

A: APPLICATION OF KNOWLEDGE AND UNDERSTANDING

A1: Apply extended knowledge of underlying concepts and principles associated with area of work.

We are looking for an example of how you have used your extended knowledge within the area in which you work. This will include developments within your field and the ability to understand and apply new developments to your area of work.

I have had training from various external companies. Some examples include, [REDACTED]. Training with external companies is essential with staying up to date with cutting edge technology and techniques within Genomics. When participating in such training I must apply my knowledge to enable successful completion. An example of this was when the lab bought a BMG Microplate reader and I received external training from the supplier. This piece of equipment would ease my workload as it enables you to quantify full 96 well plates of DNA and RNA samples in ~90 seconds. This equipment serves as an alternative/higher throughput to the Qubit. I used my existing knowledge to apply the principles of the qubit assay to this piece of technology. The kits I use with the microplate reader utilises advanced fluorophores that bind to dsDNA or RNA and fluoresce when bound. The plate reader can then measure the quantity based on the intensity of the fluorescence. Picogreen binds to dsDNA and ribogreen binds to RNA, so I have to ensure I am using the correct dye when I am preparing the assay. When we got this new equipment my colleague wrote an SOP of which I checked and validated and this is now used as our lab standard operating procedure for all users. Using this equipment for my work when I have a large sample number massively improves efficiency and saves so much time while still producing valid results.

During my degrees and during my employment I developed a good understanding of genetics and genomics of which I apply to my work every day. Without underlying knowledge my work

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	<p>would be challenging. An example of how I apply knowledge to my work is when I am completing library preparation for next generation sequencing or long read sequencing. I am competent in using various types of library preparation kits including Lexogen QuantSeq 3' mRNA, NEB mRNA, total RNA and low input using Poly A isolation or rRNA depletion, I have also carried out exome library preps as well as Oxford Nanopore Technologies library preps for long read sequencing. The principles of each are similar in that they require adapter ligation which allows the DNA or RNA to adhere to the flow cell. This however varies for each kit and different techniques, equipment, reagents and procedures are used depending on the sample/library type. I am able to adapt my skills depending on this so that I successfully generate viable libraries for sequencing. Each library prep kit generates libraries of different quantities and size so I am then able to use my knowledge of each kit to quality check each library following the prep to ensure it meets the standards required for sequencing and also to troubleshoot. This ensures I am producing the best quality samples and therefore the best data output for our customers/research. I have received great feedback from researchers for the data I have generated for them.</p>
<p>A2: Review, evaluate and apply underlying scientific concepts, principles and techniques in the context of new and different areas of work.</p>	<p>In my previous role ([REDACTED]) I autonomously used various robots for automated diagnostics. These included a COBAS, Tecan and a BD Max. Therefore I had a good understanding of automation and automated procedures. In my current role I received internal training to use our Hamilton Robot, which is a robot I had not used before but I was able to use previous experience to learn how to use the new software. I was trained in the general use and maintenance of the machine and also how to successfully carry out a number of programmes. I now use the robot autonomously and have trained other colleagues and PhD students to use the machine. Once I had a sound understanding of the day to day running of the machine I wanted to gain a deeper understanding and learn how to create protocols/methods therefore,</p>

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What we are looking for here is how you have taken techniques/principles and reviewed, evaluated and applied them in a new area of work.

I arranged training for myself and my colleagues to learn how to create new methods and how to programme the machine. This is a skill that will really benefit our service and the work we/I do as I can now setup methods for a wider range of library preparation kits which will in turn improve the efficiency, throughput and accuracy of such preps. It will also benefit me in contributing to my CPD as I believe automation skills are extremely valuable in an ever growing world of technology.

At the start of the coronavirus pandemic our labs were repurposed to take on surge testing for the [REDACTED] Hospital. This was all done with collaboration of Public Health England. I was involved in this by helping to set up workflows and train staff to carry out RNA extractions so that we could develop an efficient workflow. My role was to oversee the RNA extraction teams and provide help/advice when required. I would then setup the qPCR assays alongside other colleagues. Once Government testing capacity increased the need for our diagnostic testing reduced and so my lab began taking on research and development projects for COVID19. We were chosen to complete a largescale Government study for NHS England whereby we collaboratively as a team tested 15000 asymptomatic patients for COVID using 3 different technologies – qPCR, LAMP and ONT LamPORE. This was to determine how often NHS staff should be screened and also which the most sensitive/efficient test was. Again, we developed new workflows as a team and delegated aspects of the project to each team member. My role was to carry out the qPCR assays. This required me to use my knowledge of qPCR and my skills to successfully and efficiently complete the project. I would also step in for others if required to ease their work load. My previous lab ([REDACTED]) was a diagnostic lab with a very high throughput of samples so I was able to put forward suggestions and use my

