RSciTech
Registered
Science Technician

Science Council

A: APPLICATION OF KNOWLEDGE AND UNDERSTANDING

A1: Apply knowledge of underlying concepts and principles associated with area of work. *What we are looking for here is an example of how you apply your knowledge in your day to day work.*	My current job at the [redacted] mainly consists of archaeological sample pre-treatment for radiocarbon dating. Every day I make use of various concepts I learnt along my studies and my lab training. Dealing with specimens and interpreting results implies some knowledge on biology, biochemistry, archaeology, paleochronology, paleoenvironmental science, together with more practical concepts such as contamination avoidance, experiment reproducibility, and lab safety. Specifically, to carry out an appropriate and successful pre-treatment requires knowledge about the chemical composition and properties of both the fraction of sample that I want to retrieve and the one(s) I want to eliminate. My education as a biologist gave me the basics for understanding the concepts of acid and basic properties of solutions and the deriving molecular interactions. I apply this concept on a daily basis while extracting the relevant fraction of a sample by step-dissolving it in acid and basic solutions. For instance, the standard protocol for the purification of collagen from bone used in my lab is called A-B-A (acid-base-acid). About 500 mg of crushed bone are demineralised in an acidic solution to dissolve and remove the mineral fraction of the bone. Afterwards, the acid is decanted and a basic solution is added to solubilise humic acids, compounds commonly found in the soil, that percolate into

	the bone microcavities as long as the specimen is buried in an archaeological site. Finally, the sample is soaked again in acid to allow the release of CO2 trapped during the basic phase. The outcome is gelatinised at 75 C in a pH 3 solution, a procedure that fully solubilise the collagen, which is ultimately filtered. It is a standard protocol but it has to be adjusted according to the nature of the sample, which can be small, poorly preserved, heavily contaminated, or present other tricky features. I routinary make use of my biochemical knowledge and of my trained eyes to evaluate the status of the sample and make minor adjustments to the length of each stage or the number of rinses needed between a step and the following one. If after demineralisation the residual is small it usually means the sample is poorly preserved, so the alkali phase should be slightly shorter than average, to prevent sample loss. If the colour is dark, it means the sample is rich in humic acids and should be treated more aggressively with the basic solution.
A2: Review and select appropriate scientific techniques, procedures and methods to undertake tasks. *This means that you can explain the underlying reasons for undertaking tasks and why a particular procedure, technique, or process is appropriate.*	My job requires skills in sampling and processing a great number of different materials, including bone, teeth, skin, hairs, charcoal, vegetal remains, shells and others. We use unique codes to identify protocols, which differ according to the sample material and its specific characteristics. As a habit, I browse the lab database to get information about protocols and lab procedures whenever I need. To make the technician work more straightforward, each specimen comes with a few specifications by the submitter, including the material, the estimated age, the environment where it was found, the eventual presence of preservative varnish on

	its surface. All these are precious information that leads my choice on the most appropriate protocol. For example, four different protocols can be applied for the pre-treatment of charcoal. The main criteria to take in consideration are age and sample size and/or preservation status. Specifically, a piece of charcoal which is assumed to be less old than 25,000-30,000 years is treated with an acid-base-acid protocol, similar to the collagen one, but with different concentrations, temperatures, and timings. If the size of the sample is very small or the preservation is very poor (based on eye evaluation) though, the basic treatment is removed by the protocol, since it could completely dissolve the sample. For a charcoal specimen older than 30,000 years an acid-base-oxidation protocol is used. A certain percentage of contamination in an older specimen causes a shift in radiocarbon age calculation much higher than it does in a more recent specimen. For this reason, a more aggressive protocol is used for older samples. Although, if the specimen preservation status is poor (which is often the case in very old specimens) the basic phase is removed and an acid-oxidation protocol is preferred.
A3: Interpret and evaluate data and make sound judgements in relation to scientific concepts.	Every week I manage sample lists that are assigned to me and I'm expected to report the outcome of each pre-treatment step for each subsample on the lab informatics system and on a paper form that will be filed according to the sample/subsample code (following a progressive order) at the end of the process.

