**NHS Greater Glasgow and Clyde**

**NHS GREATER GLASGOW AND CLYDE**

**JOB DESCRIPTION**

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| 1. **JOB IDENTIFICATION**

**Job Title:** Specialist Biomedical Scientist – Healthcare Science**Responsible to:** Technical Services Manager, Microbiology Reference Laboratories**Department:** Scottish Microbiology Reference Laboratories, Glasgow. Glasgow Royal Infirmary, Greater Glasgow and Clyde**Operating Division of NHS GG&C:** Acute – Diagnostics Directorate. |
| 1. **JOB PURPOSE**

The post holder will be a key member of the team responsible for developing and delivering a comprehensive range of highly specialised phenotypic and molecular techniques for use with the Scottish Microbiology Reference laboratory, Glasgow. These methods demand highly skilled performance. The post holder will also contribute to the quality control of the laboratories phenotypic and molecular methods and will also carry out service development of methods as required. The post holder is responsible for carrying out the duties in all sections of the Reference Laboratory. They will be required to provide an efficient reference service that is necessary for effective patient care and to supervise, instruct, train and act as a mentor to less experienced biomedical scientists and support staff. They will also be required to offer specialist advice and guidance on the services available to users and to provide information about the analyses that are performed. |
| **3. ROLE OF DEPARTMENT**The Scottish Microbiology Reference Laboratories, Glasgow (SMiRL, Glasgow) is provided by NHS Greater Glasgow and Clyde, and is located within Glasgow Royal Infirmary. The SMiRL, Glasgow receive samples from every diagnostic microbiology laboratory within each healthboard in Scotland, and also interacts with a variety of stakeholders including universities, veterinary institutes, and the water and food industries.The laboratory provides specialist and reference testing for a range of pathogens and the diseases they cause to assist patient management, and also offers an antibiotic resistance service. Pathogens include staphylococci, enterococci, streptococci, Clostridium difficile, Salmonella, Shigella, legionella, haemophilus species, pneumococci, meningococci, as well as enteric, blood and ecto-parasites. In addition, valuable data is generated for surveillance purposes and during outbreak investigations to assist Public Health. The laboratory has strong collaborative links nationally and internationally making major contributions towards epidemiological intelligence, and to support important research and development projects with a focus on public health. Expertise is available to investigate novel laboratory testing methods, and improve testing algorithms that impact on the way patients are managed across Scotland. Sequenced based testing is being rolled out on agreed pathogens to greatly improve the information provided to our partner organisations in Public Health.  There are five main sections at SMiRL, each offering a specialist service focusing on different organism.Scottish Haemophilus, Legionella, Meningococcal, and Pneumococcal Reference Laboratory (SHLMPRL) undertakes a key role in conjunction with PHS to provide typing and surveillance of respiratory and vaccine preventable bacterial pathogens (Legionella, Neisseria meningitidis, Streptococcus pneumoniae, Haemophilus influenzae, Bordetella pertussis and Streptococcus pyogenes)Scottish MRSA Reference Laboratory (SMRSARL) performs a key role in the surveillance and detection of potential outbreaks of Staphylococcus aureus (S. aureus), coagulase negative staphylococci (CNS) and vancomycin resistant enterococci (VRE) from clinical infectionScottish Parasite Diagnostic and Reference Laboratory (SPDRL), provides a national advisory ,specialist testing and outbreak service to support the diagnosis of parasitic diseases and patient management,. These include investigations for blood parasites, enteric parasites, ocular parasites and ectoparasitesScottish Salmonella, Shigella and Clostridium difficile Reference Laboratory (SSCDRL) undertakes a key role in the national surveillance of the gastrointestinal bacterial pathogens, Salmonella and Shigella from human, veterinary, food and environmental sources. The laboratory section also acts as the national reference centre for Scotland for the healthcare associated infection, Clostridioides difficileSatellite Antimicrobial Resistance Service (AMR) service investigates resistance in healthcare associated bacterial pathogens, including confirmatory and reference testing for carbapenem resistant organisms and isolates with exceptional organism/antimicrobial resistance profiles |
| 1. **ORGANISATIONAL POSITION**

**GG&C MICROBIOLOGY REFERENCE LABORATORIES STAFF STRUCTURE** Microbiology/Virology Head of ServiceMicrobiology Reference Laboratories Clinical DirectorTechnical Services ManagerOperational Manager, Microbiology Reference LaboratoriesIntegrated Systems ManagerTechnical ManagerIT Manager Specialist BMS (This post) Trainee BMS Clinical Support Worker (Higher Level) 1. **SCOPE AND RANGE**