	<p>organisational skills to work in a way that allowed a very high throughput of excellent quality data.</p>
<p>A3: Analyse, interpret and evaluate data, concepts and ideas to propose solutions to problems.</p> <p><i>We are looking for an example of how you observe and interpret the results from your data to draw conclusions and inform your next steps.</i></p>	<p>As mentioned before, I have performed validation tests of commercial kits for external companies. An example is QIAprep& Viral RNA UM Kit. I compared two versions of the same kit to evaluate the efficiency/sensitivity. I followed the protocol using my initiative and experience to adapt certain steps to ensure the assays were successful. I recorded all adaptations and steps followed in my lab book which I then wrote up into a report for the company. The report consisted of an outline of methods, results, discussion including specific feedback and conclusion. My discussion suggested improvements to the protocol based off my experiences. This kit was useful in significantly reducing the workload and time of performing COVID19 qPCR testing by cutting out the need for RNA extraction. I received really good feedback from my manager and also from [REDACTED] for an excellent/useful report. This was beneficial to the company as they were seeking customer feedback to gain ideas and evaluations so that they could make improvements.</p> <p>Running the sample quality control service (QC) requires me to evaluate results before sending these back to the customer. I am assessing the quality of samples so I must know the criteria for good/bad samples and what the applications of these samples can be. For example, when I quality check RNA, I base this off the concentration and the RNA Integrity Number (RIN). The RIN is a measure of how intact or degraded your sample is. The scale is from 1-10 with RIN of 1 being extremely degraded and bad quality and 10 being intact, excellent quality. Different</p>

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preps or applications require minimum RIN values. Some RNAseq preparations require RINs of above 7 (good quality) and some can go down to as low as 1.5 and even FFPE samples. I explain this to the customer when I send their results back and discuss with them what they will be able to use their samples for. I also base this on their data requirements as this also affects library preparation selection. This demonstrates my ability to analyse, interpret and evaluate data to propose ideas/solutions based upon a customer's needs and their sample quality.

Over the past year I have carried out many tests for detecting COVID 19 using qPCR. This has included for diagnostics and for research and development projects. Along with carrying out the assay, I am capable of analysing the data using the [REDACTED] software to identify samples as positive, negative or invalid. I am able to use the software to check amplification plots and analyse cycle threshold (CT) values. I know the maximum CT value for a positive sample so I use this to identify positive samples. I can then also identify sample failures based on a lack of amplification of the internal assay control I include and figure out why the sample may have failed. Sometimes there is ethanol carry over from the RNA extraction which causes samples to fail so I am able to identify these, dilute the stock and rerun it. Diluting the stock has been validated to be affective. Full analysis is done through a pipeline to identify whether samples are positive or negative dependant on their CT value. This is done by my superior who is approved to authorise patient's results. This means there is no room for human error or subjectivity. I believe these three examples demonstrate my ability to analyse, interpret and evaluate results while also proposing/conducting solutions.

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B: PERSONAL RESPONSIBILITY



B1: Work autonomously while knowing when to escalate appropriately and recognising limits of scope of practice.

We are looking for an example of how you work with no supervision for certain key tasks, experiments or procedures associated with your role within required timeframes. You will also be able to demonstrate your understanding of when you need to seek input from either your supervisor or others and when to escalate.

As previously mentioned, I am responsible for the QC service. This involves me speaking with the customer and understanding their requirements, this is important as it is essential I know what type of sample it is, the expected yield (as I base the assay choice on this) and finally what the samples will be used for i.e. Sequencing or qPCR etc. I then arrange sample drop off and plan my workload. To work more efficiently I try and group various samples together to save time and reagents but while also sticking to the turnaround time I have given the customer. I then perform the QC using a Qubit fluorimeter and a Bioanalyser/TapeStation. I then collate the results in the customers submission form and send PDFs of their results. Sometimes my weeks get extremely busy and I am caught up doing Next Generation Sequencing (NGS) library prep which is very time consuming and therefore I ask my colleagues for help performing the QC to maintain our quick turnaround times for the customer. This is also a good example of how I demonstrate good working relationships with my colleagues as we are able to step in for each other if needed.