This means you can explain how you recognise when your activity appears to have been successfully carried out, or not, and what data, observations, or measurements you are evaluating mean, relating it to the underlying principles. You should also be able describe how you present information in an appropriate manner in order to explain your judgement.	The lab internal database allows me to update the status of each sample for each stage between the arrival of the specimen and the communication of its radiocarbon date to the submitter. If the step has been successful I can manually "pass" the sample to the following step, otherwise I have to "fail" it. A section for comments is always present, where I can note either the assumed reason of failure, specific modification I made to the treatment, or observations on the characteristics of the sample. It is not difficult to spot a failure. A sample is considered as failed when its yield measured in milligrams is below a certain threshold or approximately equal to zero. This can happen at each of the following stages: sampling, chemical pre-treatment, combustion, graphitisation and pressing, mass spectrometry acceleration. Except from the last one, all the stages are managed by the chemistry lab technician, who is responsible for carefully handling the sample and rigorously note the output of each stage. On the other hand, a sample is marked as successful when the output is quantifiable and, ultimately, when a radiocarbon date is assigned to it. There is a range of variability though, among same age specimen, which depends on their material, the species they belong to, the environment where they were found, and the pre-treatment they underwent. Variability is assessed as the isotopic ratios of carbon and nitrogen stable isotopes, measured during sample combustion. These values are used to correct the radiocarbon date and serve as a monitor for the reliability of results.

	Isotopic ratios are sensibly distinct between animal and plant residual as well as between marine and terrestrial environments. As dates are calculated on the basis of their isotopic ratios an accepted range of isotopic values is assigned to a specific material. Samples that show ratio offsets usually receive a comment of warning or a reasonable explanation for the unusual outcome. Failed and problematic samples are listed and discussed within our weekly meetings. All successful samples of the previous week are listed with their dates and output values and each one is still liked to the technician who performed the pre-treatment. When a sample with odd values is found in the list, the lab manager asks the technician to discuss and explain the possible reason of the offset. Meetings provide valuable moments of discussion about general lab procedures and samples' management as well.

B: PERSONAL RESPONSIBILITY

B1: Work consistently and effectively with minimal supervision to appropriate standards and protocols and know when to escalate appropriately. *We are looking for an example of how you carry out work with minimal input from your supervisor for certain key tasks, experiments or procedures associated with your role and completing them to the appropriate standards*	I'm used to carry out all the processing phases in autonomy, but if a tricky sample gets on my list, I may have to discuss its treatment with the lab manager. From the moment I receive a sample list it is my responsibility to collect and process the listed specimens and report pre-treatment results as soon as possible and preferably at least a week before the deadline that has been agreed with the submitter. This allows the AMS (accelerator mass spectrometer) technicians to process samples on the accelerator and to obtain radiocarbon dates on time.

and time frame. We are also looking for evidence that you know when to escalate appropriately and that you are able to make a judgement on when to escalate.	After the chemical pre-treatment starts, even if the sample has not the ideal characteristics, it is usually worth to proceed following the standard protocols and methods until the sample either fails (returns no yield) or is ready to be loaded on the accelerator. According to the size, the age, or the preservation of the sample I identify the appropriate protocol and, depending on how its look changes along the process, I can adjust the protocol. What is important to discuss with my lab manager is the step before: the sampling. Sampling a specimen is the first step of the pre-treatment process and one of great responsibility. It is a delicate phase as the operator gets directly in contact with the ancient material, sometimes represented by a unique object with huge relevance for archaeology or palaeoanthropology. The majority of specimens that my lab receives are large enough to be sampled more than once and can be fully used without the need to be returned to the submitter. Those cases don't require me to escalate to my lab manager. Besides, there is a percentage of specimens that come in very small size (measured after appropriate cleaning) and others that need special attention. Before starting the processing, it is good practice to show them to my lab manager and inform him on the way I'm going to treat them. He performs an eye-based examination and contact the submitter, if needed. After we agree on the best method, I can proceed by cutting/drilling the bone, for instance, being careful and preserving valuable parts.

