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| 1. **JOB IDENTIFICATION**
 | Job Title | Senior Biomedical Scientist  |
| Department(s)/Location | Pathology, Pathology Department, Ninewells |
| Number of job holders | 5 |
| 2. JOB PURPOSEResponsible for the day-to-day management and efficient use of a section within the Pathology Department.Responsible for the supervision, management, development, performance and organization of the full range of highly specialised scientific/technical services which include the following : specimen reception, specimen dissection, processing and embedding, main laboratory, special staining, immunocytochemistry, electron microscopy, Diagnostic Cytology and Mohs micrographic surgery clinic.Processing and analysing patient biopsies/specimens to enable provision of diagnosis for pathological conditions. Carry out scientific techniques at molecular level within Cellular Pathology with a high degree of individual skill and responsibility. Responsible for providing lectures, workshops and specialist training for qualified staff and postgraduate students seeking statutory registration ensuring compliance with the professional levels required by the Health and Care Professions Council (HCPC).You will provide expert advice and opinion both inside and outside the department as and when required.The post holder will be expected to have upheld the professional standards required by registration with the Health and Care Professions Council (HCPC) and provide evidence of Continuing Professional Development (CPD). They must also have experience of compliance with standard operating procedures (SOP’s) in accordance with ISO 15189Accountable to the Clinical Laboratory Manager through the Technical Lead Biomedical Scientist. |
| 3. ORGANISATIONAL POSITIONClinical Lead = Professional Accountability = Direct Line ManagementClinical Laboratory ManagerAdvanced Practitioner Quality Manager/Training Manager/Technical Lead**A&C****Histopathology****Cytopathology****Mortuary****Senior** **Biomedical Scientists**Senior Biomedical ScientistsMortuary ManagerSenior AdministratorMortuary AssistantsMedical SecretariesSpecialist Biomedical ScientistsSpecialist Biomedical ScientistsClerical OfficersAssistant Practitioners/CytoscreenersTrainee Specialist Biomedical ScientistsMedical Laboratory AssistantsAssistant PractitionersMedical Laboratory Assistants |