I also independently carry out NGS library preparation sequencing projects. This is where I am responsible for taking RNA or DNA through the whole prep using commercial kits to prepare them for sequencing. This involves ligating them with adapters to allow them to bind with the flow cell and also to be identified. There are various steps where errors may be made and you have to take extra care when carrying out library preparation because if library is not generated at the end then you will have lost the original sample. To reduce the risk of errors and identifying where something may go wrong, I ask a colleague to double check various steps with me. For example, samples must be normalised prior to starting the prep. This is to ensure you are inputting the same amount of each sample so that you don't over cycle or under cycle

	<p>some samples when carrying out the PCR. I always ask somebody to read out the volumes for diluting as I go along just so that there is a second pair of eyes to double check there isn't any sample errors. This is a good example of how I recognise the scope of my practice and seek help from my colleagues to ensure errors are not made.</p> <p>Our lab is currently involved in symptomatic COVID19 testing for a vaccine trial using a Covid-19 targeted qPCR assay. We find out the same day if we will be receiving samples so this can be quite disruptive to the day. As a team we rotate who is completing the samples or step in if somebody cannot do it. The whole process involves collecting the samples from another lab, carrying out the RNA extraction and then setting up the one step qPCR assay using the extracted RNA. I have to ensure all samples are booked in correctly so everything is trackable. I am then responsible for setting up the assay. This is a very big responsibility as these results get sent out to patients and contribute towards the findings of the vaccine trial. This is a great opportunity for our lab to be involved so I take extra care to complete this. The importance of sending out accurate patient results is paramount so I follow all SOPs to produce reliable, valid results. All of these examples demonstrate how I am able to work autonomously, under no or minimal supervision.</p>
<p>B2: Take responsibility for safe and sustainable working practices and contribute to their evaluation and improvement.</p>	<p>To contribute to the safe working practices of the lab I have completed COSHH forms for a variety of new kits. The University have set COSHH forms that must be completed for all hazardous reagents and consumables used in the lab. I have completed these for various new kits. COSHH forms are important as they ensure the safe handling, use, discharge, transport and storage of hazardous substances. All members of the lab must read and understand all relevant COSHH forms before handling these substances. It is important that they are filled in correctly and in enough depth to ensure lab members are not in danger and understand exactly</p>

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We are looking for an example of how you have taken responsibility for working safely and sustainably.

how to handle/store such substances. Further to this, I attend all regular lab, fire and chemical safety courses to ensure I am up to date with all aspects of lab safety and can ensure my safe working for myself and also for other members of the lab. This is important as it prevents accidents/harm and maintains a professional and safe working environment. I have written Standard Operating Procedures for use in the lab, these are then checked and validated by another member of staff. I have also validated SOPs written by others and signed these off. SOPs are important as they ensure there is consistency across all staff in the lab, thus maintaining standards, reducing errors and enhancing efficiency.

Due to the coronavirus pandemic, aspects of our work has changed a lot. We have a Technology Hub where users can book and use our equipment at their convenience. This became challenging when room restrictions and social distancing measures were put in place during the pandemic. Users still needed training so the facility had to evaluate and adapt to ensure we were still working within a COVID safe environment. I worked with my team to come up with a new way of delivering training and I took on the role of devising documents to ensure we could safely deliver the training. Theory aspects of the training were delivered via zoom and then practical aspects were delivered in the lab following strict social distancing guidelines. I adapted our training SOP to include instructions on getting prepared for the training in this adapted way. I also wrote a document including all guidelines to be followed during the training, which is sent out to the user. I ensured the guidelines were in line with the risk assessment that had been completed for the Technology Hub and also to the University's general COVID guidelines. These documents ensured myself and my colleagues were still able to deliver vital training for users of the Technology Hub within a COVID safe working environment.

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B3: Take responsibility for the quality of your work and also enable others to work to high standards.

This means that you can show how you are aware of the quality standards necessary for the work being carried out by you and others. You should be able to describe an example of how you enable these standards and ensure that they are applied.

