**All evidence you submit for professional registration must be endorsed by your supervisor/manager**

**PLEASE READ GUIDANCE NOTES FOR APPLICANTS BEFORE FILLING IN THIS FORM**

**You should use more than one example for each competency and address all of the guidance notes.**

**Name:**

**A: Application of knowledge & understanding**

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| **Competencies** | **Guidance** | **Evidence Chosen** |
| A1: **Use specialist experiential knowledge and broader scientific understanding to optimise the application of existing and emerging science and technology** | *You should provide sufficient detail here to show your specialist experiential knowledge and how you have applied it. Further to this, include any examples of where your broader scientific understanding is applied to your area of practice. Examples could include but are not limited to:** Writing and presenting internal papers, reports or standards
* Conducting appropriate research to facilitate design and development of scientific processes
 | In this section you should describe why, what and how you use your specialist experiential knowledge and broader scientific understanding to optimise the application of existing and emerging science and technology to fulfil this competency. 1. **In my present post**, I have been responsible for the bench supervision of a particular Ph.D student & training of other students’ in the same research group and part of this practical remit was to devise methods to amplify and then measure expression of isoform specific genes of interest (linked to a separate cardiotoxicity project). This was necessary to elucidate whether cardio protection in our *in vitro models* was linked to general expression of particular genes or conferred by particular isoforms derived from alternative transcripts. Specifically, I devised an SOP for students which took them from mining transcripts in data bases like *EBI/Ensembl* to primer design, which includes general aspects of primer design, e.g. avoiding hair pin loops, formation of heterodimers and, crucially, how to select target sites for such optimal primers in order to amplify just one gene transcript and not another; viz. selection of exon-exon sites only found in that spliceform. Having compiled an extended SOP a number of students were walked through it in a tutorial type discussion of the procedure
2. In my present role, I have also spent time writing up the *materials and methods* of manuscripts for publication pertaining to real time qPCR experiments in a prior position at the University of Nottingham (circa 2014-2015). At that time, I assisted and trained Ph.D students in *(RT PCR* and *real time qPCR*): See my *extended CV* for reference details, if required. In addition I communicated in person at the time with Ph. D students regarding such materials and data and provided a general theoretical basis and principles of such (gene expression) analysis. Since that time, and in my present post, I communicated with these students via e mail, clarifying data problems and requisite presentation requirements for publication, rooted in theoretical principles, which I explained. Thus far, this has resulted in [one major publication](http://www.sciencedirect.com/science/article/pii/S0091674915016425) as well as a series of both [National](https://drive.google.com/file/d/0B0Hpm_fQCVvFZzBBbnJiRENTWms/view) & [international](https://drive.google.com/file/d/0B0Hpm_fQCVvFeVlJNFJSYlpzN2s/view) conference poster presentations, with myself as a co author
3. **Similarly, in a previous position at the University of Edinburgh** – Made reference to throughout this application and linked to Reference #2 – I actively participated in a monthly Journal club where a group of us, including myself, were expected to critique a particular published paper
4. Also regarding my prior cited position at the University of Edinburgh, part of my remit was to implement a project to independently develop a high through put assay, to screen compound libraries to identify subsets of compounds cytotoxic to *Trypanosome Brucei.* Apart from requisite technical challenges in the lab, progress was facilitated by weekly *Power Point* presentations to fellow group members, to solicit comment on progress, practice and troubleshooting problems. Furthermore, with reference to presenting my project findings to the department as a whole, I actively participated in periodic departmental seminars where I summarised seminal findings in a more broad based narrative, delivered by *Power Point.*
5. **Finally, in the context of this position at the University of Edinburgh** & ‘ Writing and presenting internal papers, reports or standards’ I was responsible for authoring poster presentations on my project background, findings and future work at both [national and international conferences, including Journal abstracts](https://leicester.academia.edu/LaurenceDawkinsHallBScHonsLIBMSMRSBMIScTReg/Drug-discovery-Assay-Development). Furthermore, I prepared summarised methods and findings by written report for our project collaborators in the USA and upon leaving this position (circa 2012) [I prepared to detailed technical reports](https://www.researchgate.net/profile/Laurence_Dawkins-Hall/publications?pubType=technicalReport) in word summarising key findings and presenting seminal pieces of data to include in any future publications. My efforts both in the laboratory and with reference to aforementioned presentations and technical reports did indeed culminate in 2 seminal peer reviewed publications in[*PLoS Neglected Tropical Diseases*](http://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0000803) (circa 2010) & more recently (circa 2016) the Oxford University Journal [*Nucleic Acid Research;* Both with myself as a joint first author](https://academic.oup.com/nar/article/44/3/e24/2503057/A-novel-high-throughput-activity-assay-for-the)

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| A2: Exercise sound judgement in the absence of complete information and in complex or unpredictable situations. | *This competence is asking you to identify and be aware of the limit of your own knowledge and professional competence, to demonstrate an ability to manage your own strengths and weaknesses and to recognise the level of risk attached to your actions. Examples could include but are not limited to:** Considering when you have approached a piece of work or project flexibly and in a novel or different way, or reacted to an unexpected outcome
 | In this section you should describe why, what and how you exercise sound judgement in the absence of complete information and in complex or unpredictable situations to fulfil this competency.1. **In my current position** I am responsible for processing an experimental cohort of formalin fixed paraffin embedded (FFPE) tissue samples that are refractory to antibodies targeting *CD31*, a marker of new blood vessel formation. This experimental cohort is designed to investigate whether drugs delivered in the vicinity of a clot by stent can promote formation of new blood vessels as evinced by immunohistochemistry (IHC) using *CD 31 inter alia.* In the first instance I was expected to review current protocols & talk through experimental strategies and design and then implement pilot staining programs with pertinent antibodies. I then prepared figures in power point and reported back to my PI. In essence, the main this preliminary pilot study involved evaluating different methods of antigen retrieval (renaturation) in formalin fixed paraffin embedded archived experimental samples where preservation results in denaturation of epitopes. For one particular biomarker standard protocols evaluated by me for antigen retrieval, viz. Trypsin digestion and heat denaturation in low molarity citrate buffer both resulted in sufficient staining by IHC to score new blood vessel formation. However, the other principal biomarker utilised in this study failed to stain using standard antigen retrieval techniques. Having reviewed literature for FFPE materials I Conducted experiments where I subjected the tissue to proteinase K digestion and this yielded staining but of insufficient magnitude to score new blood vessel formation. I then improvised on a standard proteinase K antigen retrieval protocol based on some analogous optimisation experiments I had conducted many years before with similar FFPE materials. This more aggressive denaturation did indeed unmask the *CD 31* epitope. Consequently I am now in a position to begin screening the experimental cohort and answer the question. ‘Do certain growth factors promote collateral blood formation in the vicinity of a simulated Atherosclerotic plaque (in experimental rat models’ )?’
2. **In my current position, over and above personal project work and training/mentoring of students,** I am also responsible for the operation, maintenance, servicing and troubleshooting of multiple analytical platforms situated in the main molecular genomics lab I manage. Regarding one platform in particular, viz. the *AB Viia 7* real time qPCR machine, when I first took up the post, we were experiencing a number of technical complications causing frequent cessation of operations. With regard to one particular incident, complying with this competence, it became evident that calibration for array cards, designed to screen Micro RNAs, had not been performed in more than 2 years: Specifically, our service warranty covers calibration for standard 96 and 384 well plates and not specialised array cards. Furthermore, and co incidentally, the halogen bulb used to excite fluorescent samples was about to expire (~2000 hrs of use) and with change of bulb you require new calibrations, as the bulb emits polychromatic light and thus the spectral profile of each bulb is unique, necessitating fresh calibrations to match this ‘fingerprint spectrum’. Since the original array card calibrations would inevitable be wiped to purchase kits in order to put back calibrations and render the machine operable for array cards going forward would cost approximately £3000. Liasing with my line manager and chief technician Dr Tim Barnes (cf. Ref #1), it because clear that ‘soft cash’ was not available in the short term to cover this expenditure. Moreover, having discussed the matter with the principal users’ of array card format it was also made clear to me that such monies would not be forthcoming from their budgets. It appeared we had reached an impasse. Co incidentally, our machine was due for an annual service under the terms and conditions of our fully comprehensive service contract. Accordingly, I persuaded the engineer to change the bub at ~ 1700 hours instead of the prescribed 2000 hours and because this would now fall under the aegis of ‘servicing’ Thermo Fisher themselves were prepared to provide the kits for array card calibration. This circumvented the above complication and rendered the machine operable with the new build for array card format (as well as standard 96 and 384 well plates). Coinciding bulb change (ahead of the official threshold) with the annual service and thus proving the calibration kits as part of the annual service covered by our service agreement was entirely my initiative (obviously with agreement from the service engineer)
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| A3: Demonstrate critical evaluation of relevant scientific information and concepts to propose solutions to problems | *You should think of this competence in terms of selecting the best methodology, the subsequent data analysis and conclusions you draw and how you overcome any barriers or issues. Examples could include but are not limited to:** Engaging in experimental design and testing
* Reviewing relevant literature, manuals or designs
* Sharing your findings with others
 | In this section you should describe why, what and how you demonstrate critical evaluation of relevant scientific information and concepts to propose solutions to problems to fulfil this competency. 1. Another example in my current post of engaging in experimental design based on literature review and then passing on relevant protocols in the form of SOPs devised by myself was a project I participated in where my prescribed remit was to devise methods to amplify and then measure expression of isoform specific genes of interest (linked to a separate cardiotoxicity project). This was necessary to elucidate whether cardio protection in our *in vitro models* was linked to general expression of particular genes or conferred by particular isoforms derived from alternative transcripts. This required me to familiarise myself with identifying transcripts for particular cardio toxic protective genes in both *EBI/Ensembl* & Genbank to identify alternative transcripts common to both data bases. I then devised an SOP for students which took them from mining transcripts in data bases like *EBI/Ensembl* to primer design which includes general aspects of primer design, e.g. avoiding hair pin loops, formation of heterodimers and crucially how to select target sites for such optimal primers in order to amplify just one gene transcript and not another; viz. selection of exon-exon sites only found in that spliceform. Having compiled an extended SOP a number of students were walked through it in a tutorial type discussion of the procedure. In terms of subsequent experimental design and testing, this was trialled by me in the lab based on initial RT PCR. That allowed me to identify pertinent gene isoform specific transcripts actually expressed in our myocyte cell lines, which could then be taken forward by a Ph.D student by real time qPCR. The real time qPCR experiments were designed and explained by me to the Ph.D student and, having conducted the experiments, results were discussed with me to decide on the next experiment. Through this strategy of initial literature review, experimental design and testing of experimental strategies myself and the PhD student were able to successfully elucidate isoform specific gene expression in a number of cardiac cell lines and infer the relevance of such transcripts in protection against insult by foreign compounds