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| 4. SCOPE AND RANGEThe Pathology Department comprises around 80 staff and is located within Ninewells Hospital, Dundee. It provides a high quality diagnostic service covering the preparation and diagnosis of samples from patients for Tayside and North East Fife. Services provided include; Histopathology this ranges from Post Mortem material, whole organ resections down to the smallest of biopsies taken using endoscopy, and Cytopathology this includes all general fluids. These samples originate both within the Acute Sector and Primary Care. The Department is Accredited to ISO 15189;2012 Standards. In addition, the Department is Accredited by the IBMS/HCPC for BMS training and by the Royal College of Pathologist’s for Pathology and Mortuary training of Junior Medical staff.The post holder's role would be to work within the context of department strategies, policies and procedures to improve the health of the population of Tayside NHS Board area.  |
| 5. MAIN DUTIES/RESPONSIBILITIES**Managerial & Leadership** 1. Responsibility for the organization and running of technical services within the sections of pathology on a rotational basis providing specialist skills in all sections as required.
2. Responsible for deciding minimum staffing levels of all grades of staff required to ensure efficient delivery of the scientific/ technical services and designing rotas to ensure adequate technical staffing levels of Senior Biomedical Scientists, Specialist Biomedical Scientists, Biomedical Scientist, Trainee Specialist Biomedical Scientists , Associate Practitioners and Medical Laboratory Assistants through all sections of the Pathology Department, ensuring flexibility within these rotas to enable movement of staff on site and off site at very short notice to compensate for staff absence to meet the demands of the service.
3. Design and implement rotas in cooperation with senior management and other senior members of staff to ensure all Specialist Biomedical Scientists, Biomedical Scientist, Trainee Specialist Biomedical Scientists , Associate Practitioners and Medical Laboratory Assistants rotate through various sections of Pathology Department ensuring maximum possible exposure for staff to different sections of work in line with service requirements and agreed individual staff Personal Development Plans.
4. Responsible for participation in National External Quality Assessment Schemes.
5. Quality assure highly complex histological, immunological and cytological techniques to a standard suitable to pass UK External Quality control examination, advise specialist/ biomedical scientists and trainee biomedical scientists on the quality required by the schemes and demonstrate how success in these scientific techniques can be achieved.
6. Responsible for troubleshooting and problem solving issues concerning scientific/technical services and equipment associated with the section managed.
7. To provide highly specialist scientific/technical advice to users of the service on histology, immunocytochemistry, electron microscopy and cytology
8. **Scientific**Receipt and triage of patient biopsies and fluid specimens received in pathology following standard operating procedures to include entry to dedicated laboratory based computer system. This involves a significant amount of accurate data entry with attention to detail in ensuring correct patient and specimen identification. This also involves allocation of specimen types to workgroups. Requires knowledge of specimen types and medical terminology and the ability to analyze and follow up errors to ensure accurate completion of the minimum dataset.
9. Accurate identification of specimen size, description and type to allow appropriate processing. This may involve patient biopsies that are so small that they require microscope or magnifier to orientate. This will also involve decision making in assessing how the formaldehyde fixed tissue and cytological samples will be processed and whether the nature and size of the tissue requires protection to prevent tissue loss.
10. Where tissue is calcified e.g. cortical bone or teeth to ensure that the tissue is appropriately decalcified using strong mineral acids or chelating agents. To assess the completion of decalcification using digital x-ray imaging:in accordance with SOP’s and interpretation of the images.
11. To prepare patient specimens to allow the demonstration of disease processes. This involves skills and techniques in using alcohols, solvents and wax to allow the biopsy to be presented for cutting in an appropriate manner. This will require the knowledge to program the tissue processor and problem solve processing issues which may arise.
12. Using embedding skills orientate patient biopsies ranging from 0.5mm to 2 cm in the appropriate plane taking into account any special instructions. This involves manipulation of patient tissue while fingers are being exposed to 60-degree molten paraffin wax. Using skill and competence and any visual aids required to ensure that the biopsy is orientated to allow minimal ‘trimming in’ and to enable any margins of malignancy or epithelial surface to be sectioned accurately to allow diagnosis.
13. Use specialist equipment e.g. microtome. This involves orientation, trimming in to appropriate area of interest e.g. malignancy. Cutting 4/1000th of mm thick sections of patient tissue and subsequent intricate positioning of section by floating from warm water onto glass slides. This requires excellent hand to eye coordination. It also requires excellent manual dexterity as very sharp razor type knives and rotating equipment come into very close proximity to fingers.
14. Carry out frozen section production under pressure of time constraints where the patient is under anesthetic and an urgent diagnosis is required. This will involve working on fresh/unfixed potentially infectious biopsy material.
15. Support the day to day management of the Mohs clinic ensuiring sufficient staff cover is available.
16. Where required carry out autonomously, multiple complex frozen sections by the Mohs (Micrographic surgery for skin cancer) method which requires specific orientation in relation to the patients anatomy. This is to allow the Consultant Dermatologist to ensure eradication of tumour margin while causing minimal disfigurement. This work is carried out in the presence of the patient.
17. Must have the knowledge and skill to carry out in excess of 200 staining techniques required in pathology to allow identification of tissue pathology elements including tinctorial, immunological and ultrastuctural demonstration.
18. Interpret and assess the quality microscopically, of in excess of 100 specimen types received in the laboratory. This involves observing under the microscope at various magnifications in up to 3 hours in a session. This level of control involves decision making on the quality of staining, cutting and embedding and deciding whether the case should be rejected or accepted. A final check on the patient demographics, numbering and matching to ensure accurate diagnosis is carried out.
19. To report in detail the macroscopic description of endoscopy and small biopsies and transfer to processing cassettes.
20. Where required to carry out specimen handling for fixation purposes or block dissection of RCPath Category B&C specimens. This requires highly specialist skills previously only carried out by medical staff.
21. Carry out specialist immunological techniques to demonstrate the patients’ immune status in relation to diagnosis and also to identify specific tumour sub types and infectious diseases to aid prognosis. This involves assessment of the quality of the demonstration and the ability to resolve complex problems in immunocytochemistry and immunofluoresecence techniques.
22. To prepare fresh renal, muscle and rectal biopsies incorporating specialist cryogenic techniques and assess the adequacy of the specimen for subsequent diagnostic procedures e.g. microscopic identification of glomeruli in kidney. Under stereoscopic microscopy (32x magnification), orientate and cut very small biopsies to provide tissue for multiple immunocytological and histochemical techniques.
23. Competence in processing specimens to allow analysis under the electron microscope. It is also expected that individuals will be competent to identify highly complex tissue abnormalities at an ultra structural level e.g. poorly differentiated malignancies or viral inclusions (magnifications to 50,000 times).
24. Responsible for disposal of tissue in accordance with national guidelines by positively identifying specimens where the diagnosis is authorized including pregnancy losses.
25. Competent in the use of pathology filing systems to allow filing and retrieval of blocks, slides and reports.