A role I have in the lab is managing pipette calibrations. This is vital to our work to ensure absolute accuracy. The pipettes in our lab are grouped/labelled and tracked on an excel spreadsheet. I keep note of dates calibrations were performed and their due date. Organisation is key for keeping track of all the pipettes. I regularly check the spreadsheet to see if any calibrations are upcoming. I then contact [REDACTED] to request a quote. I fill in all relevant decontamination forms, pack and send the equipment off via the universities postal service. I then receive these back along with all service records of which I keep in a folder so that again everything can be tracked. This is done to ensure myself and others in lab can guarantee the equipment we are using is to the highest of standards and we are not using faulty equipment. Similarly, all our technology is under service contracts. On occasions when equipment has been faulty or we are having problems with it, I have contacted the company to either trouble shoot, arrange engineers or request replacement equipment. This involves me liaising with engineers via email and telephone. Again, this is done to ensure all the equipment we are using is working correctly and efficiently to allow myself and my colleagues to produce high quality work. Sub-optimal equipment will not produce high quality data.

I complete next generation sequencing projects for customers of our Genomics Service. This involves planning the project, which consists of calculating dilutions for normalising based on the QC data. I then complete the library preparation using kits compatible with Illumina platforms. I then quality check, pool and sequence the final libraries. Upon sequencing completion, I write up all work undertaken by me to complete the project into a written report, of which I put my name to and send to the customer along with their sequencing data. I ensure my work is high quality by following all SOPs and manufacturer protocols, I work carefully using single use tips to ensure no sample mix ups or errors occur. Further to this, I use my knowledge and experience to now train others. A specific example is when I trained a PhD student within

our group to carry out library preparation using an Illumina compatible kit. I did an in depth week long training with him, sharing techniques that help achieve high quality results. The training included, using many different types of equipment in the lab and I tried ensure they got the most out of the training so that they could then perform these techniques by themselves. Such training benefited this individual as they gained a much wider variety of practical skills and techniques so that they can now go off and carry out their research more independently. Training others also benefits my personal development by developing and refining my practical skills and also developing my communication and interpersonal skills.

C: INTERPERSONAL SKILLS

C1: Demonstrate effective and appropriate communication skills.

What we are looking for here is an example that you are an effective communicator. The example can be through appropriate oral, written or electronic means.

Effective and appropriate communication skills are an integral part of my job. Our lab runs as a service so good, effective communication with customers and my colleagues is essential. I run the nucleic acid quality check (QC) service and perform next generation sequencing projects within my facility. This involves me liaising with customers over email ensuring they understand the process of what I do and arrange for them to drop their samples off. I then meet the customer with their samples and give an expected time to results and answer any further questions they may have. I carry out the appropriate assays and then I analyse the results to ensure they are satisfactory before returning these in a PDF report and an excel spreadsheet. If samples are unsatisfactory and it is not due to an assay failure, I explain to the customer that their samples have failed the quality check and help them troubleshoot. I have to ensure that results are sent back in easy-to-understand format and I have to use my communication skills to effectively fulfil the service I am providing.

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Another role I have within the facility is to train members of the University to use our equipment within our technology hub. This equipment includes a variety of qPCR machines and an Agilent Bioanalyser. This involves me receiving training requests via our online ordering system (PPMS), contacting the customer and giving all information required and ensuring they are prepared for the training. I then meet with them and give a theoretical and practical 30-40 minute training session. I train a variety of individuals with a variety of experience and therefore it is very important to adapt the way I train based on this. For example, we have some individuals who have never run qPCR assays or used the equipment before and therefore need a deeper explanation of the theory of qPCR and the various dyes you can use and how these dyes work. Others have run these before but just need refreshing on this particular machine and therefore don't require an in depth training. I believe the way I adapt my training reflects my effective and appropriate communication skills. Training others also enables a wider range of users to access research equipment, which aids the scientific research produced by University.

Upon completion of a project, I write and send out a project report. The project report outlines all work undertaken by me to complete the customers Next Generation Sequencing library preparation project, this includes all results. It is important that project reports are coherently written so that they can be fully understood by the customer, while containing all necessary information. Another aspect of report writing I undertake is writing validation reports for external companies. As an accredited COVID testing lab external companies send us their commercial kits to test for validation purposes. An example of a kit I have validated is a QIAprep& Viral RNA UM Kit. Two versions of the same kit were compared, accompanied by a written report of advantages/disadvantages of each and preference. I followed the kits protocol for each version and provided the company with a detailed written report on any