 1. In my prior position at the University of Edinburgh, I was assigned to a project to Develop a simple, stream lined and cost effective assay for screening small compound libraries to identify putative lead compounds with antagonistic efficacy against a Trypanosome Target protein devoid of an *ortholog* in the human host (on account of a unique RNA editing process in *Trypanosomatid* parasites not found in humans:

The first stage in this (drug discovery) assay development procedural pipeline was to find an optimal method for expressing and purifying a recombinant soluble target protein: In particular *RNA Editing ligase 1 (REL 1)* which has no equivalent *ortholog* in the human genome and thus potentially represents a parasite specific target: Having consulted the literature, experts in the field and trialled various pilot scale expression models, abundant soluble phase protein was achieved by expression in the *E coli* strain *BL21 DE 3* by commencing induction with a simple heat shock and then expressing the recombinant protein over a protracted time period (20hrs) at a sub ambient temperature (18oC). These expression conditions were conducive to protein production with minimal mis folding and thus soluble active protein compatible with a functional assay.  The next obstacle was to discover methods for long term storage of the protein @ -80oC without losing activity upon freeze thawing: This was achieved by Glycerol stabilisation @ 10% (v/v) coupled with particular additive known to help promote retention of nascent structure through a clathrate mode of action. The bench work was a combination of guidance from literature extolling ‘best practice’ coupled with empirical investigation Having produced soluble, stable target protein preliminary pilot scheme evaluated the effects of known inhibitors on *REL1* based on a radio ligand assay followed by antagonism of REL 1 with substances predicted to have antagonistic efficacy towards *REL 1* based on *in silico* modelling. This ‘proof of principle’ culminated in [a major publication in *PlOS*](https://www.scopus.com/record/display.uri?eid=2-s2.0-78149265785&origin=inward&txGid=79c924ad5103dee1a30b1dcb95c364a4) with myself as joint first author and also [first author poster presentations at National infectious diseases conferences](https://www.academia.edu/20081776/_P-120_RNA_editing_as_a_drug_target_in_Trypanosoma_brucei_Identification_of_inhibitors_of_the_essential_enzyme_REL1). Joint first author status was conferred because all bench work and preliminary literature investigations were performed in dependently by myself The final stage of this procedural pipeline having demonstrated proof of principle was to develop a stream lined high through put assay to mass screen compound libraries. This required assay development in the context of [(*Michaelis Menten*) enzyme kinetics](http://portfoliolaurencedawkinshall.weebly.com/examples-of-work_drug-discovery.html) & substrate, [Fluorometric adducts](http://portfoliolaurencedawkinshall.weebly.com/examples-of-work_drug-discovery.html) & considerations about how best to quantify target hits in terms of ‘best practice’ viz. a statistical parameter called the [*Z score*](https://en.wikipedia.org/wiki/Standard_score)*.*  All biochemical parameters were successfully and personally developed by me and the assay was subsequently used in drug discovery centres to identify ‘real hits’; Once again resulting an [*Oxford University press Journal publication (NAR)*](https://www.scopus.com/record/display.uri?eid=2-s2.0-84965062888&origin=inward&txGid=b79dfc2a130a7b77eda7ab3c69b9c8ce), with myself as joint first author as well as joint first author on numerous posters @ [national](https://www.academia.edu/20082427/_P-116_RNA_Editing_as_a_drug_target_in_Trypanosomes_Development_of_a_high_through_put_screening_assay_for_RNAediting_ligase_1) as well as [international](https://www.academia.edu/31543552/_151_Towards_new_drugs_for_trypanosomatid_diseases_based_on_specific_high-affinity_inhibitors_for_Trypanosoma_brucei_RNA_editing_ligase_1) conferences1. **In the context of my present position,** I have been charged withdeveloping an *in vitro* model of tumour metastasis, which simulates the interaction between tumour cells and endothelium, in the presence of modulating platelet factors. The first task was to develop a simple stream lined model of tumour endothelium interaction in culture: This has been achieved by seeding *Boyden chambers* with *Huvec* cells followed by additional seeding with a tumour cell line (*HT 29*) and then evaluating transmigration of the latter cells through the endothelial barrier. All seeding parameters have been personally and empirically investigated by myself, with proposals put at bi weekly meetings to my PI who then comments on my ideas. In addition, I have reached out to the scientific community at large via *Research Gate* to solicit best practice and also consulted current literature on transmigration to adopt and adapt such published precedents. The next stage, which will commence shortly, will be to set up the full transmigration assay, where purified platelets are added to the mix together with putative antagonists of platelet exosome factors to identify substances demonstrating putative inhibition of *HT 29* transmigration

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**B: Personal responsibility**

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| **Competencies** | **Guidance** | **Evidence Chosen** |
| B1: Work autonomously and take responsibility for the work of self and others | *It is important for this competence to ensure you describe your contribution, responsibility and impact on a certain task and make it clear what you personally have achieved i.e. “I” not “we”. In formulating your answers, you should consider the following:** You will be expected to undertake much of your work without day-to-day supervision and so you should demonstrate that you are able to achieve this
* You should demonstrate your understanding of when you may need to seek guidance from others and how you would obtain this guidance
* If you are responsible for managing the work of others, you should clearly describe how you discharge those responsibilities
 | In this section you should describe your level of autonomy and how you take responsibility for the work of self and others to fulfil this competency. 1. **My current role as a ‘core research technician’ is a centrally funded support role and my overall job scope is to offer technical support to individual end users’ particularly students with limited laboratory experience and also provide and maintain a fully functioning multi PI large molecular biology laboratory.** I was hired into this position based on my abundant experience in both ambits and as such I am expected to organise my own time and interact with students, PIs admin and outside technical representatives with minimal input from my line manager. To that end, I manage my own time and set my own priorities; both with regard to project work and running a busy multi user molecular biology laboratory. In essence, this requires efficient time management in which one or more bench projects are intercalated with housekeeping duties to satisfy both sets of work objectives. Regarding lab management I discharge this aspect of my job description completely independently based on prior personal practice; I simply keep my line manager in the loop. Where bench project work is concerned I discharge technical duties independently but recognise the bigger picture informing why I do what I do is outside my own expertise (requiring theoretical expertise in the actual subject matter). Accordingly, I will try and trial particular technical solutions to problems associated with experiments of my own volition but the initial project scope is set by a PI who I will meet with on an intermittent basis. These progress meetings take the form of me presenting material(s)/results, usually in power point format as a personal presentation for comment and scrutiny. Technical details tend to be a 2 way discussion, based on my own findings and discussion elicited by me via forums like *Research Gate* but project priorities, vis-à-vis how they conform to the bigger picture and permission(s) to order relevant experimental consumables are given by the PI
2. With Reference within this varied remit to managing the work of others, for about 6 months I bench supervised a Ph. D student: As already discussed, the object of managing this aspect of their project was to devise methods to identify and measure isoform specific gene transcripts of candidate genes with a putative role in conferring protection to toxic insults on cardiac cell lines *‘In vitro’.* This management took the form
* Of training them in mining isoform specific gene transcripts from data bases, cf. *Ensembl* & *Genbank*. This in turn entailed me writing an SOP and then talking them through it
* Primer design which includes general aspects of primer design, e.g. avoiding hair pin loops, formation of heterodimers and crucially how to select target sites for such optimal primers in order to amplify just one gene transcript and not another; viz. selection of exon-exon sites only found in that spliceform
* Having completed these preliminary design of genomic materials I was then responsible for training and demonstrating all aspects of RT PCR to the student
* This enabled the student with discussion and guidance from me to take a subset of the best performing genes/primer sets forward into actual real time qPCR in order to measure gene expression:
* Initial training in real time qPCR and design of gene expression experiments with discussions on how to proceed was managed exclusively be me
1. **In my prior position at the University of Edinburgh (Ref. #2)** I was, as my PIs first employee in the UK, having come to the UK on an *MRC fellowship* from the USA, I was expected to assist with lab set up from its inception and also set up a drug discovery project, building on prior work in the USA. Specifically:

I spent the first 3 months in post:* Procuring quotes for key pieces of equipment
* Purchasing such equipment and consumables with permission from my PI/line manager
* Organising the physical space in the lab including attendant organisation of fridges and freezers for perishable consumables for subsequent project work to be carried out by myself and other lab staff employed subsequently

 Having set up the lab, I liased with my PI to identify bench work priorities and project scope with reference to the aforementioned drug discovery program I personally and independently performed in the lab. To autonomously perform this lab work, I versed myself with key achievements in the USA and then identified technical strategies to achieve key practical objectives as already outlined, viz. efficient production of soluble and stable recombinant target protein (*rREL 1*) and subsequent optimisation of the fluorescent assay utilising *rREL 1* with reference to substrates, enzyme kinetics and statistical evaluation of preliminary hits. My principal role was to independently perform the wet science and inform my PI of progress and potential future experiments. He would ratify progress; confirm future objectives and also modify experimental objectives in line with MRC project milestones and finance. Progress meetings were weekly and took the form of one on one *Power Point* presentations of data, experimental design and future priorities. In addition, I was expected to present via *Power Point* to publicly to the group as a whole in order for my PI but also post doctoral fellows to comment on my data and plans  |
| B2: Promote and implement robust policies and protocols relating to health, safety and security |  *You should demonstrate that you understand the policies and protocols related to health, safety and security that apply to the work you are undertaking and describe any responsibilities that you have related to this. Security can include issues related to data, Intellectual Property, confidentiality, prevention of contamination, traceability of documents and information. In formulating your answers, you should consider the following:** These policies and protocols will document how relevant aspects of your work must be carried out. Demonstrate that you know where these policies and protocols are documented, and that you are able to apply them in your practice
* What risks you are aware of related to the security aspects of the work you carry out, and how you seek to mitigate these risks
* How you “promote” the awareness and application of these policies and protocols with others, especially peers and more junior colleagues
 | In this section you should describe why, what and how you promote and implement robust policies and protocols relating to health, safety and security to fulfil this competency. 1. **In my current position,** I am responsible for completing *COSHH* forms for communal hazardous chemicals I order via *smarter* purchasing
2. In addition, I am responsible for training students in the completion of such forms and making sure they understand and comply with *GLP* in terms of PPE and waste disposal: Training of novice students is an integral part of the students introduction/induction into the lab
3. Apart from this induction into health and safety, I provide an *ad hoc* service for anyone purchasing hazardous/toxic chemicals linked to a new procedure if they require help completing or complying with the *COSHH* form, e.g. interpretation of *hazard statements*; *pictograms* & *risk phrases*
4. In addition, safe working practice is inculcated by training, e.g. safe waste streaming by paying attention to such things as methods and routes of disposal: A seminal example would be making sure that *cytotoxic* chemicals are only handled in the fume hood and are disposed of in a cytotoxic bin, collected and eradicated by incineration; as opposed to working on the open bench and streaming such waste via standard orange waste bags, neutralised by microwaving and destined for land fill. An example of this would be use of *Trizol* for extraction of RNA
5. To ensure that such practices are continually adhered to, apart from initial training of students, we have monthly lab meetings where obvious transgressions are pointed out and GLP is clarified in such meetings and subsequent lab minutes. These monthly meetings are augmented by *ad hoc* e mails when mal practice is identified
6. Another example of safe working practice, compliant with *COSHH,*  is storage of chemicals; This has been set up by me as part of my lab management remit: Specifically, acids and alkalis are separated from oxidising agents in separate metal fire proof cabinets and volatile cabinets are stored in ducted, ventilated solvent cabinets
7. To comply and implement the above I have attended Leicester specific COSHH and risk assessment courses
8. I**n my former position at the University of Edinburgh,** I was responsible for all aspects of health and safety including *inter alia GLP*, storage and safe handling of hazardous substances and waste streaming. Thus all of the above considerations and practices were similarly carried out
9. Furthermore, to gain an appreciation of such practices and how they are informed by HSE legislation I attended a 1 week Biosafety course with 1 full day of examinations and an oral presentation, culminating in the award of [Bio safety practitioner (Foundation Level #1)](http://www.istr.org.uk/docs/bsp%20level%201%20register.pdf)
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| B3: Promote and ensure compliance with all relevant regulatory requirements and quality standards | *You should demonstrate that you understand which regulatory requirements and quality standards apply to your area of work. In formulating your answers, you should consider the following:** Describe what you do to ensure that these requirements and standards are being followed for those activities for which you are responsible
* Describe how you “promote” the awareness of regulatory requirements and quality standards amongst peers and more junior colleagues
 | In this section you should describe why, what and how you promote and ensure compliance with all relevant regulatory requirements and quality standards to fulfil this competency. **In both my current role in the BHF cardiovascular centre and former role in Infectious diseases at the University of Edinburgh**, part of my Lab management remit was/is to ensure safe and competent working practice through administering *COSHH* and paying due regard to laboratory organisation and *GLP*In that regard and to ‘promote and ensure compliance with all relevant regulatory requirements and quality standards’ I:* Make sure that for all new chemicals that are communally ordered on behalf of the lab, *COSHH* forms for hazardous chemicals are completed
* These forms stored on a shared drive and in addition hard copies are archived in ring binders: Users are expected to read these forms and sign they have understood implicit risks before commencing procedures incorporating such hazardous substances
* Furthermore, these are made available via our departmental intranet and all new lab staff are aware of their location via an induction pack
* For new students (in particular) performing laboratory procedures with one or more of these chemicals they are instructed in implicit hazards and *GLP* by me before commencing such procedures
* In addition, for procedures utilising non communal but hazardous chemicals I make sure the students are aware of how to fill out relevant *COSHH* forms (by accessing and transposing MSDS information onto the departmental *COSHH* forms) and implied safe practice; In particular, storage & handling of such substances; disposal routes; PPE and the concept of risk phrases, hazard statements and pictograms
* Promotion of such safe *COSHH* compliant working practices as mentioned is reinforced through monthly lab housekeeping meetings which I contribute to in terms of housekeeping points and on occasions publicly conduct as well as devise minutes (for general circulation to lab staff)

Another example in my current position in Cardiovascular sciences of *COSHH* complaint practices is chemical storage. In particular, I am responsible for devising and implementing safe storage of chemicals in conjunction with the Chief Technician Dr Tim Barnes, who is also my direct line manager and (pertinent to this answer) health and safety officer (and in fact Referee #1 in this application): Specifically, Organic or generally Volatile solvents have recently been relocated by myself to a purpose vented solvent cabinet, liasing with the Chief Technician; Acids and alkalis are stored separately in a metal cabinet under the fume hood and Oxidising agents are segregated into a metal flame proof cabinet by themselves. To promote this delineation I have taken to placing laminated signs on the outside of respective containment facilities describing the type of storage, e.g. volatile solvents, viz. all organics and then listing the contents inside**In my second cited position at the University of Edinburgh** similar considerations applied. In addition, however, Because I arrived at the lab at the point of inception and assisted my PI in the actual set up of the laboratory I was also responsible for devising and implementing waste disposal policies in line with *HSE*, University wide policies and extant local regulations. These were enunciated in policies written by me and displayed in the laboratory as well as archived on local lab drives and also reinforced at our weekly lab meetings *ad hoc* |
| B4: Oversee the implementation of solutions with due regard to the wider environment and broader context. | *You should demonstrate an understanding of the potential and actual impacts of your work on your organisation, on the profession, on the general public and on the physical environment. Examples could include but are not limited to:** Indicating that you are aware of the sensitivity of your work and show how this understanding translates into the ways in which you carry out your work
* Showing an awareness of how your profession is portrayed and viewed by the public at large, and how you take responsibility for recognising this in the work you do
* Describing how you seek to avoid reputational damage related to the work you carry out
* Explaining how you set a good example to others in the way you discharge the responsibilities related to the work you undertake
 | In this section you should describe why, what and how you oversee the implementation of solutions with due regard to the wider environment and broader context.to fulfil this competency. **In my current role and also second role at the University of Edinburgh, under scrutiny, in this document I am/was responsible for managing large molecular genomic laboratories, consisting of 20 or more lab based personnel, linked to multiple PI’s**1. One consequence of this many persons in terms of impact on and due regard for the broader environment is waste streaming including ‘oversee and implementation’ of recycling provision

