

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

Name: A. N. Otherexample

A: Application of knowledge and understanding: Identify and use relevant scientific understanding, methods and skills to address broadly-defined, complex problems

Competencies	Guidance	Evidence Chosen
<p>A1: develop, maintain and extend a sound theoretical approach to application of science and technology in practice</p>	<p>This means you have a sound theoretical understanding of the area in which you work. You also continuously keep up-to-date with developments in your field and are able to understand and apply new developments to your area of work. You may, for example:</p>	<p>Why: I need to keep up with new developments and research relevant to the subject area that I work in.</p>
	<ul style="list-style-type: none"> a) take part in a journal review group within the workplace. b) suggest updates to the way in which experiments or procedures are carried out based upon new knowledge of technology or underlying theoretical principles. c) undertake further academic/vocational study in your 	<p>What: This involves keeping up with new publications which are relevant to our groups area of work.</p>

	<p>field of work</p>	<p>How: Every month our research group holds a journal club. Everyone who attends is expected to do a short presentation on a recent publication that will be of interest to the group. I take part in this group and present the findings results and conclusions from recent publications. Publications include Nature, Journal of Biochemistry.</p>
<p>A2: apply underlying scientific concepts, principles and techniques in the context of new and different areas of work</p>	<p>This means that you can explain the major reasons for undertaking new and different work. You may be, for example:</p> <ul style="list-style-type: none"> a) working in a new subject in a different area. You should be able to name the main components/elements involved and why you are carrying out the work. b) involved in carrying out a new procedure; you should be able to explain why you are using that procedure and why it is relevant to the new work undertaken. c) involved in using different or new experimental model; you should be able to explain why you are using that model, how you are using it and 	<p>Why: we use a lot on monoclonal antibodies in our group and these are very expensive. It would be much better if we could produce them in house.</p> <hr/> <p>What: I needed to find suitable clones for production of the relevant antibodies and then work out the best way to culture and harvest the antibodies.</p>

	<p>what the results might mean.</p>	<p>How: Other groups in the department had clones I could make use of others I bought in from the uk or American cell banks. I looked at the cheapest way to culture the cells with least cost. Recently new cell culture vessels have been made that allow cells to be grown densely in specialised vessels and then harvest the supernatant quickly and easily from the cells. This cut down the cost of media and plastic consumables. Depending on what the Abs were going to be used for I then either froze the supernatant or purified them on an affinity column. For example I purified a IgG antibody using a Immobilised Protein A column which has a specific affinity for this type of antibody</p>
<p>A3: analyse, interpret and evaluate relevant scientific information, concepts and ideas and to propose solutions to problems</p>	<p>This means that you can take the results from your work and others and explain their relevance. You are able to review the work and ideas of others and propose ways in which any problems that arise may be overcome. You may, for example:</p> <ul style="list-style-type: none"> a) enable others to analyse and interpret their work and advise on how they may overcome problems, b) review relevant scientific literature and present your findings to others. c) develop new methodologies based on scientific information or results from 	<p>Why: The group that provided us with a protein that we used in our research suddenly refused to supply us with any because of difficulties they were encountering in its production. We needed to quickly develop a method by which we could produce our own protein.</p> <p>What: I have to find a way of expressing and purifying the protein.</p>

	<p>previous work by others or yourself.</p>	<p>How: Used knowledge of molecular biology and protein biochemistry to devise and entirely new expression and purification protocol. This resulted in the successful production of the protein for use within the lab. I designed primers to undertake PCR by which I would clone the gene of interest, which included the insertion of a his tag to the protein. The amplified PCR product was then digested with restriction enzymes to enable it to be cloned into an inducible expression vector (T7) using T7 Ligase. This was then transformed into heatshocked bacterial cells and the protein purified using a his tag affinity column which specifically binds the his tag on the protein.</p>
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B: Personal responsibility: Exercise personal responsibility in planning and implementing tasks

Competencies	Guidance	Evidence Chosen
<p>B1: work autonomously while recognising limits of scope of practice</p>	<p>This means that you can work with no supervision for certain tasks, experiments or procedures associated with your role, whilst understanding when you need to seek input from either your supervisor or others. You should be able to carry out certain work with no input from you line manager and be able to report back to her/him when you have results.</p>	<p>Why: I have a number of research projects which I need to carry our experiments for with minimal supervision</p> <p>What: I plan and devise my own experiments and report back the results to my supervisor</p> <p>How: Based upon existing protocols used in the lab or developed by myself. If I hit a problem or the results are unexpected I will discuss them with my supervisor. For example I was carrying out some new experiments to determine if CD4 Receptors on T-Cells would be co-localised by Enterotoxin B using confocal microscopy, but was unable to identify if this worked. We discussed the protocol and he</p>