	<p>issues I faced with each, providing suggestions for improvements to their protocol. To maintain the high excellence of my lab it is important that any reports that I send out to customers or external companies are to a high standard of professionalism, appropriateness and scientific knowledge.</p>
<p>C2: Demonstrate effective interpersonal and behavioural skills.</p> <p><i>This means that you can give an example that demonstrates the skills that you use to interact with colleagues in a constructive way within the work setting. In these situations it may be appropriate to discuss these with your supervisor, as an external perspective is often very useful in this regard.</i></p>	<p>I have a good understanding of how to adapt my behaviour depending on who I am interacting with. In my previous role as a [REDACTED] in an NHS Microbiology lab, I often had to liaise with doctors and patients, giving out test results and explaining these over the phone and in person. I also answered telephone queries from wards if they were unsure of tests or sample submission. This was an integral part of my job and I had to ensure that doctors/patients understood exactly what I was telling them to ensure no errors were made regarding patient results/sample submission. I have applied these interpersonal and behavioural skills to my current position where I regularly interact with engineers, colleagues and customers. Again, it is really important to adapt the way I respond depending on the individual I am interacting with. Often customers need help troubleshooting, so I am able to use my scientific knowledge to offer advice and suggestions for improvements. It's also important I interact with customers, engineers and also my colleagues to a high level professionalism and behave in an appropriate manner so to uphold the standards of the University and my professional body.</p> <p>Another aspect of my role where I demonstrate good interpersonal skills is during team meetings. We meet weekly to discuss our work for the upcoming week and any concerns that need raising. I am comfortable speaking up in these meetings and understand the importance of allowing others to speak up too. These weekly meetings are really useful for our lab as it allows us to work better as a team and keep on track with all aspects of our work and raise any</p>

	<p>concerns we may have. I get an understanding of that weeks' workload and also allows me to step in and offer help if need be. It is also a good opportunity to get questions answered regarding a piece of work or a piece of equipment in the lab.</p> <p>Finally, I have a good understanding of appropriate behaviours for working well within a team. There are various things I do in the lab which I believe helps/benefits others and demonstrates my proactive role. For example, I am responsible for managing the pipette calibrations to ensure the equipment we use in the lab is of the highest standard of accuracy. I also monitor the stock control of our QC service to ensure that we never run out of stocks, in turn hindering our work. Due to the coronavirus pandemic, our stocks for the QC service have been extremely hard to obtain so I have been contacting the companies directly to get help with delivery dates. This is so that the lab can continue running smoothly without disturbance. I feel like this highlights my behavioural skills and the role I play to try and ensure the lab continues running smoothly so that we can provide the best service for our customers.</p>
<p>C3: Demonstrate productive working relationships and an ability to resolve problems.</p> <p><i>This means that you should be able to describe how, when working with others, you are able to demonstrate that you developed positive working relationships and resolved the problem. Your</i></p>	<p>During the coronavirus pandemic our lab became an accredited testing lab and we were tasked with carrying out a large scale study for the UK Government and NHS England. This study would have been unsuccessful if we did not work together as a team. Planning the project involved ordering/organising bulk orders of stock required to complete the study and preparing all SOPs and data analysis/storage. My role in the study was to carry out the qPCR assays and quality check the results before further analysis. I would not have been able to carry out my role if it wasn't for my colleagues doing the sample sorting/plating out and the RNA extractions. Likewise, the data analysis team would not have been able to perform the analysis without me setting up the qPCR assays. This is an excellent example of how I demonstrated good</p>

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example should demonstrate how those working relationships were effective in resolving problems.

productive working relationships to successfully complete a large scale study with excellent results. The results of this study were published with authorship for all of us that were involved

In our lab we use a very wide range of technologies and these sometimes have technical faults. When these faults occur I contact technical support and liaise with them to resolve issues. One example of a problem I have resolved is when our Illumina NextSeq NGS sequencer failed a run. I contacted Tech Support, who guided me and sent me an SOP to follow to carry out system checks to identify the problem. The check identified a hardware issue that was rectifiable by an engineer who was sent out the following day. I liaised with the engineer and met with him when he came on site. I ensured our error log was filled in so that we can keep track of any errors like this that might occur again. This is where good organisational skills are important and demonstrates my ability to resolve problems with productive working relationships. This is essential as faults often occur and contacting tech support is something I frequently have to do. This ensures our technology continues working smoothly and the service can continue running with minimal disturbances.