The Scottish Reference Laboratories, Glasgow (SMiRL) falls under the auspices of National Services Scotland (NSS). Public Health Scotland (PHS) along with National Services (NSD) have a statutory role in commissioning the Reference laboratories on behalf of the Scottish Government. They are also responsible for monitoring the reference work, assessing public health impact and review of the reference laboratory function is undertaken by PHS/NSD with advice from a multidisciplinary group of clinicians and managers (Reference Laboratory Working Group).The laboratories are hosted by NHS Greater Glasgow & Clyde and funded by National Services Division of NSS.The Department is divided into sections, managed by Technical Managers. Each section deals with a different aspect of the reference laboratory service and requires additional specialist knowledge and skills that relate to that section e.g. work performed in the containment level 3 laboratory. Staff rotate through the sections whilst maintaining an up to date knowledge of microbiology and current working practices within the reference laboratory. The laboratory provides a limited weekend working service where the post holder would be expected to carry out, without supervision or the immediate on site availability of medical or technical advice, any of the tasks for which they are trained. The post holder would be expected to participate in the provision of this service.The post holder will be expected to work collaboratively with the all members of the department, and in some instances with other Microbiology staff across GG&C.Hours of work : * Agenda for Change terms and conditions apply and the post holder will work 37.5 hours at the times necessary for the provision of the service. The normal starting time is 08.45 and finishing time at 17.00.
* The post holder is expected to participate in the Department’s Saturday / Sunday rota for which additional payments may apply. The post holder is also expected to provide service cover on Public Holidays.
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| 1. **MAIN DUTIES/RESPONSIBILITIES**

 The Specialist Biomedical Scientist will be expected to apply professional judgement and developed specialist knowledge and skills, and to work, often under pressure, as part of a team. The post holder will also be expected to operate in the absence of supervisory or other staff.  The duties of the post holder are:* To perform tests and procedures (manual and semi automated) that will assist in the confirmation, diagnosis, prevention and cure of infectious diseases
* To assess the suitability and appropriateness of samples received and to prepare and process them having decided which manual and semi automated techniques to employ.
1. To use interpretive skills and experience to determine the pathogenic nature and clinical significance of results of laboratory tests, for example, by:
	* Preparing, examining and reporting on microscopic preparations of specimens
	* Examining bacterial culture plates and differentiating potentially pathogenic bacteria from harmless bacteria.
	* Deciding on and performing tests or procedures that are necessary to identify pathogenic microbes
	* Performing antibiotic sensitivity tests and reporting appropriate drug therapy
	* Performing serological investigations
	* Performing genotyping tests including PCR, Pulsed Field Gel Electrophoresis (PFGE), Spa, and MLST sequencing.
* To use experience and individual judgement to technically interpret results which may be incomplete, complex or conflicting and to take appropriate actions i.e.
	+ authorisation of results
	+ ordering relevant follow up laboratory procedures
	+ adding technical and clinically relevant comments
	+ informing the requestor/ medical staff of clinically significant results
* To be able to work independently to prioritise work and perform all of the tasks required in receiving and processing specimens and in reporting complex microbiological tests with minimum input from other members of staff.

Prolonged concentration and attention to detail are essential to the above processes and form the greater part of the working day.* To take responsibility for finishing, checking and validating colleagues’ work as necessary
* To communicate patient results by telephone and to provide technical advice to clinicians in other hospitals, and other service users.
* To ensure satisfactory completion and validation of analyses (within agreed turnaround times) and to ensure data integrity when entering test results, compiled by the post holder and others, into the laboratory information system and prior to final authorisation by medical staff .
* To ensure that records are kept up to date and to comply with local and national policies for the safe, secure and confidential processing and storage of patient and other laboratory information.
* To use the Laboratory Information System (LIMS) according to the authorised protocols.
* To check the validity and reliability of analytical processes, maintaining and monitoring satisfactory performance by internal quality control and external quality assessment and to take corrective action as necessary.
* To participate in all aspects of quality assessment and audit and to report any instance or event that may cause a service delivery failure.
* To complete documentation for audit purposes or consumable/reagent monitoring and to inform appropriate staff when goods are required.
* To plan and organise their work and that of trainee and support staff as necessary, within the demands of the team.
* To supervise, instruct and train less experienced biomedical scientists, laboratory assistants, students and medical staff when required to do so and to be involved in the teaching duties of the department.
* To offer advice and guidance on the services available and analyses performed, and, when required, to refer enquiries for clinical advice to laboratory medical staff.
* To continually improve service provision by contributing to the development of standard operating procedures (including proposing amendments) or undertaking developmental work, research projects or clinical trial work.
* To comply with health and safety and security regulations of the department and ensure that safety procedures and safe systems of work are practiced.
* To comply with good work practices required for the standards of Clinical Pathology Accreditation /UKAS (UK).
* To comply with Department and Division policies and procedures and endeavour to maintain a spirit of goodwill and harmony towards all other members of staff.
* To participate in an annual joint review that includes consideration of: laboratory objectives and plans, job content and training and development needs and objectives.