In particular, in my current role as a core (research) technician within cardiovascular Sciences at the Glenfield Hospital, I am responsible for recycling of empty tip boxes, accrued through the shire number of tips consumed. Recycling circumvents the original situation where empty tip boxes were disposed of in black standard refuse bins destined for landfill To accomplish effective and efficient recycling, I am expected to liase with the parent company who then make appropriate arrangements with the courierIn addition, and at the outset of my post, users’ were mandated to place their empty tip boxes inside recycling polythene bags situated in a green wheelie bin. In the absence of collection problems linked to logistical problems with the courier, e.g. failing to go to the appropriate pick up point in the hospital or failing to turn up for collection at all my primary communication with the parent company who outsource recycling to couriers has been to arrange a date for pick up and ensure polythene bags are sealed and situated in the designated pick up point. In addition, I am responsible for making sure we have requisite stocks of polythene bags and ties to continually provide recycling 1. In addition to environmental considerations and their impact on the environment, in my current core role with lab manager responsibilities, I also oversee and implement waste disposal, which has to be COSHH complaint and in line with GLP. This in part is inculcated through information provided in COSHH forms and passed on in person to novice workers when I walk them through the implications of COSHH forms for particular hazardous chemicals.
* To take one specific example of waste hazard disposal and limiting environmental impact, We use *Trizol* and other phenol derivatives to extract DNA and RNA and these must be used in a fume hood and residual organic waste disposed of in cytotoxic bins *in situ*
* The use and disposal of such hazardous phenolic compounds is inculcated by COSHH – both in terms of initial training by myself for novices when it comes to nucleic acid purification – and also initial purification demonstration/Technical training by me for the benefit of new students
1. Another example in my current role of due regard to the environment in terms of policy practice is making sure non hazardous but biological waste is segregated from general refuse. This is achieved by delineation of such waste streams into 2 types of physically distinct bins; Namely black bins for general landfill refuse and orange bins for general containment level 1 (non hazardous) biological material, which is microwaved prior to disposal in landfill. I ‘manage’ these routes od disposal by monitoring transgressions and either pointing them out by general e mail; speaking discreetly to the particular ‘offender’ or bringing up the issue in our monthly housekeeping lab meeting. Adding to point 2) I absolutely come down hard on anybody who mistakenly or casually disposes of toxic organics in orange bags instead of cytotoxic bins
2. In my current role and in terms of promoting cardiovascular science in a good light I participate in a couple of outreach initiatives:
* The BHF centre relies primarily on program grants from the BHF to procure continuous funding. As part of that procurement I play a lead role in promoting and providing scientific tours for lay members of the BHF, e.g. volunteers and in house admin staff: These take the form of explanation in basic language of key themes underpinning our work, e.g. ‘what is DNA versus RNA versus protein ?; what is PCR ?’ and then explanation of what key pieces of equipment situated in the lab are used for to accomplish these aims. In conducting these tours I am mindful of professional and courteous conduct
* The second initiative I participate in to promote the work of general life scientists is participation in school tours; Thus far in my case this has taken the form of a personal professional profile compiled in *Micro Soft Front page* which was showcased on a board at *Leicester Grammar school* as part of their careers fair
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**C: Interpersonal skills**

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| **Competencies** | **Guidance** | **Evidence Chosen** |
| C1: Demonstrate the ability to communicate effectively with specialist and non- specialist audiences | *A non-specialist audience is anyone working outside of your particular area of expertise, so it would not necessarily be a non-scientist. Your example(s) should indicate how you have communicated in a way that is effective to each type of audience. In formulating your answers, you should**consider the following:** Not just the content of the message but also the mode or style of delivery that is adapted according to the audience
* The feedback loop to gauge the understanding and improve future communications
 | In this section you should describe why, what and how you communicate effectively with specialist and non- specialist audiences.to fulfil this competency. **In my current role**, I am responsible for managing a multi user multi PI molecular genomics laboratory which includes at any one time approximately 20 lab based personnel. My remit includes interfacing on multiple projects; stock taking ordering and account auditing; assignations with Company equipment engineers and external sales specialists & training novice personnel in particular bench techniques. In addition I perform outreach duties engendering in house non specialist audiences and external (BHF) personnel. In consequence I interface with a plethora of specialist and non specialist audiences alike, including* PIs in relation to managing bench based projects I personally participate in
* Students relating to technical training and health and safety training (COSHH)
* Technical specialists and equipment engineers from outside Medical Science companies
* Sales representatives from similar companies
* In house admin staff relating to smarter purchasing and account auditing
* In house financial personnel relating to account auditing
* Non specialist admin staff participating on scientific tours I organise and conduct
* Non specialist external personnel (BHF volunteers & in house London based staff) on similar scientific tours and latterly formal lectures on ‘measurement of gene expression’ (relating to a BHF open day, with 120 BHF staff and volunteers in attendance)
* A mixture of both specialist and non specialist personnel at a departmental away day where I delivered a 5 minute *Power point* presentation to approximately 150 personnel
* Finally I have also participated in one ‘Outreach program’ at Leicester grammar school, where I presented a career profile for display at a careers fair

**In my prior role** under scrutiny my remit was very similar. Consequently, the above relationships also pertained. In addition, However, in that role I was also expected to give public power point presentations to both my own group on a weekly basis and at departmental seminars. Finally, I was expected to communicate to a wider specialist audiences at both national and international conferences in the form of (1st) authorship of poster presentations and conference abstractsRegarding didactic style, when communicating with PIs in progress meetings, that takes the form of *Power point* figures, summarising data: Conversation is confined to data proclivities and experiments to do. The conversation in this regard is very much a dialogue, with myself leading discussions on methodology results and proposed future direction, with the PI commenting on data and confirming or altering the next experiments in sequenceRegarding technical training delivered to specialist students, this takes the form of didactic instruction in the office, initially relating to an SOP that I have devised with explanation of practical principles underlying the procedure and then any safety implications if hazardous substances are incorporated. This is followed by didactic practical demonstration in the lab with, on one occasion bench supervision of follow on experiments: An example of this type of technical training with specialist students is extraction of RNA from mammalian cells, followed by reverse transcription, culminating in cDNA and then selective amplification of target genes using optimal primers designed to gene transcripts mined in *EBI Ensembl* & *GenBank.* SOPs have been respectively devised by me for RNA extraction, reverse transcription and selective amplification of genes of interest (GOI), using genomic data mined from *Ensembl* and *GenBank* databases & students are walked through these in person. One on one practical demonstration is then provided with emphasis on PPE, waste disposal and the procedure itself**Regarding scientific tours to non Scientific non specialist audiences** these require more thought but in many ways are more rewarding: In essence, I tend to commence such tours by providing background explanation of ‘what is DNA’ ‘what is RNA’ and ‘what is protein’ and the relationship between these 3 groups. I then talk about genes as bits of DNA and how mutations are like spelling mistakes in a book causing pathophysiology….etc. Crucially and for the purposes of this competence, this material is presented with cartoon like depictions of each substrate and pitched at the level of a ‘Radio 4’ discussion, i.e. compatible with an educated lay person. Analogies are used as frequently as possible, e.g. the simile of mutations being like spelling mistakes in a book and the book itself constituting the whole genome sequence. Having provided this contextual background then and only then do I take the participants to see particular platforms in the lab, e.g. *gel documentations* systems for visualising DNA; PCR machines, which are like factories for making lots of the DNA for analysis, and real time PCR machines for measuring the RNA made from DNA. In presenting the lab tour, I always ensure that I select equipment/data that is tangible and engaging to the eye, e.g. *ethidium bromide* bands on agarose gels. On reflection, having given a number of these lab tours, I realise that key to engaging the participants is to keep dialogue as ‘open as possible’ since interest in medical science is often motivated by personal real world experiences. Thus, the ‘scripted tour’ might digress in to familial stories of heart disease in participant families. From that point of view and over time I have realised that the actual content of these tours is as much determined by lay participants as my rehearsed materials. Consequently, discussions tend to sound as much like a *BBC* news report as a didactic lesson in the genetics and genomics of Cardiovascular disease. In addition, over time, my presentations have become more replete with metaphors and analogies in order to make a point, e.g. when describing primer design for making lots of DNA by PCR (I often describe the actual PCR machines as ‘DNA production factories’) I talk about the fact that these little DNA strands find their intended target in the same way as spell checker find a sentence in a word document. In addition, over time, I have resorted to recommending popular science narratives on genetics and genomics and even use their front covers as props, e.g. the ‘*The* *deeper genome*’ (John Parrington) uses the metaphor of an ice berg on the front cover to make the point that exposed and understood part of the genome (the protein coding exome) is quite literally the ‘tip of the iceberg’ where gene expression and development is concerned and most components orchestrating expression are the hidden bits or ‘*dark matter* ‘ of the genome (encoding *non coding RNA* species). I use this front cover to make this introductory preface when beginning my tourAnother activity I regularly engage in is soliciting and providing answers to research questions on scientific forums; Principally [Research Gate](https://www.researchgate.net/profile/Laurence_Dawkins-Hall). I engage with this forum to find technical solutions to problems relating to a research project. For example, I am currently attempting to set up an *in vitro* model of tumour cell extravasation and the effects of platelets on this transmigration phenomenon. I have been guided by experts in the field by soliciting discussion on *Research Gate*Indeed, with regard to providing advice to external personnel via Research gate [I was invited to become I review Editor for Frontiers in Medical Research (Infectious diseases and Microbiology)](http://loop.frontiersin.org/people/159049/overview) I duly accepted and have just completed my first editorial assignment, wherein the principal author took on board my caveats regard manuscript content and subsequently I recommended the manuscript be accepted for publication; Just today I have accepted my second editorial assignment with *Frontiers in Microbiology* : My recent editorial experiences have assisted with reinforcing my scientific critical reasoning; similar, in fact, to participating in a monthly Journal club in my prior cited position at the University of Edinburgh**With reference to my previous Scientific post at the University of Edinburgh** I regularly presented *Power point* updates to my group colleagues: These figures like informal presentations to PIs primarily stressed emerging data and future work. Concomitantly I also participated in departmental seminars. Delivered by power point these presentations tended to knit data together in order to reinforce a hypothesis or completion of a project milestone, e.g. [optimisation of a fluorescent high through put drug discovery assay](http://portfoliolaurencedawkinshall.weebly.com/uploads/2/6/5/8/26583794/working_portfolio_fret_assay_2009_2013.pdf) in order to implement actual drug discovery by screening small compound libraries  |
| C2: Demonstrate effective leadership through the ability to guide, influence, inspire and empathise with others | *This competence is about understanding your leadership skills and is not reserved for those in management roles; it is applicable to all. Examples could include but are not limited to:** Experiences of mentoring or coaching you have had; you should consider how effective this was and the overall impact
* Considering when you have managed change within your organisation or overseen the implementation of any new processes
 | In this section you should describe why, what and how you demonstrate effective leadership through the ability to guide, influence, inspire and empathise with others.to fulfil this competency. 1. With reference to my current position in Cardiovascular Sciences and ‘mentoring, guidance, and influencing others’, I have been personally instrumental in effecting out comes in this regard in both scientific and non scientific contexts:
2. The first lab based/research project example, exemplifying leadership skills and influencing the behaviour of a student relates to a bench project I was responsible for implementing through a Ph. D student. The overarching objective of this project was to Devise a procedural pipeline for extraction of RNA from cardiac myocytes & consistently and robustly measure expression of pertinent genes of interest (GOI):
* Using real qPCR to quantify such genes, do we elect to use customised & therefore expedient *TaqMan* assays or more technically involved but cheaper and flexible *Sybr Green* qPCR assays ?
* Having selected a real time qPCR protocol, how do we go about selecting stably expressed abundant housekeeping genes for normalisation of expression?
* Regarding IT considerations, what is the best method for quantifying expression between different sample groups (normalised to selected housekeeper genes)?