I also help customers resolve issues with their samples and provide advice on troubleshooting. For example, a common problem occurs during NGS library preparation where there is carryover of Adapter dimers in the final library. Customers submit their libraries to me and I quality check them which is when I usually identify these adapter dimers. I outline to the customer that this is not ideal for sequencing and will hinder their data so it is best that they do a further clean up to try and eliminate as much of the adapter dimers as possible. This gives the customer a chance of saving their libraries rather than having to repeat the whole prep. I feel like this is a good demonstration of my ability to solve problems and working with customers to

	save their samples and reduce their workload. Customers really appreciate this feedback/advice.
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D: PROFESSIONAL PRACTICE

<p>D1: Identify, review and select scientific techniques, procedures and methods to undertake tasks.</p> <p><i>This means you can give an example of work that you have undertaken showing where and why the method/procedure used was chosen as the best (or most relevant) to use.</i></p>	<p>There are many tasks I carry out independently and am required to use to my own expertise and initiative. Although we have SOPs in our lab, some of the work we do is bespoke and can depend on sample type, sample quality, data output specifications and therefore I have to adapt the techniques I do based on this. Firstly, I quality check the samples and select assays based on the expected yield and the actual yield. I will then review these results and advise the customer on library preparation kits their samples are suitable for. Often customers will have a kit in mind that they would like us to use but their samples do not meet the requirements for the kit and will therefore not work and I can then discuss with them the other options. I then begin the prep with the appropriate kit and calculate normalisation dilutions so that the samples again meet the input for the kit. They all also need to be at the same concentration to ensure they aren't over or under cycled during the PCR enrichment. I then have to decide how many PCR cycles to do based on the sample input. Commercial kits provide a guide but this needs optimising and can vary based on sample type. I therefore do a check on the Bioanalyser following PCR to ensure they have undergone sufficient cycles and there is visually enough sample. If there isn't, I can add more cycles on by rerunning them on the thermal cycler. After I have reviewed this and am satisfied with the results, I finish off the prep. Once the prep is complete I then have to quality check the libraries to calculate the nM for sequencing. I use my knowledge of various library prep kits to know whether the TapeStation profile is expected for</p>
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	<p>that library as again this can vary for different library types. Once I am satisfied I can then take them through to NGS. Following sequencing, I then assess the metrics of the sequencing run, these include quality scores, cluster densities and yield. I ensure the run has met all of the Illumina specifications for the instrument and then send the data out to the customer once I am satisfied. If the run hasn't met the requirements I troubleshoot and if I cannot come to a conclusion, I contact Tech Support to discuss with them. Sometimes it is a machine or flowcell fault so tech support will provide replacement flowcells and I will rerun it. In conclusion, much of what I do in my day to day role depends upon many different factors and therefore no project is the same meaning that I have to adapt my techniques and skills to ensure I produce the best quality data for my customers. The multiple examples provided here demonstrate my ability to identify, review and select a variety of scientific techniques to undertake and successfully complete tasks.</p>
<p>D2: Contribute to the organisation of tasks and resources</p> <p><i>This means that you can give examples of how you have contributed to the running of the laboratory/workshop/section or other types of working environment.</i></p>	<p>I am responsible for pipette maintenance and calibration. As previously discussed I use a spreadsheet to track all pipettes across our 3 labs and ensure they are all calibrated annually. This ensures they are working to the highest accuracy. I also maintain the stocks in the lab. I predominantly monitor the QC stocks including Qubit and TapeStation stocks but I also order other kits and consumables for the lab, keeping track of everything on our lab ordering record. This includes receipting orders that arrive and ensuring this is traceable by good record keeping. Further to this, customers who are using our sequencing service receive a quote from myself for the cost of their flow cell along with our service charges. I use a costing spreadsheet to do this to ensure uniformity across our service. When the quote is returned to me, containing their grant code to be charged, I order in their flow cell using the Universities ordering system. I then have to receipt the delivery and store accordingly. I then inform the customer their flow cell has arrived so that they can submit their samples. Keeping stock checks</p>

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	<p>and maintenance records ensures the smooth running of the lab and ensures the equipment we are using is calibrated to a high level of accuracy thus giving us confidence in the results we produce.</p> <p>I organise training sessions for users of our Technology hub. I receive training requests through PPMS (University booking system), specifying the instrument the individual would like training on. I then contact them and send all the information required for that instrument. This includes our training SOP and information for getting access to the labs. This allows employees and students of the University to improve their skills and allow them work more effectively. This also aids my skills by cementing my knowledge and furthering my interpersonal and communication skills. Further to this, I also maintain the online booking system and incidents that are logged on PPMS for trained users. If users encounter a problem with any of our instruments they can log it on PPMS and I regularly monitor this and act on this if need be. A specific example is when our 384 well qPCR machine had a fault. I read the customers explanation of the incident and investigated this and was able to put an intervention on the machine to prevent others using it while it was down. I realised the fault was a machine issue so I contacted Tech Support who advised me on how to fix the issue. Maintaining our equipment is vital so that we can ensure data quality remains high and that the equipment is working optimally. We also want to ensure the machines are available for our customers so that bookings remains convenient for our users. This is a good demonstration of my organisational skills and how I utilise my resources to solve problems.</p>
D3: Participate in the design, development and implementation of solutions.	I actively participate in the development and implementation of solutions. I often have to carry out new protocols and use my skills and knowledge to figure out the best equipment and techniques to enable successful completion of a task. A specific example is when I carried out