In addition, the post holder carries out general duties in order to discharge the legal responsibilities of a Registered Biomedical Scientist, including the maintenance of patient confidentiality and giving evidence in court. |
| **7a. EQUIPMENT & MACHINERY*** The post holder will utilise essential laboratory apparatus such as centrifuges, microscopes, refrigerators, freezers, incubators, anaerobic cabinet, water baths, spectrophotometers, exhaust protective cabinets etc.
* They will also operate specialist, automated analytical systems such as Merlin Micronaut for AST results. They will operate thermocyclers, Pulsed Field Gel Electrophoresis equipment, real-time PCR equipment for DNA analysis and the laboratory sequencer for sequence-based typing including spa, and MLST typing.
* The post holder will use and maintain expensive (some individually valued in excess of £140,000) and highly complex equipment in a safe and proper manner for their own use and for other staff to operate. They will be able to recognise when analysers and equipment are malfunctioning by monitoring system controls and keeping logs of control data. They will trace and correct faults in analysers and instruments and maintain them for good operation, keeping equipment in optimal condition for use and making fine adjustments as necessary. In the absence of more senior staff, they will co-ordinate with engineers and assist with repairs to ensure continuous operation of essential equipment.

**7b. SYSTEMS*** Using the laboratory computer system software, the post holder will generate reports of tests carried out on patients’ samples. They will know how to correct and amend reports prior to release to the ward, GP and other service users. They will utilise additional computer software packages such as Q-pulse/Word for accessing department SOPs, intranet access to Division policies and data including email.
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| 1. **DECISIONS AND JUDGEMENTS**

 The post holder will be assigned to a workstation within a sub-section of the reference laboratory and will manage their own workload effectively, following established laboratory policies and procedures and related guidelines. They will carry out their work independently and will be responsible for carrying out their duties, interpreting results and deciding which further investigations are required.They will consult with a line manager only on occasions when the post holder cannot resolve the problem themselves. They must know and decide when, it is appropriate to seek advice and when to refer clinically significant results to medical staff.The post holder specialising in microbiology will call upon their extensive diagnostic and interpretative skills to execute the everyday tasks of the job properly, making critical evaluations as necessary. i.e. the post holder will: * Assess specimens for suitability for testing
* Determine if specimens require special handling procedures, e.g. Those that pose a greater risk of infection to laboratory staff
* Decide if the specimen merits urgent testing
* Decide if the specimen needs to be referred to another department, discipline or laboratory
* Decide which tests are appropriate, considering the type of specimen received and the investigation requested
* Use their knowledge, skills and experience to perform and interpret complex microbiological analyses e.g. interpretation of bacterial cultures, differentiating potential pathogens from harmless bacteria that can be present in patient specimens; analysis of antibiotic sensitivity patterns, making critical measurements to determine which antibiotics are appropriate to treat the infection
* Examine microscopic slides, deciding quickly and competently which organisms are likely to be pathogenic and reporting this information verbally to the clinician
* Make informed judgements about which bacterial isolates and sensitivity test results to report
* Order further tests to confirm bacterial identifications and provide supporting evidence in cases where results are ambiguous, inconsistent or incomplete
* Assess Quality Control (QC) results and know the remedial action to take when QC failures invalidate test results
* Compile and interpret complex reports and validate the results
* Determine if appropriate technical or clinically significant comments need to be appended to the report
* Make judgements relating to technical failures of equipment and failures in test procedures producing anomalous test results
* Identify Health and Safety breaches and know how to deal with them
* Recognise laboratory information systems data anomalies or failures and know when to alert the System Manager
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| 1. **COMMUNICATIONS AND RELATIONSHIPS**
* Contributes effectively to work undertaken as part of a team and to work in partnership with colleagues, other professionals, support staff and users to ensure provision of an effective service.
* Provides explanation of laboratory information varying from routine to highly complex, to senior laboratory staff, clinicians, control of infection staff and other service users, and may recommend further tests/actions required, advising on suitability of tests and outcomes in line with departmental policy. There may be barriers to understanding due to the microbiological terminology used in the information that is conveyed.
* Receives information from senior laboratory staff, clinicians and other users varying from routine to highly complex requiring interpretation, analysis and further action.
* Report critical or urgent requests/results directly to clinical and nursing staff in the promotion of patient care
* Deals with enquiries from all sources, providing explanations and comments and recommending further actions, when required directs enquiries to senior laboratory staff / consultants.
* Assists in the training of Clinical Support Workers, Trainee Biomedical Scientists Clinical Scientists and Medical Staff in various aspects of routine and specialist microbiology and may also train nurses, clinicians and other Biomedical Scientists.
* Participates in departmental meetings and contributes to effective communication within the department
* Communicates non-conformities or malfunctions to senior staff / Technical Manager.
* Communicates with other staff groups including medical, nursing, clerical, porters, estates staff and drivers. On occasion, the post holder will be required to communicate effectively with outside agencies e.g.
	+ To arrange urgent transportation of specimens to other laboratories.
	+ To discuss the urgent supply of materials with laboratory suppliers.