**Specific Competencies for staff working in Cytopathology**1. In addition to specimen receipt above, be competent in the receipt, macro description and computer entry of patient fluids received in Cytopathology.
2. To be competent in handling and preparing potentially infectious fluid samples within a containment level 2 laboratory utilizing a Class 1 Microbiological hood with appropriate personal protective equipment.
3. To produce synthetic clots from fluids, which are then prepared and dealt with as for patient biopsies. The knowledge to programme the specialised cytology processors and trouble shoot when problems arise, is also essential.
4. To prepare urgent fine needle aspirates, either from clinic sites or from wards, where attendance at the ward may be necessary, and to provide advice to medical staff as required.
5. Provide a referral point in support of Cervical Screening service provided via NHS Greater Glasgow and Clyde.
6. Competent in the preparation and staining of liquid based cytology of cervical smears using the relevant automatedpreparation systems.
7. Staining and coverslipping of preparations and quality assessment of those preparations

**Management**1. Lead Specialist/Section Manager in Pathology with day to day responsibility for training, direction and management of Specialist Biomedical Scientists, Biomedical Scientists, Trainee Specialist Biomedical ScientistsAssociate Practitioners,and Medical Laboratory Assistants, in the performance of their duties and in compliance with Pathology Departmental Standard Operating Procedures, Trust policies, ISO15189 Accreditation Standards, including Health and Safety Regulations and proficiency levels required by the Health and Care Professions Council.
2. Staff in this grade work autonomously taking responsibility for their own decisions and decisions made by others, both diagnostic and scientific to meet the requirements of the Health and Care Professions Council
3. Participate in recruitment and selection of new staff; from selection of interviewees from their application, to sitting on interview panels and presenting subsequent reasoned argument for the appointment of most suitable candidate.
4. Responsible for providing supervision of Trainee BMS staff during completion of IBMS Certificate of Competence for the Registration Portfolio and newly registered BMS staff completing Specialist Diploma.
5. Sign competencies of Specialist BMS, Trainee BMS and MLA staffs undergoing In House training programmes.

**Administration, Budget and Stock Control**1. Responsible for ensuring there is sufficient stock levels of consumables in the performance of the Department’s diagnostic service provision by using stock control systems accordingly including web based applications
2. Authorize the purchase of materials and consumables via PECOS electronic ordering system up to £250 per order raised amounting to a value of in excess of £20,000 per year.
3. Meet with representatives from supplier companies and contact companies using tact and persuasion to negotiate discounts and prices for consumables and equipment necessary for the running of the Pathology Department, in accordance with NHS Tayside Procurement policies.
4. Maintain and update the Pathology Department Equipment Database. Advise Lead Biomedical Scientist on equipment status and the replacement needs. Prioritize equipment and anticipate future equipment needs. Obtain quotes from companies as requested and make recommendations for the purchase of new equipment.
5. Arrange servicing contracts for equipment and suggest appropriate levels of servicing, liaising with Medical Physics.
6. Carryout equipment audits to ensure that equipment is being maintained, errors logged and repairs carried out.
7. Responsible for the safe use and for ensuring the maintenance of expensive and highly complex equipment is carried out in accordance with manufacturers instructions
8. Responsible for ensuring SSTS and all other systems are kept up to date in accordance with NHS Tayside policies.

**Policies**1. As Lead Specialist/Section Manager, propose, formulate and write Standard Operating Procedures that can impact beyond the section to reflect and improve/up date service requirements.
2. Contribute to departmental policies to a standard appropriate for ISO15189 accreditation.
3. Follow NHST policies, particularly those related to Human Resources, work within them and implement them within the laboratory
4. Work within HCPC standards.

**Research and Development**1. Co-ordinate and control clinical research projects and developments leading to subsequent publication of scientific papers on a regular basis.
2. Evaluates, and validates the safety of equipment for implementation into clinical service provision
3. Undertakes Horizontal and Vertical Audits to ISO 15189 standards, identifying non-conformances to ensure adherence to departmental policies and standard operating procedures and make and implement quality improvement suggestions.