With reference to these 3 seminal questions my first task was to go away and prepare the ground by perusing current literature on best practice and engaging with the wider scientific community via *Research Gate.* Based on these initial endeavours it became obvious that:* *Sybr green* assays although requiring design of primers to GOIs and working up the assay, would afford flexibility in terms of where in the cDNA sequence we were able to map the primer sequence: This seemed important in order elucidate if a particular protein isoform derived from a particular alternative transcript was responsible for conferring cardio protection to drugs. Moreover, *Taqman* probes, although off the shelf and therefore convenient are expensive compared to simple *sybr* dye labelling of cDNA and with inclusion of panels of housekeeping genes to select the best requisite 2 or 3 for expression analysis, it became evident that significant cost savings could be incurred by choosing to label with *sybr green*
* Based on current best practice and [*MIQE compliance*](http://miqe.gene-quantification.info/)  it was also evident that we needed to screen a panel of housekeeping genes using programs like [*gene Norm*](https://genorm.cmgg.be/) to find the 3 optimal housekeepers in the context of our expression system
* Finally, from literature perusal, including discussion threads on *Research Gate* and also soliciting answers on Research gate to questions posed I realised that we needed to perform normalisation of gene expression using the [*geometric mean*](https://en.wikipedia.org/wiki/Geometric_mean) of 2-3 housekeepers and enumerate actual gene expression between different cardiac cells lines using the so called *Delta Delta Ct* method (or [*Livak*](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.320.1365&rep=rep1&type=pdf) method). This was carried out in *Excel* and [students trained by me in the methodology](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.320.1365&rep=rep1&type=pdf)

Subsequently and crucially from the perspective of this competency, I communicated this information in the first instance to the student in question. Further, I devised SOPs to codify practice and initially I walked the student through the specifics of the procedural pipeline. Regarding implementation of the actual practical lab work, viz. preparation of materials such as gene specific primers; preparation of RNA from cardiac cell lines; production of cDNA and then preliminary RT PCR to screen for optimal primers/housekeeping genes selection of that subset demonstrating consistent and high level expression in the context of our cell lines; and finally actual measurement of gene expression in target proteins normalised against these housekeepers by real time qPCR I worked with the student in the lab at the outset to ensure competent practice. The student then took this project forward by themselves having been familiarised with pertinent concepts and received practical training from me. At this juncture the student and I interacted to monitor progress and troubleshoot practical issues and if necessary, whilst at this stage I did not personally engage in the lab work I did still design many of the students experimentsIn the final stages of this bench supervision, it was necessary to collate raw data and carry out a procedure to actually enumerate gene expression. This was done by the student using the so called *Delta Delta Ct (Livak)* method of analysis, incorporating calibration based on the *geometric mean* of 3 housekeeping genes, selected with training and guidance from me, as described above. In terms of data analysis training, there again, I provided worked examples of the *Livak* method and computing the geometric mean in excel spreadsheets. Furthermore both housekeeping gene selection by use of software and subsequent *Livak* analysis were discussed in group meetings and also in specific one on one meetings with myself and the group head present. In conclusion through guidance and training the aforementioned student because confident and competent in measurement of gene expression 1. With reference to effecting change in my current position outside of my lab based technical duties, I have carried out reorganisation of our micro biology/ cloning lab. In particular, I now insist that
* Virgin LB agar plates are segregated from inoculated plates in a ‘clean fridge’ ( where reagents for plasmid preps etc. are also stored)
* Virgin plates are kept sealed by para film to minimise contamination by fungal spores
* Inoculated plates are segregated in a so called ‘Dirty fridge’: Such plates are sealed with *Nesco* film and dated
1. To prevent cross contamination
2. To make sure that plates are disposed of within a 6 week time frame, after which time colonies are desiccated and not viable (for plasmid purification)

Finally, spent LB agar plates must be disposed in separate bins (for incineration) and not general biological (Orange bag waste) as any agar from a breached orange bag that escapes during autoclaving can block the filters and put the autoclaves out of actionAll such competent practices are promoted by making sure that every new user of the cloning/Micro biology lab is subject to induction by me and also via laminated instructions on the fridges and bins within microbiology |
| C3: Demonstrate the ability to mediate, develop and maintain positive working relationships | *You should describe or define the “working relationship” and provide at least one example which focuses on your handling of a challenging interpersonal situation and demonstrates your ability to mediate and achieve a positive outcome. You should consider how through your approach you have changed or modified the behaviour or attitudes of others to positive effect. Examples could include but are not limited to:** How you have managed the merger or integration of different teams
* Managing working relationships across different departments or organisations
* Interactions with committees, working groups or other professional body activities
* How you have managed and resolved a difficult relationship situation between members of a team for which you are responsible.
 | In this section you should describe why, what and how you demonstrate the ability to mediate, develop and maintain positive working relationships.to fulfil this competency.1. **In both my previous role at the University of Edinburgh and my current role in BHF cardiovascular Sciences at the University of Leicester**  I deal with different constituent groups, e.g. scientific specialists (lab personnel), admin staff outside protagonists, each with their respective and different agendas. Productive & relationships are necessary to perform all aspects of my job description to the best of my ability. This is imperative in my support role to ensure smooth running of the labs on behalf of other lab users and perspicuous costings in relation to finance staff. Maintenance of positive working relationships keeps everything afloat
2. With specific regard to one type of working relationship and resolution of a problem, as described, part of my remit is management and organisation of lab resources and adherence to GLP. In general this is achieved by identifying transgressions and either communicating with the individual in question or sending out group wide e mails explaining the transgression and why this needs to change. In turn these ‘incidents’ are flagged and discussed by me in monthly lab housekeeping meetings. On one particular occasion however, there had been a recurring problem with agarose not being removed completely from conical flasks and problems with auto fluorescence when contaminated glass wear was employed in other types of experiments. This was recurring despite e mails from me informing users how to completely remove the agarose and re affirmation of these instructions in the monthly lab meetings. As a consequence of this I informed my line manager Dr Tim Barnes in his capacity as health and Safety officer. He then sent out separate correspondence. In addition, I asked the PI to raise the incident herself at our monthly gatherings. This duly happened and with independent cajoling the problem ceased. To cover all bases however and stop contamination of other types of fluorescent assays, I took the initiative and introduced specific and separate glassware for agarose gels vis-à-vis general glassware; In particular, I asked regular users’ of agarose gels to take a duran bottle, delineated by a label and red (as opposed to blue top) and keep for the specific purposes of running gels. This behaviour was successfully adopted
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**D: Professional practice**