**KEY RELATIONSHIPS****Internal*** Support Staff – Clinical Support Workers and Admin Staff
* BMS Staff
* Medical Staff

**External*** Facilities and estates staff
* Patients
* Commercial Reps and Service Engineers
* Service Users
* BMS staff in other laboratory disciplines across GG&C.
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|  **10. PHYSICAL, MENTAL, EMOTIONAL & ENVIRONMENTAL DEMANDS OF THE JOB** **Physical Skills*** Advanced hand to eye co-ordination required, manipulation of samples on slides (microscopy). Highly developed co-ordination skills with good dexterity.
* Use of specialist equipment requiring fine adjustment, e.g. microscope, maintenance and adjustment of analysers and other equipment.
* Ability to undertake detailed work with high level of precision, speed and accuracy e.g. dealing with extremely small volumes of liquid, selecting bacterial colonies from mixed cultures, handling and processing specimens (some of which are not recoverable) within a limited time period.
* Keyboard skills

 **Physical Demands*** Sitting daily at a workstation for long periods of time while examining microscopic slides and cultures, analysing test results and compiling reports.
* May require multi tasking and prioritisation of work often under stressful conditions and during antisocial hours.
* Some manual handling is involved, moderate physical effort over several short periods e.g. small pieces of equipment less than 5kg, removal of cultures for disposal (8-14Kg).
* Wear protective gowns and gloves for long periods of time while sitting at microbiology safety cabinets. Under extreme circumstances during hazardous conditions use chemical and biological respiratory masks.

 **Mental Demands*** Frequent (daily) periods of prolonged concentration required during the entry, screening and in depth analysis of large quantities of scientific and numerical data e.g. while examining microscopic slides and cultures, analysing test results and compiling reports. Often interrupted by technical enquiries from staff or telephone calls.
* Pressure of service delivery and maintenance of standards.
* Involved in maintaining a service in the presence of possible adverse events including equipment failure and staff shortages.

 Emotional Demands* Deals with incidents/errors and complaints from staff, patients and service users.