		<p>suggested using a different control protein which gave me the expected results.</p>
<p>B2: take responsibility for safe working practices and contribute to their evaluation and improvement</p>	<p>This means that you accept responsibility for working safely. You may be responsible for the generation and communication of the following (but not limited to):</p> <ul style="list-style-type: none"> ▪ risk assessments associated with your work ▪ relevant Health and Safety regulations, e.g. COSHH, Noise, Manual Handling ▪ relevant Home Office Licenses ▪ safety training courses you have successfully completed for your 	<p>Why: I am responsible for the safe use of the radioactive 'hot room' and there are regulations that need to be followed</p>

	<p>laboratory role</p> <ul style="list-style-type: none"> ▪ any monitoring of safety within your work, e.g. for radioactivity, chemical exposure ▪ safety equipment and control measures necessary to work safely and protect others. ▪ carrying out safety inspections of premises and equipment, producing reports and making recommendations. <p>You may also be responsible for an aspect of 'safety monitoring or training' and (if relevant) a description of this should be included.</p>	<p>What: I need to make sure the room is clean and regularly monitored , that the waste generated in the room is disposed of appropriately and that clear and accurate records are kept on the use of the radioisotopes.</p>
		<p>How: I devise rotas of responsible people from the various labs using the room to carry our cleaning and record checking and monitoring or the room for contamination.</p> <p>I keep the records up-to-date and make sure that all monitoring records are reported back to the central office so that all legal requirements regarding waste disposal are kept.,</p> <p>I liaise with the departmental Ionising Radiation Office to make sure that we comply with all new legislation regarding the handling and disposal of radioactivity</p>

<p>B3: promote and ensure the application of quality standards</p>	<p>This means that you are aware of the quality standards necessary for the work being carried out by you and others. You promote these standards and ensure that they are applied. You may:</p> <ul style="list-style-type: none"> a) produce and communicate protocol standards (such as Good Laboratory Practice) b) train others to recognise when something has not been carried out correctly and explain the impact this could have. c) contribute to the analysis of your own and others' work and explain the impact of good and bad data and outcomes d) recognise when your own and others' work needs to be repeated or the methodology updated and communicate the reasons for this in terms of reproducibility or quality 	<p>Why: Within the department there are many groups undertaking the same types of experiment. At the moment they all produce their own risk assessments and COSHH forms which is time consuming and results in much duplication between the groups.</p> <hr/> <p>What: The Chief Technician for the department wants to create a database of SOPs and COSHH forms and risk assessments that the various groups can use so that they are not all duplicating the same work.</p>
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	standards.	<p>How: The Chief Technician runs monthly technicians meeting and at a recent meeting we were tasked with coming up with a list of what procedures were carried out I n our labs. At a subsequent meeting we went through all the lists from the different labs and agreed who would write which SOPS and associated COSHH and Risk assessments. I was given 5 protocols to work with.</p> <p>I have previously attended in house courses on how to carry our Risk Assessments and COSHH forms. The Chief Technician provided us with proformas for creating the SOPS. I created all the necessary documentation and the Chief Technician is compiling these for a departmental database.</p>
B4: take responsibility for planning and developing courses of action as well as exercising autonomy and judgement within broad parameters	<p>This means that you accept responsibility for planning and developing relevant courses of action within the required time frame. You must demonstrate that you are able to do this with no supervision using your own judgement within the parameters of your broader role. This might include (but not be limited) to:</p> <ul style="list-style-type: none"> ▪ devising contingency plans in the case of a safety breach (e.g. spillage of radioactive material). ▪ assessing the risks of equipment and 	<p>Why There are various pieces of equipment in the lab that need regular servicing and routine maintenance that I have responsibility for, so that they are not damaged and are safe to use (e.g. centrifuges, -70 freezers)</p>

	<p>plant failure on experiments and procedures and how to deal with such situations.</p> <ul style="list-style-type: none"> ▪ developing and planning training of personnel to cover essential tasks in the event of staff illness ▪ determining which equipment needs regular maintenance and servicing and planning the timetable and personnel involved. ▪ understanding what must be undertaken in terms housekeeping in the laboratory, planning and developing appropriate methods and timetables to meet the requirements. 	<p>What: I need to make sure that the equipment is maintained and serviced at the appropriate times</p> <hr/> <p>How: At a lab meeting I presented a list of what equipment needed maintaining and what needed to be done and at what intervals. We then allocated the equipment to all lab members so that they had responsibility for looking after that piece of equipment. At regular intervals I check that the maintenance is being carried out.</p>
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C: Interpersonal skills: Demonstrate effective communication and interpersonal skills