	If the sample is a bone of unusual small dimension or poor preservation, I may have to discuss with my lab manager if removing the standard step of ultrafiltration after collagen gelatinisation, at the end of the acid-base-acid treatment. Ultrafiltration enriches the final volume of long chain peptides, which are more likely to be endogenous, compared to short ones. Unfortunately, at the same time ultrafiltration implies a partial sample loss that may compromise the success of already small or poorly preserved samples.
B2: Demonstrate how you apply safe working practices. *This means that you can explain the safe working practices applicable to your area of work and describe how you follow them.*	The rooms where I work include a biochemistry lab, a weighing room, a drilling room, a mass spectrometer room and other auxiliary spaces. As for many public buildings, all doors are fire-safe and there are fire/chemical spill alarm and equipment. Additionally, specific measures are taken and regulation lists and labels are hanged in relevant spots of each room, according to the main risks that relate to either the use of solvents, high temperature surfaces, or high-pressure instruments. For instance, all rooms dedicated to the use of chemicals are provided with at least a fume hood and a ventilated cupboard to store solvents, which is locked when not in use. There are specific labels marking the recommended sash setting during and after use. Solvents in the cupboard are grouped according to their chemical properties in acids, chlorinated, non-chlorinated, and oxidising agents. Each group is kept separated from the others as well as usage bottles are separated from waste reagents. The most dangerous chemical we treat is chromic acid. I use it as oxidating agent within the AOx (acid-oxidation) protocol for very old charcoal. The protocol includes

	a wet oxidation phase in which samples are soaked in 0.1M chromic acid in a heating block overnight. To prepare chromic acid I prepare a solution of sulphuric acid in which I dissolve powdered potassium dichromate. All steps rigorously take place under the fume hood, which surface I previously cover with aluminium foil. Every disposable item that gets in contact with the potassium dichromate or the chromic acid has to be stock into a dedicated waste bin, kept under the hood for the whole treatment duration. When the samples have been washed thoroughly to eliminate chromic acid traces, the foil that cover all surfaces is placed into the dedicated bin, together with consumables. Glassware is washed multiple times. Also, on a rotation basis, my colleagues and I take care of the hazardous waste disposal. Waste is periodically collected by a company. Each lab in the area can book a slot and bring its liquid and solid waste, which has to be labelled with the appropriate code. Waste items come along with a waste list, that is checked by the technician together with the company operator.
B3: Take responsibility for the quality of your work and the impact on others. *This means that you can describe how you take responsibility for the quality of the work that you undertake and its impact on others within defined*	Most of the specimens are submitted to our lab by external paying submitters. As service provider, the lab assures results quality, based on a number of criteria that are specified on the lab website. Quality responsibility is ultimately a lab matter, but each technician personally takes care of the list of samples they have been assigned. Let's take a bone list for instance.

parameters and timelines – including if an activity does not work in the way that you expect.	As sampling must happen under contamination-controlled conditions, it has to be performed in a dedicated drilling room provided with an LEV aeration system. Only one person (i.e., set of samples) at the time is allowed in. Wearing lab coat, gloves and face-masks is always required to minimise the probability of contamination of a sample by the technician. Also, a good light and a steady hand are needed to cut out a piece of bone with a small circular saw or to powder it with a micro drill. I always perform surface cleaning with ultrapure water between a sampling and the next one. Moreover, the submitter has an option to ask for a fast turnaround of results, with an additional fee. It is the technician responsibility to annotate the presence of fast tracks sample in their list and to give them adequate priority. Due to various fragility factors regarding ancient materials, sample loss is not rare. If a sample fails along the pre-treatment it's the technician duty to report it, alongside with a brief explanation. As long as all recommendations have been followed, there's not much that could be done. It can be frustrating sometimes, but I personally take fails as a chance to carefully observing the main causes of failure, so to minimise future sample loss.

C: INTERPERSONAL SKILLS

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C1: Demonstrate effective and appropriate communication skills. *What we are looking for here is an example that you are an effective communicator. The example can be through appropriate oral, written or electronic means.*	I started presenting my research output when I was a Master student, speaking to an audience of peers, a broad scientific audience, or a general public. But what built my ability to communicate science is my travel history. To take part in fieldwork, workshops, and conferences I visited Croatia, Tanzania, UK, Czech Republic, and Denmark. Between 2015 and 2022, I participated in eleven international workshops and conferences, with two posters and one talk. At the moment I've got two papers and three posters in preparation. Among these I'm first author of one paper and presenting author of a poster. Also out of formality, I'm happy to chat about science with students, professors, technicians, and even children. During the sampling phase of my Master thesis project, I had to introduce my research to and lyase with more than 90 volunteers. Many of them were students from a non-biological background, others didn't have a higher education. It's a good exercise to change language register many times a day to explain the same concept to people with a different knowledge of the field. It really showed me how much I myself understood of the study. I enjoyed all my talks and presentation but my favourite up to know is the last one I held in my village, in August 2019.

