its equivalent a critical ability to review the results and determine the significance of quality control and assessment information for analytical procedures in histocompatibility and immunogenetics a detailed understanding of the analytical principles in histocompatibility and immunogenetics to facilitate method troubleshooting and the development of adequate procedures of preventive maintenance an understanding of the hazards (environmental, biological, chemical, radioscopic) associated with the practice of histocompatibility and immunogenetics and the appropriate controlling legislation (eg COSHH) and appropriate procedures for risk assessment (RIDOR) 	
<i>Achieved through:</i>	<ul style="list-style-type: none"> a structured taught element (eg approved MSc course, lecture programme) and participation in appropriate BSHI Cert. practical instruction at bench level, participation in locally organised health and safety course self-endeavour (eg literature awareness) under the tutelage of an appropriate accredited specialist in histocompatibility and immunogenetics 	
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HPC Standards of Proficiency Code – Clinical Scientist	4-RESEARCH AND DEVELOPMENT	Be able to demonstrate a training in research which should include:
2b.1	<ul style="list-style-type: none"> ability to read and critically appraise the literature 	<ul style="list-style-type: none"> must be able to undertake an assessment of the literature on a selected subject and provide a written critique of this must be able to design a simple research project with a defined aim and a structured design that addresses this aim must have the practical knowledge and skills to undertake a research project and to provide a critical written report of the project must have a knowledge of appropriate available statistical methods must be able to present the outcome of a research project orally to an audience must be able to provide a critical appraisal of a research study (publication, report or oral presentation) submission of a satisfactory research project report or dissertation as part of the BSHI Cert.
2b.1	<ul style="list-style-type: none"> ability to develop the aims and objectives associated with a project 	
2b.1	<ul style="list-style-type: none"> ability to develop an experimental protocol to meet the aims and objectives in a way that provides reliable and robust data (i.e. free of bias) 	
2b.1	<ul style="list-style-type: none"> ability to perform the required experimental work ability to produce and present the results (including statistical analysis) 	
2b.1	<ul style="list-style-type: none"> ability to critically appraise results in the light of existing knowledge and the hypothesis developed and to formulate further research questions 	
1b.4, 2b.1	<ul style="list-style-type: none"> ability to present data and provide a critical appraisal to an audience of peers – both spoken and written 	
<i>Achievement of:</i>	<ul style="list-style-type: none"> an understanding of the processes and methods employed in the practice of histocompatibility and immunogenetics a critical understanding of the application of investigative protocols and diagnostic tests in the assessment of the immunogenetics status of the patient in application to transplantation and disease associations a critical understanding of the integration and interpretation of histocompatibility and immunogenetics parameters with other diagnostic parameters (eg haematological or chemical) in the overall clinical assessment of the patient a critical understanding of scientific method and the tools required to successfully evaluate, develop and/or modify both current and emerging technologies as routine diagnostic tools in histocompatibility and immunogenetics developed research skills and expertise sufficient to support supervised and collaborative research initiatives in histocompatibility and immunogenetics 	
<i>Achieved through:</i>	<ul style="list-style-type: none"> a structured taught element (eg approved MSc course, lecture programme) and completion of the BSHI Cert. participation in local research meetings and evidence of supervised and collaborative research initiatives the presentation of outcomes of method evaluations, protocol development and clinical research initiative of a standard suitable for publication self-endeavour (eg critical literature search and evaluation) under the tutelage of an appropriate accredited specialist in histocompatibility and immunogenetics 	
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HPC Standards of Proficiency Code – Clinical Scientist	5-COMMUNICATION	Be able to communicate in both the written and spoken media to colleagues, peers and patients:
1a.6	<ul style="list-style-type: none"> ability to assess a situation and act accordingly when representing the specialty 	<ul style="list-style-type: none"> must be able to communicate effectively with professional colleagues within the discipline and in the wider scientific and clinical community must be able to present findings effectively in a variety of written and spoken media must be able to educate and train professional colleagues within and without the department must understand the requirements and responsibilities associated with the supervision of junior colleagues must be able to use modern communication devices must understand basic management techniques and be aware of topical management issues satisfactory completion of the three ‘seen essays’, an oral presentation and satisfactory performance in the mid-term assessments and final <i>viva voce</i> examinations as prescribed for the satisfactory completion of the BSHI Cert.