 **Health & Safety**1. Ensure that all work practices and environments are kept in accordance with the legislation set out in the Health & Safety at Work Act (1974) and subsequent amendments and ensure users of the pathology service are given relevant information regarding the substances they are dealing with and be prepared to answer queries regarding products we distribute.
2. Responsible for monitoring and recording levels of substances hazardous to health in order to ensure a safe working environment for all staff.
3. Responsible for Risk Management within section of responsibility.
4. To be fully aware and competent in Health and Safety and to be able to manage utilizing COSHH and Risk Management methods to reduce spillage and exposure to substances hazardous to health.
5. Responsible for handling spillages of solvents, strong acids and alkalis and potential carcinogens in relation to daily workload within the department and other parts of the hospital including out of hours.
6. Responsible for completing any adverse events within their section of responsibility and performing adverse event reviews where required.
7. Responsible for carrying out Risk assessments, COSHH assessments and Manual Handling Training within Pathology.
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| 6. COMMUNICATIONS AND RELATIONSHIPS1. Accountable to the Clinical Laboratory Manager through the Technical Lead Biomedical Scientist.
2. Through active participation at Pathology Department staff groups, meetings, comprising of staff representatives from Professorial level to support staff, use highly specialist knowledge of Scientific /Technical aspects of pathology, Team Leading and Management to advise on best practice for technical services and workflow, ensuring continuity of workflow through all sections of the Pathology Laboratories. At these meetings put forward reasoned and evidence based suggestions and use tact and persuasion to negotiate with Senior Management and users of the service to affect change.
3. Provide guidance and reassurance to scientific and technical staff during the change management process to meet future diagnostics modernization needs.
4. Communicate and discuss highly complex pathology related information internally with other Senior Biomedical Scientists, Specialist Biomedical Scientists, Trainee Specialist Biomedical Scientists Associate Practitioners, Medical Laboratory Assistants, Consultant Medical staff, Junior medical staff and Admin & Clerical staff.
5. External to the department they will communicate with all grades of ward and GP based staff, Consultant and other grades of Medical staff and General Practitioners. Part of this communication will be conveying highly complex information directly to other clinicians
6. Use persuasive and negotiating skills in communicating with staff/clinicians requesting pathology tests.
7. They will communicate with the Training Manager, Training Officer and Clinical Laboratory Manager in relationship to competence of Specialist Biomedical Scientists, Trainee Specialist Biomedical scientists, Associate Practitioners and Medical Laboratory Assistants to facilitate Continuing Professional Development and formulate Personal Development Plans.
8. Conduct Appraisals/Performance Development reviews for Specialist Biomedical Scientists, Trainee Specialist Biomedical Scientists,Associate Practitioners and Medical Laboratory Assistants setting out clear goals and objectives for the following year using empathy, reassurance and motivation to encourage staff and promote Continuing Professional Development and Team Working.
9. Carry out back to work interviews with staff after absence. This involves receiving sensitive/personal information and using the appropriate levels of tact, discretion and empathy where required, in line with trust policies and guidelines, achieve a satisfactory consensus.
10. Professionally they will communicate with the professional bodies the Institute of Biomedical Science,and the Health and Care Professions Council for areas of professional conduct and Continuing Professional Development.
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| 7. KNOWLEDGE, TRAINING AND EXPERIENCE REQUIRED TO DO THE JOB1. Accredited Honours degree in biomedical sciences
2. MSc or equivalent **(essential)**
3. Registered with the Health and Care Professions Council **(essential)**
4. Highly Specialist knowledge of Cellular Pathology/Cytopathology gained through short courses and in house training programs.
5. Institute of Biomedical Science Certificate of Competence
6. Evidence of Continuing Professional Development to Health and Care Professions Council Requirements
7. A management qualification or willingness to work towards this is desirable
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ESSENTIAL ADDITIONAL INFORMATION

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| 1. SYSTEMS AND EQUIPMENT

Equipment The post holder will be required to use multiple specialised, complex automated, semi-automated and manual equipment some of which are up to the value of £250k and to provide instruction and training in the safe use of the above equipment. They will be responsible for ensuring all of the above equipment is adequately maintained, serviced and records kept to allow others to use safely. Responsible for recording servicing in Equipment Database, and faults and minor error as required by ISO15189 and as part of the quality management system. They will carry out adjustments to the equipment and minor repairs as required.**Responsibility for Records Management**All records created in the course of the business of NHS Tayside are corporate records and are public records under the terms of the Public Records (Scotland) Act 2011. This includes email messages and other electronic records. It is your responsibility to ensure that you keep appropriate records of your work in NHS Tayside and manage those records in keeping with the NHS Tayside Records Management Policy and with any guidance produced by NHS Tayside specific to your employment. |
| PHYSICAL DEMANDS OF THE JOBPhysical Skills1. Requires manual manipulation of very small, less than 4/1000th of a mm, sections of samples in histology and nanometer samples in Electron Microscopy.
2. Fine adjustment of microtomes at micron level and microscopes at nanometer level for Electron Microscopy.
3. Requires repetitive circular motion in hand powering the microtome for up to a 2-hour session whilst sitting in a confined position.
4. Requires manipulation of sections/cytology preparations being viewed whilst seated at a microscope for up to 4hrs in a session and on a daily basis