	As a member of a local cultural association of Elba Island, named [redacted], I'm involved in summer cycles of conferences about science and history, aimed at entertaining a general public of locals and tourists. The one I made in 2019 was about human evolution and the role of molecular anthropology in expanding our knowledge on the history of our past. It was so pleasant to see a lot of people I have known for years coming to listen to my "tales" and asking me so many questions. The subject was not easy, there was a lot to say. Lots of names, lots of dates, lots of concepts. Someone in the audience was an engineer, someone a chemist. They asked about sequencing technologies and AI applications in the field of archaeogenetics. Some of them were astonished by discovering there had been so many extinct species, some of the contemporaneous. One also asked me about aliens and the possibility that our species comes from outer space. I answered that human history is already complex enough with the things we can prove. Let's get back to aliens only when we've got convincing evidence.
C2: Demonstrate effective interpersonal and behavioural skills. *This means that you can demonstrate skills that you use to interact with colleagues in a constructive way within the work setting. In these situations it may be appropriate to discuss these with your supervisor, as an external perspective is often very useful in this regard.*	In the lab and on the field as well as outside the academic environment, I always try to maintain a healthy and friendly relationship with the people I share space with. Lots of things in the lab need attention and a cooperative team is essential to make the machine work efficiently.

	For this reason, I like to keep things tidy and organised so everyone can use them after I left bench. Also, I try to be helpful and participate in instrument maintenance and general lab keeping. I'm so glad I found such a supporting team of colleagues at [redacted]. We smoothly share spaces and instruments though a simple booking system and if anyone has urgency to complete a protocol (maybe a couple of fast-track samples) they just ask, and colleagues will find a suitable solution. Both now and in my previous experiences, I really enjoyed team-working and liked to interface with all components of the group. When it comes to planning for a project, sharing ideas, keeping up with a schedule, I try to give rational suggestions taking account of everyone's needs and priorities. For instance, I'm currently collaborating to the development of a method to date ultra-small samples. Our team include a postdoc and three technicians. We planned our work and shared tasks accordingly to our possibilities and dedicate some time to the research while continuing doing our regular job. I support the team regardless of the role I cover in it. At the Zoology and Anthropology Unit in Pisa, during my Master, I used to lead a group of three undergraduate students. Later, within the MendTheGap European Project I was appointed as manager of one among five Working Packages, with a co-manager. In the fieldwork seasons I joined I used to be a 'simple' student. As long as there's balance and respect for every figure, I get along well with everyone.

	I guess a proof that I'm sociable and adaptable is that people keep being sociable and kind with me. At any rate, here below is a quote from a recommendation letter a professor in Pisa wrote while I was applying for my PhD in 2018. "On all occasions she has been able to maintain good relationships with colleagues and other people participating in the research groups she has been attached to. She also shows a natural aptitude in smoothing difficulties in human relationships." "She demonstrated very good adaptability and unexpected skills for fieldwork and intercultural relationships."
C3: Demonstrate an ability to work effectively with others. *This means 'team work', which can be in a large team or on a 1:1 basis. Your example should illustrate how you worked collectively with others, what your specific role was within the team, and what the outcome was.*	Both within and outside the academic and lab environments, I had many chances to work in a team. I joined numerous activities during my bachelor and master, interacting with peers, assistants, and professors to discuss and solve biological questions. The same I did during the fieldtrips in Croatia and Tanzania, adding logistic issues and people necessities to regular scientific problems. Communication was essential to coordinate our work, use instruments, interpret results, and make progress. As a member of the MendTheGap project, in 2018, I was part of an international team of researchers, students, and project managers. This taught me how to deal with a schedule as a synergic group and reach the goals of each work package. Informing each other of single and subgroups' progress was essential to write reports.