 **Working Conditions** * Frequent (daily) unavoidable exposure to open samples of blood and other biological body fluids of known or potentially infective material.
* Manual manipulation of highly unpleasant specimens e.g. sampling from faeces, sputum and urine samples.
* Frequent (daily) exposure to unpleasant smells such as faeces samples, anaerobic bacteria and smells generated from sterilisation of all laboratory waste prior to disposal.
* Controlled exposure to reagents, chemicals, solvents, during test analysis; many of which are potentially hazardous or carcinogenic.
* May occasionally be exposed to spills of hazardous chemicals; spills, leakage and breakage of specimen containers and culture bottles that may contain highly infectious material. The post holder will be required to deal with any spillage/breakage immediately, ensuring appropriate measures and containment as per SOP
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|  **11. MOST CHALLENGING/DIFFICULT PARTS OF THE JOB*** The post holder is required to interpret results on numerous specimens in a limited period of time. Some of these interpretations can be very complex and the available information is often conflicting or incomplete. A comprehensive knowledge of microbiology is essential.
* The ability to carry out and prioritise multiple tasks, with heavy and sometimes conflicting demands, is essential. This is often done under stressful conditions and during antisocial hours.
* Accommodating activity increases and ensuring that errors/incidents are kept to a minimum.
* It is necessary to make judgements and decisions without supervision when working on-call or at weekends. These decisions or judgements may be complex and often require to be made quickly and where information is limited or unavailable.
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| **12. KNOWLEDGE, TRAINING AND EXPERIENCE REQUIRED TO DO THE JOB****Essential:*** Must be a Registered Biomedical Scientist with the Health Care Professions Council (HCPC).
* Must have at least two years post Registration experience in a clinical microbiology laboratory.
* Must have an honours degree in Biomedical Sciences, or equivalent HCPC acceptable honours degree.
* Must participate in and provide evidence of Continual Professional Development and ongoing training that is required to maintain specialist knowledge, professional standards and registration with the HCPC.
* Must have knowledge of laboratory standard operating procedures, including complex and specialist tests, and Division and department policies and procedures.

**Desirable:*** Experience of working in a reference laboratory.
* Successful attainment of relevant specialist diploma.
* Be willing to study for an MSc qualification, or equivalent.
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| **ADDITIONAL INFORMATION FOR APPLICANTS** |
| * Frequent (daily) periods of prolonged concentration required during the entry, screening and in depth analysis of large quantities of scientific and numerical data e.g. while examining microscopic slides and cultures, analysing test results and compiling reports.
* A contractual weekend working service operates where the post holder would be expected to carry out, without supervision or the immediate on site availability of medical or technical advice, any of the tasks for which they are trained.
* Those candidates not holding IBMS Specialist Diploma or 2 years post Registration experience in a Clinical Microbiology laboratory will be employed under AfC annex U arrangements. This also applies to those candidates who have an accredited degree in Biomedical Science, and are working towards their HCPC Registration Portfolio.
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| Job Description AgreementJob Holder's Signature DateHead of Department Signature Date |

**PERSON SPECIFICATION FORM**

**Job Title:- Specialist Biomedical Scientist**

**Department:- Scottish Microbiology Reference Laboratories, Glasgow**

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| **Qualifications** | **Essential (√)** | **Desirable (√)** |
| Accredited Degree in Biomedical Science |  **√** |  |
| Registered Biomedical Scientist with the Health Care Professions Council (HCPC) |  **√**  |  |
| Successful attainment of IBMS Specialist Diploma in Clinical Microbiology or equivalent knowledge and experience |  |  **√** |
| Be willing to study for an MSc qualification, or equivalent |  |  **√** |

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| **Experience** | **Essential (√)** | **Desirable (√)** |
| Two years post registration experience in a clinical microbiology laboratory |  **√**  |  |
| Extensive knowledge of relevant analytical and diagnostic techniques including genotyping techniques |  |  **√** |
| Experience of working in a reference laboratory |  |  **√**  |
| Awareness of developments in the subject and commitment to continuing personal and professional development |  **√** |  |
| Awareness of Health and Safety issues |  **√** |  |
| Experience of working as part of a team |  **√** |  |
| Ability to supervise trainee and support staff in their day to day work |  **√** |  |

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| **Behavioural Competence** | **Essential (√)** | **Desirable (√)** |
| Ability to communicate efficiently verbally and in writing |  **√** |  |
| Strong interpersonal and relationship skills |  **√** |  |
| Ability to follow verbal and written instructions |  **√** |  |
| Ability to work accurately, neatly and efficiently |  **√** |  |
| Ability to plan and organise workload with good time management skills |  **√** |  |
| Must be reliable and trustworthy |  **√** |  |
| Must be enthusiastic, motivated and able to have a flexible approach to the work |  **√** |  |

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| **Other** | **Essential (√)** | **Desirable (√)** |
| Keyboard Skills |  **√** |  |
| Good hand-eye co-ordination |  **√** |  |
| Use of laboratory equipment, including pipettes |  **√** |  |
| Understanding of Equal Opportunities |  **√** |  |