1a.6	<ul style="list-style-type: none"> ability to respond to enquiries regarding the service provided when dealing with clinical colleagues 	
1a.2, 1b.1, 1b.3	<ul style="list-style-type: none"> ability to communicate with patients, carers and relatives, the public and other healthcare professionals as appropriate 	
1b.3, 1b.4	<ul style="list-style-type: none"> ability to communicate the outcome of problem solving and research and development activities 	
2b.1	<ul style="list-style-type: none"> evidence of presentation of scientific material at meetings and in the literature 	
<i>Achievement of:</i>	<ul style="list-style-type: none"> an ability to communicate clearly and with confidence to clinical and other professional colleagues both within and outside the discipline of histocompatibility and immunogenetics in both a formal and informal setting an ability to educate and train others both within and outside the clinical immunopathology department and to supervise the work of trainees and other staff as appropriate to the task an understanding of all aspects of information technology pertinent to the service provision and support of a histocompatibility and immunogenetics 	
<i>Achieved through:</i>	<ul style="list-style-type: none"> a structured taught element (eg approved MSc course, lecture programme) and participation in BSHI training programme presentations in both oral and written form within and outside the department through the medium of seminars, tutorials, case presentations, posters and appropriate peer-reviewed publication participation in local seminars, clinical meetings, attendance at grand rounds clinical audit and clinical report evaluation and signing self-endeavour (eg competence in word processing and other PC based programmes) under the tutelage of an appropriate accredited specialist in histocompatibility and immunogenetics 	
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HPC Standards of Proficiency Code - Clinical Scientist	6-PROBLEM SOLVING	Be able to deal with the unexpected and thus be able:
2a.2	<ul style="list-style-type: none"> to assess a situation 	<ul style="list-style-type: none"> must be aware of the operation of the service and its detail in order to recognise aberrant output must be capable of seeking and establishing relationships between independent pieces of information must be capable of utilising the knowledge base pertinent to the discipline must be able to integrate information from different sources in relation to decision making and results interpretation must be able to recognise the unusual and act appropriately
1a.6, 2b.1	<ul style="list-style-type: none"> determine the nature and severity of the problem 	
1a.6, 2b.1	<ul style="list-style-type: none"> call upon the required knowledge and experience to deal with the problem 	
1a.6, 2b.1	<ul style="list-style-type: none"> initiate resolution of the problem 	
1a.6	<ul style="list-style-type: none"> demonstrate personal initiative 	
<i>Achievement of:</i>	<ul style="list-style-type: none"> an understanding of the significance of, and interrelationships between, individual items of laboratory data an awareness of the extent of available knowledge in clinical histocompatibility & immunogenetics and an ability to employ appropriate information tools to search for, consolidate and critically examine information 	
<i>Achieved through:</i>	<ul style="list-style-type: none"> an approved postgraduate degree course and/or short courses and seminar programme self endeavour through literature surveys and tutorials with nominated and local supervisors participation in local clinical and laboratory seminars, clinical audit and case presentations 	
<i>Assessed by:</i>	<ul style="list-style-type: none"> the nominated supervisor (must be band 8 or above) or locally approved supervisors and also by BSHI Training Committee 	

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	GENERIC COMPETENCES	SPECIFIC COMPETENCES
HPC Standards of Proficiency Code – Clinical Scientist	7-PROFESSIONAL ACCOUNTABILITY	Be able to demonstrate an understanding of management principles and techniques, including the following:
1a.1	<ul style="list-style-type: none"> Understanding of the legal and ethical boundaries of the modality, and the ethical aspects of scientific research. 	<ul style="list-style-type: none"> must be able to recognise legal and ethical boundaries of the modality and practice and conduct research within these boundaries must be able to recognise the limits of his/her knowledge and skills must understand the principles of clinical governance and be able to audit, reflect on and review practice must understand the need for and basic requirements of accreditation schemes appropriate to the modality must understand the importance of effective communication with colleagues and be able to function as an effective member of a multidisciplinary team must understand the principles of appraisal and be able to supervise staff in his/her area of responsibility must participate in an appropriate CPD scheme (after completion of training) must have acquired a basic knowledge of health and safety requirements appropriate to the discipline must have acquired a basic understanding of the structure and organization of the department, and relevant financial aspects.
1a.6	<ul style="list-style-type: none"> Ability to recognise the limits of personal practice and when to seek advice. 	
1a.7	<ul style="list-style-type: none"> Ability to manage personal workload and prioritize tasks appropriately. 	
1a.3, 1a.4, 2b.5, 2c.2	<ul style="list-style-type: none"> Understanding of the principles of clinical governance including clinical audit, accreditation requirements relevant to the modality. The importance of confidentiality, informed consent and data security 	
1b.2	<ul style="list-style-type: none"> Ability to contribute effectively to work undertaken as part of a multi-disciplinary team 	
1b.4	<ul style="list-style-type: none"> Ability to supervise others as appropriate to area of practice. Understanding of the role of appraisal in staff management and development. 	
1a.8, 2c.2	<ul style="list-style-type: none"> Understanding of the need for career-long self-directed learning and the importance of continuing professional development. 	
1a.5, 1a.8, 2b.4, 3a.3	<ul style="list-style-type: none"> Understanding of the need for, and ability to establish and maintain, a safe practice environment. 	
	<ul style="list-style-type: none"> Understanding of the structure and organization of the department and how it fits into the local clinical setting, General understanding of the way the modality is structured and practised in other locations within the UK. Basic understanding of the importance of financial accountability, budgetary control and resource management. 	

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<i>Achievement of:</i>	<ul style="list-style-type: none"> • an understanding of the management principles and tools used in the service • the ability to act as a professional and work effectively as part of a team • understanding of the importance and principles of accreditation, audit, confidentiality, data security and safe working practice
<i>Achieved through:</i>	<ul style="list-style-type: none"> • a structured taught element (eg approved MSc course or approved lecture programme), participation in appropriate training programmes and local courses on general, personnel and financial management, health and safety, audit, etc • participation in local seminars and meetings, attendance at clinical audit meetings and clinical governance committees. • attendance at departmental management meetings • involvement, under supervision, in management within the laboratory • mentoring by an experienced practitioner
<i>Assessed by:</i>	<ul style="list-style-type: none"> • the nominated local supervisor and appropriate professional body external advisor/tutors