Competencies	Guidance	Evidence Chosen
<p>C1: demonstrate effective and appropriate communication skills</p>	<p>This means that you can demonstrate effective and appropriate communication using oral, written and electronic means. This may include (but is not limited) to:</p> <ul style="list-style-type: none"> ▪ discussing and agreeing objectives with your supervisor ▪ discussing and agreeing objectives in team meetings ▪ giving presentations of your work or other aspects of lab work (e.g. safety updates, method updates) to your supervisor and team. ▪ preparing written reports on your work 	<p>Why: My research group has weekly meetings to discuss the progress of their work so that the lab is informed of what others are doing and so they can feedback and discuss their work</p>
		<p>What: I Have to report back on the experiments I have been undertaking and the associated results</p>
		<p>How: I prepare power point presentations which explain what I have been doing. These include graphs and charts and other means of presenting the results to the group. The power point presentations are the best way to present the data as they give a clear visual interpretation of what the experiments have achieved. I always allow for questions at the end of the presentation so that I can be sure that the information was understood.</p> <p>I also have to deal with a wide variety of different people about many different information. I choose the best way to impart this information depending upon the message and the group/person being communicated with. For example when we get new students inot the lab I have to give then trining on various pieces opf</p>

		<p>equipment the best way to do this is to give a hands on demonstration, let them ask questions and in return ask them questions to ensure they have understood what I have told them this is done in an informal setting by verbal communication. Oterh times I need to update the departmental technicians on rots for managing the local stores and this is done via an email which is the most efficient way of getting the information to everyone involved.</p>
<p>C2: demonstrate interpersonal and behavioural skills</p>	<p>This means that you can demonstrate skills that enhance your ability to interact with colleagues in the work setting. In these situations it may be appropriate to discuss these with your supervisor, as an external perspective is often very useful in this regard.</p>	<p>Why: I need to make sure that lab members are fulfilling their duties in terms of caring for the equipment in the lab (see B4).</p> <p>What: I need to ensure that they understand what is required of them and the importance that they carry out their duties correctly.</p> <p>How: I talk individually with each lab member and talk them through and demonstrate what they need to do. I need to be sure that they understand what I have told them so The first time they undertake the routine servicing of the equipment I observe and ask them questions about what they are doing. I make sure that they understand if they have any problems that they can always come and talk to me. This is done in an informal way and makes the new people feel relaxed and able to approach me at a later date if they have any problems.</p> <p>I alter my interpersonal skills when dealing with different audiences. For example I have to deal professionally with visiting senior scientist to the lab and would deal with them in a more formal way.</p>

<p>C3: demonstrate productive working relationships and an ability to resolve problems</p>	<p>This means when working with others you are able to demonstrate that you developed positive working relationships and resolved conflict. You should be able to demonstrate that working relationships were effective in resolving problems. For example you may:</p> <ul style="list-style-type: none"> a) be a member of a committee/group that is tasked with a particular safety aspect of the job and be able to demonstrate that together you made a difference that was useful and effective in the work place. b) liaise with other groups within your organisation to effectively deal with problems (e.g. lack of or demand for training in a particular area) c) be a part of working groups tasked with addressing specific problems. 	<p>Why: The labs and offices in the department need regular H&S inspections to make sure we are compliant with legislation and that the areas are safe to work in. People working in these areas need to ensure that they know what they should be doing to be compliant</p>
		<p>What: The Chief Technician asked me to be part of the H&S committee and to take part in H&S inspections</p>
		<p>How: I went on a course on how to do safety inspections. We then as a team went and inspected the labs and offices. There were several issues that needed to be addressed (lack of lab coats, lack of COSHH forms, dangerous cables) I wrote up the reports and took them round to the heads of research groups to make sure they understood what we had found and what they needed to do. WE re-inspected after a month to ensure that our recommendations had been implemented.</p>