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| **Competencies** | **Guidance** | **Evidence Chosen** |
| D1: Scope, plan and manage multifaceted projects  | *Describe a project that you have managed and make it clear the level of autonomy you had while working on the project, especially if you were in a team. You should show how you contributed to determining the resulting courses of action. Examples could include but are not limited to:** An operational project utilising resources across several disciplines
* A change management project aligning processes across sites
* An industry-wide project establishing guidance on technical standards and requirements
 | In this section you should describe why, what and how you scope, plan and manage multifaceted projects.to fulfil this competency.My current position where I am expected to participate in multiple ad hoc research projects and manage laboratory resources for other laboratory users requires careful consideration with regard to my time and how I plan my activitiesWith particular regard to lab based research projects I am currently participating in 3, cf.1. IHC staining of experimental sections to elucidate new blood vessel formation in rat experimental models with artificial atheroma’s and proximal stents carrying growth factors in an effort to promote collateral blood formation, circumvent blockage and restore blood flow to the heart
2. Processing samples derived from patients undergoing cardiac surgery: Specifically, amplifying particular micro RNAs species in plasma and then measuring there levels by real time qPCR to make correlations between *mIR* levels and subsequent postoperative morbidity; In other words attempt to identify prognostic biomarkers in the form of *mIR* that might indicate postoperative complications
3. An attempt to model *in vitro* the interaction between tumour cells and blood vessels to evaluate diapedesis of tumour cells through these (model) vessels and how this trans migration is modulated by platelet (exosome) factors

Because assignment to research projects is temporary and *ad hoc,* at the outset for all such projects and other projects going forward, a discussion is initially had between myself and relevant PIs in order to identify project objectives. I have then gone away and thought about these objectives and based on a time commitment I can allocate to each of these projects (in conjunction with concomitant lab housekeeping duties already described), another discussion is had where we scope the anticipated time that each of these projects will take. Finally, a document is composed by the relevant PI; agreed to and commented on by me and then signed by all relevant parties including my line manager. To provide an example of project scope, with regard to IHC processing of experimental tissue sections the number of such archived sections was known. Accordingly, based on a commitment of 2 days per week with an ability to process 10-20 sections in those 2 days requiring staining for 2 types of biomarker (*CD 31* and *actin*), I deduced that my minimum commitment to that project would be 10 weeks. In terms of how I then proceeded with each of the 3 projects and interfaced experimental duty that was left to me. To review project progress in each case I am expected to present key pieces of data to respective PIs in *power point* and make suggestions regarding future experiments (in the case of the in vitro model of tumours diapedesis) or comment on sections/samples processed for the other 2 projects (IHC and real time qPCR respectively|) and thus an anticipated completion date. In essence therefore projects are jointly scoped and managed by myself in concert with the PI and then both planned and managed exclusively by meRegarding material resources required for such projects, I am expected to stock take such resources e.g. antibody levels as experiments proceed and make recommendation to the PI when depleted stocks should be re ordered. Furthermore, although the PI is responsible for initial financial scoping and subsequent financial management of the project having made recommendations, when approved I am expected to order required materials and then charge them back to the PI (as an extension of my core laboratory stock taking and ordering duties)   |
| D2: Demonstrate the achievement of desired outcomes with the effective management of resources and risks | *Using the project you have discussed under D1, or another project with which you have been involved, you should describe your roles and responsibilities in managing the activities to achieve the desired outcomes. Examples could include but are not limited to:** Identifying the resources (people and/or money) needed to undertake the activities
* Monitoring and surveillance of the progress of the activities
* Identification, evaluation and implementation of changes that may be needed to ensure the activities are successfully completed
* Identification and management of risks that could impact on the successful completion of the activities
 | In this section you should describe why, what and how you demonstrate the achievement of desired outcomes with the effective management of resources and risks.to fulfil this competency.An integral part of my responsibilities in my current role is providing material resources for other personnel – in a laboratory of 20 + personnel - to expediently conduct experiments. This entails* Stock taking and ordering of such materials
* Auditing the consumable stock & monitoring both expenditure on a consumables budget I am personally responsible for managing as well enumerating monies claimed through users signing for stock:
* This involves putting up charge sheets for users to sign as well as collecting such sheets; computing total expenditure by individual using formulas in *Excel* spreadsheets and then passing on these figures to personnel in accounts in addition to communicating with PIs to inform them of charges that would be levied against their grants (and put back into my consumables budget in order to balance the books)
* Furthermore, unclaimed stock also requires enumeration by myself to ensure that signed expenditure to claim back plus unclaimed stock approximately matches expenditure on the consumables budget I have been charged with managing

All such accounting activities are carried out by me and at the outset of my position I quickly deduced that all such prescribed activities were not optimal, viz. Expenditure was not being monitored frequently and thoroughly enough and auditing to balance the books and thus to viably spend on consumables was not happening. Accordingly:1. I introduced more detailed sign out sheets for users’ which included prices and grouped consumables into colour coded areas to simplify and render more transparent the actual process of signing out items, viz. tubes; gloves; tips etc.
2. In addition, I made sure these sheets were changed monthly instead of quarterly and enumerated claimed stock on a monthly basis, such that PIs could more efficiently monitor consumable expenditure on laboratory reagents
3. Furthermore I evaluated and periodically continue to evaluate stock usage such that we do not over stock and therefore overspend, bringing expenditure and recharges back into sync
4. In addition, with the advent of smarter purchasing about 18 months ago, I have been able to shop around and keep prices down. As part of this calculus, prices incorporated into *excel* spreadsheets are adjusted in real time to reduce expenditure and reclaims and also make sure that what we reclaim reflects the actual prices at that moment in time. This facilitates good book keeping
5. Finally, on annual basis I procure a detailed stock take, compute expenditure, add that to claimed expenses and then balance the net figure against actual expenditure. These calculations are carried out be me and presented to finance for approval: Apart from enumerating stock and ascertaining over stocked items and items in deficit this exercise serves to prove that the expenditure model is fit for purpose

In terms of resource management, when I arrived it became evident that fridges and freezers in particular where chaotic rendering stock taking by me and finding particular items by end users difficult. Thus, I pushed via the chief technician to implement a whole scale clear out of fridges and about 10 -20oC freezers. By doing this much space was liberated and as a result I was able to stream line freezer organisation in particular. In consequence, apart from assigning space to current lab users I was able to archive materials from personnel who had left in a different physical location and, crucially from the view point of this competency, dedicate 1 whole freezer to signed consumable resources, with stratification into reagent groups e.g. PCR reagents; Restriction enzymes, Sequencing reagents, antibiotics etc. and an attendant plan. This has greatly improved management of such stock 1. In terms of assisting with resource management, one such resource is capital expenditure on equipment and subsequent provision of service contracts. Regarding one type of platform, namely *Qiagen Rotor gene* real time PCR machines, when I took up the post, we were in a situation where capital expenditure linked to these platforms and ensuing service contracts were being taken from grant monies linked to one particular PI but were being used over and above her specific project work by other groups. In initial conversations with this PI, it was decided that I would record usage of platforms and then on a monthly basis devise histograms in *Excel*, enumerating total usage by machine, but also provide pie charts as well breaking down usage according to individual users. Every six months I have taken to pooling this data nd providing a longer term picture of usage versus groups: Moving forward, this should assist with building a legitimate case for other PIs contributing to annual service contract expenditure
2. With reference to risk management and resources, with the advent of our smarter purchasing system, which requires attachment of *COSHH* forms to chemical orders, I took that as an opportunity to ensure all requisite *COSHH* forms are present on line and as hard copies in the lab and encourage end users to clarify disposal, PPE and handling hazard issues in particular regarding new hazardous chemicals with me
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| D3: Take responsibility for continuous performance improvement at both a personal level and in a wider organisational context | *Your examples should indicate what actions you take to make improvements to your personal performance and to your organisation as a whole. This could be through encouraging the continuous development of junior staff or through improvements to processes within the organisation. Examples could include but are not limited to:** Identification of lessons learned from activities undertaken by yourself or by others for whom you are responsible, such as what went well, went badly or was lacking
* Evaluation of the performance of specialists methods and tools used
* Development of recommendations for future enhancements or modifications to procedures or working practices in order to achieve performance improvements