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This means that you can give an example of 'problem solving' that describes your specific role in helping to overcome a specific problem. For instance it might mean that a process, programme, design, assay, or method suddenly stops working and you are involved in finding out the reason why. Your example should show what your role was in understanding the problem and what your contribution achieved.

nucleic acid extractions from blood samples. There were two different types of blood tubes and therefore required two different extractions. These had not been done in my lab before so I did a few samples at a time, optimising the protocol each time to achieve better results. For example, I discovered the best way of decanting the supernatant and used various different techniques which showed to improve RNA yield. I then shared these findings with my group so that they could use these and achieve the same results. I then took this one step further and learnt how to use the QiaSymphony so that I could automate the procedure, thus improving the accuracy and efficiency. I met with [REDACTED] technologists and we discussed all the requirements for doing the blood extractions on the robot and provided advice and techniques to achieve the best results. Because of this the lab is now willing to take on a large-scale project whereby we can use the robot for the extractions. This demonstrates how I was able to develop and adapt solutions to benefit my colleagues and my service.

I have written multiple Standard Operating Procedures (SOPs) for use by members of our lab. SOPs are important to ensure everybody is following the same steps to complete a task. This ensures uniformity across the lab and ensures the same end, high quality result is achieved. An example of an SOP I have written is for a new software update we had on one of our Next Generation Sequencers. The upgrade meant the system had a completely new layout and setup procedure. To ensure we all understood how to use this new software, I suggested we had a new SOP. I worked through the software, navigating ways of carrying out our work and wrote this up into an easy-to-follow SOP. I then shared this with the rest of the group and they followed it through so that they could highlight if anything was unclear. Once we were all happy with it, it was validated by another member of staff and placed in the lab as a validated SOP for users. We have our SOPs laminated in the lab so they are accessible and we can tick off steps as we go along so distractions don't disrupt our workflow and cause mistakes. Further to

	<p>this, I have also validated SOPs written by others. I have followed through their procedure and suggested improvements or corrected spellings etc. I then sign this off and it becomes an authorised lab SOP. As highlighted before, SOPs are the best tool for quality management and I recognised here that for this new software the best way of achieving this was by standardising it.</p>
<p>D4: Contribute to continuous process improvement.</p> <p><i>This means that you can give an example which shows how you are aware of progress in your area and seek ways of improving the efficiency of your work. It should describe how you seek to discuss with your supervisor the strategy for achieving this. For instance this could include new and improved methods, new ways to increase throughput, or ways to increase cost-effectiveness.</i></p>	<p>I am always seeking ways to improve my own work but also the processes we perform in the lab. To improve our service it is important that we are always assessing the procedures we perform, looking for improvements as well as keeping up to date with kit updates or new kits available. I take an active role in maintaining this by taking on training opportunities. A key example is the robotics training I received from [REDACTED]. I went on a two day training course learning the software for their robots and learning how to create news methods. I did this training as I wanted to expand my skill set but also to continue the development of our automated procedures. There are many protocols I carry out that are very time consuming and have room for error and will therefore benefit from being automated. My aim is to programme a new protocol for RNAseq on the robot and have it validated by [REDACTED] so that myself and other users can carry out the method when there is a large sample set. Further to this, I now train others to use the robot which contributes to widening the skill set of my team too.</p> <p>As a lab we have undergone a collaborative study with World Health Organisation (WHO) to gain reference sequencing data for Microbiome analysis and the data was submitted to the WHO Expert Committee on Biological Standardisation so that we would be a reference sequencing lab for microbiome analysis. We undertook various methods using control samples provided by NIBSC. My role in this was to carry out the Whole Genome Sequencing using a commercial NGS library prep kit to generate libraries suitable for sequencing on Illumina NGS</p>

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	<p>platforms. Following sequencing the data was analysed by a senior member of staff and submitted for review by WHO. My role was a vital part of the study and the method I carried out was compared to another method. The results were comparable and we gained accreditation as a microbiome sequencing centre. Our service can now be accessed by a wider customer base requiring this service. This demonstrates my contributions to continuous process improvement.</p>
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E: PROFESSIONAL STANDARDS

E1: Comply with and promote relevant codes of conduct and practice.