Physical Effort1. Requires sitting with back arched to ensure accurate embedding of tissue samples in up to a 2 hour session
2. Requires sitting in a confined position carrying out microscope work e.g. quality control of histology\cytology slides
3. Requires keyboard to be used for up to 2 hour session
4. Requires standing for up to 4 hours while staining or attendance at off site clinics
5. Requires small items of stock to be moved weighing up to 5kg for manual movement and moving larger weights by trolley

Mental1. There is a continuous requirement on a daily basis to concentrate for periods of up to 4 hours for example microtomy, quality control of histological slides, or tissue dissection. This is required on most days.
2. There is a constant requirement to maintain the required levels of concentration and accuracy necessary to complete tasks whilst being able to quickly adapt to changing demands throughout the day. This can involve movement between sections, swapping tasks frequently to ensure minimum interruptions to service, solving problems as they arise and answering queries.
3. There is a requirement for prolonged concentration when staining in order to coordinate up to 10 different stains simultaneously over a 3 hour period
4. Intense concentration required for verbal delivery of histological lectures and training workshops for duration of up to one hour using a variety of audiovisual apparatus and answering questions throughout.

Emotional1. There is daily exposure to patient specimens and reports with obvious advanced malignant disease
2. Occasional exposure to fetal and adult post mortem material and its emotional effect
3. Exposure to patients undergoing Mohs’ facial
4. Dealing with sensitive issue with staff who may be undergoing problems of a personal nature where the objective is to reach a solution that meet the needs of the department and the individual.
5. May attend Multi Disciplinary Team meeting to participate in discussion on patient management with the care team.

**Working Conditions**1. Within the laboratory environment there is frequent use of hazardous chemicals, some of which are classed as carcinogens.
2. Frequent exposure to unfixed/fixed potentially infectious body tissue and fluids on a daily basis, most commonly TB, HIV and HEP C
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| DECISIONS AND JUDGEMENTS1. Lead Specialist/Section Manager working autonomously, taking responsibility for own workload and also the section workload and scheduling/prioritizing work for consultants as appropriate to enable targets to be met.
2. Be familiar with advances in Histopathological / Immunocytochemical/ Cytopathological techniques/equipment and be able to trial new techniques/equipment, evaluate them and present reasoned arguments for the implementation, or rejection of the techniques/equipment to users of the service.
3. Investigate reports of Adverse Events to identify the source of error. Complete Local Adverse Event Review reports, explaining the often complex nature of the error. Use empathy and re-assurance whilst speaking to individuals involved to try to establish the root cause without apportioning blame. Make suggestions where appropriate to minimize the risk of the incident being repeated and ensure that appropriate measures are taken.
4. Make decisions about the running and organization of technical services on a day-to-day basis.
5. Highly Specialist practitioner who will make judgements and takes decisions on orientation, demonstration and differentiation of methods for showing tissue abnormalities providing scientific advice to pathologists as required.
6. Make decisions on the acceptance/rejection of the quality of their own and other qualified practitioners work.
7. Assessing adequacy and availability of tissue biopsies for quality control.
8. As section manager, will be responsible for ensuring that there is minimal disruption to the Pathology service in the event of mechanical breakdown, computer breakdown or in the event of hazardous chemical spillage by assessing immediate needs, deciding priorities and implementing emergency procedures as required.
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| MOST CHALLENGING/DIFFICULT PARTS OF THE JOB1. Managing unexpected and critical situations where instant decisions have to be made to minimize disruption to pathology scientific/technical services.
2. Managing staffing levels to cope with changes in work patterns on shift to shift basis to ensure the constant provision of a high quality service
3. Troubleshooting problems in the specimen reception area when specimens arrive with little or no accompanying details.
4. Appropriate differentiation of stained slides to allow demonstration of abnormality.
5. Being able to maintain the required levels of concentration and accuracy necessary to complete tasks whilst being able to quickly adapt to changing demands throughout the day: this can involve movement between sections, swapping tasks frequently throughout the day to ensure minimum interruptions to service, solving problems as they arise and answering queries.
6. Maintaining up to date knowledge base through CPD.
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