Description of examples where your actions have led to performance improvement by | In this section you should describe why, what and how you take responsibility for continuous performance improvement at both a personal level and in a wider organisational context.to fulfil this competencyIn terms of fulfilling this competency my remit of engaging in personal research projects, training other personnel with reference to particular techniques and procedural practices and also managing the wider organisation of a large multi user/multi PI molecular genomics lab lends itself to a number of scenarios pertaining to performance improvement:1. In terms of wider structural/organisation improvements I have just made reference to re organisation of personal and communal space in freezers in particular culminating in more efficient and accountable practice
2. As also mentioned previously (in another competence) a concomitant re organisation of the cloning/Micro biology laboratory was also implemented by me: This resulted in appropriate disposal of LB agar plates, a reduction in the incidence of cross contamination and better organisation of utilised communal stock
3. New practices were/are inculcated with the introduction of an induction by me for users’ of Microbiology and continued improved practice is ensured by regular monitoring of Micro biology and pointing out a departure from GLP in our monthly lab meetings and ad hoc group e mails, in line with inculcation of continued good practice in the large multi user laboratory I also manage

Apart from communal resources in the form of lab reagents and space I am also responsible for up keep and optimal performance of key pieces of equipment in the laboratory. I have accordingly time tabled and declared on maintenance sheets next to said equipment any maintenance required by such equipment; in particular: * Acid cleaning of the pH electrode on a monthly basis;
* Acid cleaning of the pedestals on the *Nanodrop*;
* Weekly wiping of data on board the instrument Console linked to the *viia 7* real time qPCR machine (to prevent memory saturation and cessation of running)
* Yearly calibration of the viia 7 ensuring optimal S;N from output data is sustained

Regarding one piece of equipment, I both personally use in my project work, but also manage on behalf of other end users’, viz. the *Viia 7* *Real time qPCR machine* over the last 18 months in particular we have experienced a series of performance problems and outright cessation of running. This has required communication with laboratory staff to clarify the specifics of problems, e.g. Arrested runs owing to temperature sensor detector issues & faulty communication between the instrument console and PC linked running software *inter alia* and then communicating these issues to the engineer. Furthermore, subsequent to resolution of these problems, suggestions have been made by the engineer regarding better operational practices, which have then been incorporated into user SOPs by myself and inculcated to new and existing users’ via ‘group’ e mails and pertinent conversations, making reference to the updated SOPs. In addition, maintenance procedures such as self tests and calibrations are now timetabled and recorded on laminated sheets for perusal by myself, engineers and other end users. Further, I encourage users to record ‘error messages’ in a user log, inform me and take snap shots of the actual messages which are then archived into a desk top folder set up by me as a first aid tool for the engineer. As a result this systematic recording of problems, I have been able to collate a troubleshooting/diagnostic case and pass on to the engineer preceding any necessary visit. This has assisted the engineer in diagnosing the fault and expedited resolution of the problem Similar performance issues were identified with our bank of standard PCR machines cf. *G Storms* : On one particular occasion, it appeared that digital cycle programs were behaving erratically and LED displays were aberrant. This problem persisted, despite deleting and then re introducing such programs, implying the problem was not program corruption but rather faulty software/hardware linked to the PCR machine itself. Having had the machines investigated by the engineer, it became evident that the primary fault was asynchrony between cycle times in programs and the on board clock. This particular asynchrony, as it happens, can be diagnosed and corrected by running a series of ‘cycle tests’. In consequence, I learned how to run such tests from the service engineer and duly do as part of my maintenance schedule Finally, when I arrived provision of recycling for empty tip boxes was irregular and as it turned out provided by a company that we had since ceased to buy tips from so in effect the sporadic collection service they offered constituted a favour to our department!! I thus based on price and recycling provision transitioned this service to a new company and monitored collection of recycled tips bags outsourced by this company to a courier. Through these personal efforts initiated and carried out by me of my own volition we now experience a regular and reliable pick up of tip recycling bags In terms of improving my own practice regarding all aspects of my multifarious job description already described In view of my numerous and diverse responsibilities I am more fastidious about how I structure my day and how I keep all affected parties in the loop concerning scheduled activities and my whereabouts at all times  |

**E: Professionalism**

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| **Competencies** | **Guidance** | **Evidence Chosen** |
| E1: Demonstrate understanding and compliance with relevant codes of conduct | *You should describe how the codes of conduct under which you practice relate to the work that you carry out and give examples of how they govern your professional practice. Within this, you should include any ethical considerations, both in terms of scientific and business practices. Examples you may wish to use may relate to:** Standards of professional practice in respect of your profession, employer, clients or patients
* Standards of professional behaviour in respect of attitudes, respect and confidentiality
* Standards of professional competence in respect of personal development and the development of others
 | In this section you should describe why, what and how you demonstrate understanding and compliance with relevant codes of conduct.to fulfil this competencyIn my current role I deal with a various constituent groups. When dealing with all such groups I am polite and courteous. Another dimension to my work place is the international nature of staff, particularly lab based staff, e.g. we have a number of Iranian, Iraq and Greek students in particular. One consequence of this multicultural element is being mindful of communications to ensure that practices and policies are understood. For example, when I send out group e mails regarding GLP (or more particularly transgression thereof) I tend to keep my language as simple as I can without diluting content. This tends to be true of personal spoken communications as well. With reference to one particular Iraq Ph. D student I played a part in training it became quickly obvious to me that whilst his spoken English was lacking his proficiency with the written word was better developed. Accordingly, when explaining a particular procedure, e.g. primer design, I would talk to him in conjunction with a written SOP which we discussed, but which he could read from during our dialogue. Moreover, I sent him papers pertaining to primer design; gene mining in *Gen Bank* etc. so he could peruse and reflect on this material in his own time and then get back to me with questions. In dealing with different ethnic groups/ Nationalities over the duration of my career I have come to realise that certain Asian groups in particular are not always inclined to speak up and say when they do not understand something. Accordingly, it is more efficacious and polite to clarify a procedure and then let them go away and ‘fill in the gaps’. In addition, I have found that my habit of training new students in general to comply with GLP particularly benefits foreign PhD students as demonstration of a technique, e.g. extraction of RNA then makes sense whereas prose might notFinally, to be mindful of and sensitive to cultural differences and accordingly best practice, we are obliged in our environment and working for a public body to submit to on line learning and self tests, in line with University wide prescribed *‘Equality and diversity’*   |
| E2: Demonstrate a commitment to professional development through continuing advancement of own knowledge, understanding and competence | *Your answer should provide specific examples of what you have already done in terms of continuing professional development (CPD) and your plans for the coming year. In your examples you should describe how your engagement in CPD has benefited your practice and the users of your work.**Examples can be taken from any of the five categories of activity (work based learning, professional activity, formal/educational, self-directed learning and other) defined and exemplified at:* [*http://istonline.org.uk/wp-content/uploads/2016/01/CSci-categories-CPD-learning-activities.pdf*](http://istonline.org.uk/wp-content/uploads/2016/01/CSci-categories-CPD-learning-activities.pdf) | In this section you should describe why, what and how you demonstrate a commitment to professional development through continuing advancement of own knowledge, understanding and competence.to fulfil this competencyAn explanation of this competence is given in conjunction with the CPD form submitted for *CSci* and *RSci* status provided by IST when applying for professional registration directly through the ISTAccordingly and as enunciated on that form my key CPD objectives are as follows:* Training courses: Both formal written courses and e learning format
* Elected membership of professional bodies
* Provision of technical training to others: Whether in person or on line (e.g. *Research Gate* community)
* Personal technical training linked to participation in lab project work
* Devising/optimising particular techniques, including formulation of new standard operating procedures (SOPs)
* Steering the course of project work based on data analysis, troubleshooting and networking with internal and external Technical specialist
* Attendance at external workshops, e.g. the Technicians summit
* Outreach activities, viz. Providing scientific tours to in house (non scientific) admin staff; External admin/volunteers linked to the *BHF*; Formal lectures on particular scientific themes provided to non scientific staff associated with the BHF
* Appraising papers as a review editor of specific Journals