This means that you can give an example of how you comply with a code of conduct (e.g. of your professional Body) or how you work within and promote all relevant legislative, regulatory and local requirements.

I try my utmost to comply and actively promote the codes of conduct set out by the University ██████████ and the Institute of Science and Technology. I always strive to complete my work to the highest of standards and will not give out suboptimal results. I have excellent feedback from customers I have completed NGS projects for, for the data I have produced. This has also been endorsed by my supervisor in our lab meetings. I also try to maintain high standards by actively participating in CPD activities and taking on and seeking additional training opportunities (outlined in section 2 below) to ensure continuation of the highest professional standards. I abide by all legal requirements (safety legislation/regulation) by attending all lab, fire and chemical safety courses as required. I practice this in my day-to-day work. Some examples include using the correct bins for clinical or autoclave waste and disposing of these accordingly, I clean down my work area daily so that I maintain a safe working environment for myself and my colleagues. I also use UV hoods accordingly to protect myself and others and also to maintain a PCR-clean working environment to prevent contamination of my samples.

Further to this, our work environment has changed greatly since the coronavirus pandemic. The University set new guidelines and guidance which is in line with government legislation for maintaining a COVID safe working environment. I follow all guidance and encourage others to do so if necessary. Our facility has a technology suite for user access within the University and this was challenging due to room restrictions to adhere to social distancing. I devised documents, in accordance to the universities guidelines and risk assessments that had been

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	<p>carried out, to enable users to safely use the equipment and to also still receive training despite social distancing being a challenging factor.</p>
<p>E2: Maintain and enhance competence in own area of practice through professional development activity.</p> <p><i>This means that you undertake activities to enhance your competence in your own area of practice i.e. Continuing Professional Development (CPD) and reflect on its impact on you and others. We are not looking for a list of courses here but evidence of how your CPD benefits your practice and benefits others. Your CPD may include work-based learning, professional activity, formal/educational, self-directed learning.</i></p> <p><i>(Note registrants will need to comply with the Science Council CPD Standards)</i></p>	<p>Continuing my professional development is extremely important and I take an active role in maintaining this. At my annual Personal Development Review (PDR), I set myself goals to achieve by the following year. One of my goals was to expand my knowledge and gain greater expertise in automation. We have a [REDACTED] robot in our lab so I contacted the company and enquired about training. After receiving all the information I decided which training option was going to be the most beneficial and organised this for myself and a colleague. The training consisted of presentations and exercises/workshops. I was able to successfully complete the training and gained a lot of knowledge which I am now able to use on the Robot in our lab. This is going to benefit our service as I am now able to create methods to increase the automated procedures we can perform as a service, thus increasing our throughput, efficiency and accuracy.</p> <p>I regularly participate in self-directed learning in the form of webinars and workshops. I recently attended the Higher Education Technician Summit (HETS). I learnt about advancing my status and increasing opportunities for myself along with a Professional Registration showcase to give me inspiration for completing my RSci registration. I attended a workshop about effective networking for technicians and how networking can advance you and your career. I found the summit incredibly beneficial and it highlighted a lot of the areas for support for technicians and also gave me a lot of helpful tips regarding networking that I am going to utilise.</p>

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I also participate in regular work based learning. The technology in my lab is ever evolving to keep up with the latest Genomic techniques, therefore I am regularly involved in training from external companies as well as internal training from colleagues. My lab has multiple Oxford Nanopore Technologies (ONT) sequencing platforms. I have received multiple training days from the company to learn the theory of this tech and how to successfully complete their common library preparations and also how load and maintain the sequencers. I also attended their online conference, London Calling 2021. This included demos and workshops for planning experiments and also talks from individuals who have used the technology to produce excellent research. I want to continue developing my skills and knowledge with this technology and so I aim to expand my skills to use some of their more complex kits and gain more experience running various sample types and library types on their sequencing platforms. I also regularly have group meetings with ONT specialists to discuss data produced and queries, which really aids my knowledge and understanding.