D: Professional practice: Apply appropriate theoretical and practical methods

Competencies	Guidance	Evidence Chosen
<p>D1: identify, review and select scientific techniques, procedures and methods to undertake tasks</p>	<p>This means that you can give examples of work undertaken and why the method/procedure used was chosen as the best (or most relevant) to use. This might include (but is not limited to)</p> <ul style="list-style-type: none"> a) review of method – why is this one the best compared to others that are available b) cost effectiveness c) time taken d) IT considerations 	<p>Why: We needed to find a method of producing a certain protein that was used in our research group as our supplier had stopped making it</p>
		<p>What: I needed to identify a method for producing and purifying the protein</p>
		<p>How: I used my knowledge of molecular biology and protein biochemistry to devise and expression vector and purification method. This has worked and the group is now using the protein I purify in their experiments (see earlier competency)</p>
<p>D2: contribute to the organisation of tasks and resources</p>	<p>This means that you can give examples of how you have contributed to the running of the laboratory and related areas. For instance this might mean (but is not limited to):</p> <ul style="list-style-type: none"> ▪ organisation of safety 	<p>Why: There are various pieces of equipment in the lab that need regular servicing and routine maintenance that I have responsibility for, so that they are not damaged and are safe to use (e.g. centrifuges, -70 freezers) (see B4)</p>

	<p>inspections</p> <ul style="list-style-type: none"> ▪ ordering equipment and materials ▪ organisation of rota for cleaning ▪ organisation of human and physical resources when an issue arises ▪ organisation of statutory inspections, servicing and maintenance of equipment. 	<p>What: I need to make sure that the equipment is maintained and serviced at the appropriate times</p> <p>How: At a lab meeting I presented a list of what equipment needed maintaining and what needed to be done and at what intervals. We then allocated the equipment to all lab members so that they had responsibility for looking after that piece of equipment</p>
<p>D3: participate in the design, development and implementation of solutions</p>	<p>This means that you can give examples of 'problem solving' and your role in helping to overcome the problem. For instance it might mean that an assay/method suddenly stops working and you are involved in finding out why – what was your role and what did it achieve</p>	<p>Why: Our supply of a particular protein used in the lab ceased to be available to us.</p> <p>What: I needed to identify a method for producing and purifying the protein</p> <p>How: I used my knowledge of molecular biology and protein biochemistry to devise and expression vector and purification method. This has worked and the group is now using the protein I purify in their experiments</p>

<p>D4: contribute to continuous performance improvement</p>	<p>This means that you are aware of progress in your area and seek to discuss with your supervisor the strategy for improving the efficiency of your work in the laboratory. This can include new and improved methods, new ways to increase throughput, ways to increase cost-effectiveness</p>	<p>Why: we use a lot on monoclonal antibodies in our group and these are very expensive. It would be much better if we could produce them in house.</p>
		<p>What: I needed to find suitable clones for production of the relevant antibodies and then work out the best way to culture and harvest the antibodies.</p>
		<p>How: Other groups in the department had clones I could make use of others I bought in from the uk or American cell banks. I looked at the cheapest way to culture the cells with least cost. Recently new cell culture vessels have been made that allow cells to be grown densely in specialised vessels and then harvest the supernatant quickly and easily from the cells. This cut down the cost of media and plastic consumables. Depending on what the Abs were going to be used for I then either froze the supernatant or purified them on an affinity column.</p>



E: Professional standards: Demonstrate a personal commitment to professional standards

Competencies	Guidance	Evidence Chosen
<p>E1: comply with relevant codes of conduct and practice</p>	<p>This means that you can give examples of how you:</p> <ul style="list-style-type: none"> a) comply with the code of professional conduct of the Institute of Science & Technology b) manage work within all relevant legislation, regulatory frameworks such as Health and Safety Legislation, Home Office Regulations, Good Laboratory Practice (GLP), local Codes of Practice, etc. 	<p>Why: As a member of the IST I am required to comply with their code of conduct</p>
		<p>What: For example they require that I abide by the legal requirements relating to their work activities or operation, including all aspects of safety legislation and safety regulations, in the country or jurisdiction in which they undertake their duties.</p>
		<p>How: My responsibility for the 'Hot room' means I have to comply with legislation regarding the disposal and monitoring of the use of radioactive materials. I also produce risk assessments and COSHH forms for the group and department.</p>
<p>E2: maintain and enhance competence in own area of practice through professional development activity</p>	<p>This means that you undertake activities to enhance your competence in your own area of practice (PPD – Professional and Personal Development). Your PPD report may be used as evidence for this section, and details of what you need to achieve in terms of PPD are outlined in the PPD</p>	<p>Why: I need to keep abreast of new technologies and methods. I also wish to expand my role and take on more management responsibility. I also need to keep abreast of new legislation around H&S aspects of working in a lab.</p>

	<p>section of the website.</p> <p>For your first application for Professional Registration you need to submit a plan of what you expect to undertake in the next 12 months.</p> <p>Note that PPD has to be submitted on an annual basis to maintain being on the Professional Register.</p>	<p>What: see PPD form</p>
		<p>How: by undertaking a variety of CPD activities.</p>