With reference to actual competencies, these are specified in the IST prescribed PPD form below. I should add that this information has been transposed from an in house cardiovascular CPD form which is composed and then appraised by myself and line manager with goals achieved and future goals agreed upon: **Activity 1**Higher Education Technicians Summit 2017 (*HETS* 2017) Points awarded1: 3 Category2: 2,3,4**Brief Description of activity:** The main value of this meeting was to emphasise the importance of professional registration with and membership of external accrediting bodies as validation of CPD. In my case as a result I have become an elected member of *RSB* (*MRSB*) and also the Institute of Science & Technology (*MIScT*); A ‘Registered Practitioner’ with the IST & also a licentiate **Value obtained**Learning outcomes: Familiarisation with Registration and professional Society membership(s)**Skills acquired:** Registration procedureHow it has benefited the quality of my practice:. As mentioned I have been elected to various professional SocietiesHow it has benefited the users of my work: **Reflections:** This meeting was the prime motivator in enabling me to apply and successfully join a number of professional scientific outfits **Activity 2**Awarded Membership of the Institute of Science & Technology & Registration as a ‘Practitioner *(MIScT(Reg*) Title: Points awarded1: 3 Category2: 2,3,4Society membership**Brief Description of activity:** Gaining Elected membership of the IST acknowledges skills, experience, certifications and publications. Becoming elected as a ‘Registered practitioner’ reflects that my PPD aspirations are in line with IST standards. It was obtained by an extensive written application which obliges me to reflect on and codify my current job remit**Value obtained**Learning outcomes: Professional Qualification *MIScT (Reg)* and society membership **Skills acquired:** Ratification of current skillsHow it has benefited the quality of my practice:. How it has benefited the users of my work: **Reflections:** This qualification will motivate me to keep my CPD up to date and in doing so think carefully about structure work based responsibilities **Activity 3**Awarded membership of the Royal Society of Biology (*MRSB*)Title: Points awarded1: 3 Category2: 2,3,4 **Brief Description of activity:** Gaining Elected membership of the RSB acknowledges skills, experience, certifications and publications. It was obtained by an extensive written application which obliges me to reflect on and codify my current job remit**Value obtained**Learning outcomes: Professional qualification obtained together with Professional Society Membership**Skills acquired:** Ratification of current skillsHow it has benefited the quality of my practice:.How it has benefited the users of my work: **Reflections:** This qualification will motivate me to keep my CPD up to date and in doing so think carefully about structure work based responsibilities **Activity 4**Elected membership of the Institute of Biomedical Sciences *(LIBMS)*Points awarded1: 3 Category2: 2,3,4**Brief Description of activity:** Gaining Elected membership of the IBMS acknowledges skills, experience, certifications and publications. It was obtained by an extensive written application which obliges me to reflect on and codify my current job remit**Value obtained**Learning outcomes: Professional qualification and membership of a professional Scientific SocietySkills acquired: Ratification of existing skillsHow it has benefited the quality of my practice:.How it has benefited the users of my work: **Reflections:** This qualification will motivate me to keep my CPD up to date and in doing so think carefully about structure work based responsibilities **Activity 5**(Re) Learning ImmunohistoChemistryTitle: Scientific Training Points awarded1: Scientific Training Points awarded1: 3 Category2: 1,3,4**Brief Description of activity:** In house training with regard to practice of immunohistochemistry. This included devising a new protocol for a specific FFPE materials in conjunction with one primary antibody **Value obtained**Learning outcomes: This training enabled me to process an experimental sample cohort with proficiency and efficiency. Furthermore, the standard training then allowed me to improvise on the standard protocol to obtain scorable data for otherwise refractory samples/antigens. A specific SOP was then devised by myself **Skills acquired:** IHC How it has benefited the quality of my practice:. This has enabled me to perform competently and independently IHC on experimental tissue cohortsHow it has benefited the users of my work: This training has allowed me to successfully complete IHC and thus scoring of biomarkers in tissue sections; This satisfies project milestones and thus benefits the PI/grant holder **Reflections:** This training led to productive scoring of an experimental tissue cohort contributing to successful completion of a cardiovascular experimental study **Activity 6**Training in a primary tissue culture in vitro assay Category2: Scientific Training Points awarded1: 3 Category2: 1,3,4**Brief Description of activity:** In house training with regard to handling primary cells lines and establishing an in vitro model of tumour metastasis and its modulation by Platelets **Value obtained**Learning outcomes: This training has enabled me to begin to set up an in vitro assay modelling the metastasis of tumour lines from vasculature. In addition to practical training the process of standardising the protocol entailed visiting publications in this area and also networking & corresponding with pertinent experts via *Research Gate* **Skills acquired**: *In vitro* cell modelling/Tissue cultureHow it has benefited the quality of my practice:. This training has allowed me to successfully optimise an *In vitro* model of tumour transmigrationHow it has benefited the users of my work: The setup of this assay will enable screening of the effects of platelets exosome substances on tumour migration **Reflections:** Training expedited my ability to hit the ground run and optimise the basic *in vitro* model**Activity 7**Scientific TrainingTitle: Technical instruction/Project supervision Points awarded1: Scientific Training Points awarded1: 3 Category2: 1,3,4**Brief Description of activity:** Provided principles, practice and bench supervision to a Ph. D student engaged in gene expression analysis by RT PCR and qPCR **Value obtained**Learning outcomes: Ph. D student under my instruction was enabled to independently and successfully perform these gene expression assays to evaluate candidate genes Skills acquired: Supervisory/Training skillsHow it has benefited the quality of my practice:.Reinforced my training and supervision skillsHow it has benefited the users of my work: The aforementioned Ph. D student can independently evaluate expression of candidate genes, contributing to her thesis**Reflections:** Productive and enabling training that conferred new skills to a student and reinforced my technical training and supervisory acumen**Activity 8**Training in mining data bases & designing primers to quantify isoform specific gene expressionDate undertaken: June-Present Title: Scientific Training Points awarded1: 3 Category2: 1,3,4**Brief Description of activity:** This training devised by me and based on an extended SOP I wrote for a number of Ph. D students was designed to enable them to independently mine transcripts from Genomic databases, e.g. *EBI/Ensembl* and then design primers to assay such genes by qPCR. I was responsible for devising all aspects of training from mining transcriptomic databases to analysis of gene expression data by qPCR **Value obtained**Learning outcomes: This training reinforced my communication skills, both verbally and written and in addition provided an opportunity to update some of my own genomics based skills in the process of putting together training material(s). In addition, it contributed to Student GLP and facilitated productivity  **Skills acquired:** Technical training/devising SOPsHow it has benefited the quality of my practice: Reinforced my training and technical writing skills. How it has benefited the users of my work: Imparted technical methods that enabled them to investigate gene expression by real time qPCR **Reflections:** A Mutually beneficial training activity**Activity 9**Scientific tours provided to in house admin personnel and external non scientific *BHF* personnelDate undertaken: Ongoing Title: Outreach tours Points awarded1: 3 Category2: 1,2,3,5**Brief Description of activity:** This ‘outreach’ type activity is designed to familiarise both internal staff not engaging with research and also BHF personnel an over view of what actually goes on in a fully functioning genomics laboratory dedicated to cardiovascular research: Thus far this has involved informal tours of small parties with discussion & in the fall will also involve a formal lecture by myself (inter alia) to BHF personnel (~120 persons) on a particular specialist topic (‘measurement of Gene expression’) **Value obtained**Learning outcomes: These tours and associated material(s) allow me to practice and refine communicating key concepts in prosaic terms suitable for an educated lay audience. Skills engendered include finding and preparing relevant materials; preparation and structure on delivering of such materials and organisation of ‘key aids’ in the laboratory **Skills acquired:** Scientific communicationHow it has benefited the quality of my practice: These outreach activities provide niche opportunities to practice communicating complex scientific activity in lay persons language How it has benefited the users of my work: These tours have been received with enthusiasm and familiarise both in house non scientific personnel and similar persons linked to external funding bodies (BHF) what goes on in a modern laboratory and how the money gets spent !!**Reflections:** A Mutually beneficial training activity **Activity 10**Presentation to departmental staff at away dayDate undertaken: May 2017 Title: Lecture Points awarded1: 3 Category2: 1,2,3,5**Brief Description of activity**: Formal presentation to all staff within the department at an external ‘away day’ concerning my job description, responsibilities & how it illustrates the job family I am part of (‘Non Faculty support staff’) **Value obtained**Learning outcomes: This activity was designed to illustrate a particular job family within our school in the context of other job families: It involved a lecture to about 150 members of the department. Preparation & structuring of materials (‘*Powerpoint*’) and consideration of the level at which to pitch this presentation (vis-à-vis scientific and admin staff) were key attributes of this activity  **Skills acquired:** Outreach communication skillsHow it has benefited the quality of my practice: Reinforced my presentation skillsHow it has benefited the users of my work: This talk hopefully familiarised CVS staff with what a typical core research technician does with their time!!**Reflections:** An enjoyable and worthwhile endeavour for myself as speaker and my captive audience  |

**Guidance notes for Applicants to the CSci scheme**

**Competencies Form**

This form must demonstrate that you fulfil the competencies required for the scheme applied for. You must use specific examples to illustrate how you have fulfilled the competencies, simply stating that you fulfil the competencies is not enough. The examples must contain enough detail to allow the assessor to understand why, what and how you undertook the activity. The examples you use should paint a picture of what you undertook. Examples may be used to demonstrate more than one competency if relevant. The forms include illustrative examples of what you may have done to fulfil the competencies, you do not have to fulfil all the illustrative example evidence listed on the form.

You should try to use examples of activities that you have undertaken recently, ideally any activity used as an example should have been undertaken within the last 2-3 years.