	It has been my first job as young-stage researcher and made me actively participate in archaeologic fieldwork, workshops, and conferences in Italy, Croatia, and UK. The project was organised in five work packages (WP1-5). Each WP aimed at the teaching and dissemination of notions and research approaches characteristic to different disciplines within the sciences of the past. Each WP had two managers whose task was to coordinate the research and dissemination work related to the package. My personal research task integrated WP4 (Twining and Integrating Genetics with Sciences of the Past). I aimed at producing paleoenvironmental and paleochronologic data from a marine core from a Central Adriatic location, to be correlated to a cave stratigraphy on a Dalmatian Island. Within the project scheme, I also shared the role of manager of WP5, the package responsible for reports. My tasks was to contact other WP managers, revise and check all written, spoken, visual, and media presentations, including press releases and interviews, and to write synthetic reports. Reports were organised according to the relevant WP structure and double-checked by my manager colleague and me. On the final workshop, at the project closure in January 2019, my colleague held a short talk about our work and gave appropriate feedback to other project members.

D: PROFESSIONAL PRACTICE

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D1: Recognise problems and apply appropriate scientific methods to identify causes and achieve solutions. *What we are looking for here is an example of where you have problem solved or attempted to problem solve.*	Creativity and problem solving are essential in a lab. Experiments are always slightly different from the theory, but nevertheless need reproducibility. A challenge I often face is obtaining good quality yield (high concentration/quantity and purity) from non-ideal starting material. Just after my graduation, in 2017, I continued the project that started with my thesis, and carried out a gene expression study. I did so by volunteering at [redacted] lab, performing RNA extraction from saliva samples, followed by retro-transcription, and real-time PCR (polymerase chain reaction). The saliva had been sampled by my team the previous year, collected in Oragene RNA collection kits and stored in a freezer (-20°C). According to the manufacturer, to safely extract good quality RNA from the kits, the best protocol is Qiagen RNeasy Micro Kit. The protocol implies an initial heating phase, followed by RNA solubilisation through neutralisation and then precipitation in ethanol. The RNA pellet is then resuspended and transferred to a RNeasy Mini Elute spin column. After a buffer wash, DNase I is added to degrade and remove DNA for 15 minutes. Subsequently, the RNA bond to the column filter is washed with buffers and ethanol and finally eluted in RNase-free water.

	The Oragene kit assure RNA stability and preservation for one month at room temperature, but general practice recommends less than -70°C for long-term storage of RNA, which was not performed by our lab. Although I carefully followed the extraction protocol, my results were not very satisfying at the beginning. Being that the first time I extracted RNA, I started by processing two selected samples and comparing them to two fresh sample of saliva, collected in the lab in Oragene RNA kit without freezing. Checking on a spectrophotometer, the extracts from fresh saliva were acceptable but for the project ones, both concentration and purity values were too low to proceed with retro-transcription. No one else in the department had ever used the kits, so I couldn't directly ask for advice or feedback. So, [redacted] and I set up a few experimental steps to try and improve our yield. We extracted again aliquots of the same group of samples with a different protocol, including TRIzol reagent (Invitrogen) and chloroform. This method was also suggested by the Oragene kit manufacturer as a second chance, given the reagents' toxicity. It doesn't include DNase treatment because the mixture TRIzol – chloroform separates 3 phases: an aqueous phase containing RNA, an interphase containing degraded DNA, and an organic phase containing degraded protein. The aqueous phase lays on the top and can be carefully aspirated and moved to a clean tube.

	With the TRIzol protocol, our yield was more abundant, but we suspected that some degraded DNA could still be present in the eluate. We applied a supplementary DNase I treatment after TRIzol - chloroform extraction but were still not fully satisfied with our results. The purity was variable across repetitions, with an average at the limit for retro-transcription. We decided to shift to RNA Clean & Concentrator™-5 (Zymo Research) spin columns, for RNA elution after DNase I treatment. Three extraction replicas of the same sample group showed more consistent output in terms of yield concentration and purity. Using this combined protocol, we finally proceeded with the expression analysis. It's not possible to modify the nature of "old" or badly preserved samples, but sometimes methods can be adapted to better serve the situation. This experience showed me that creativity in the lab is always rewarded, if carried out rigorously.
D2: Demonstrate how you use resources effectively. *This means that you can give examples of work that you have undertaken where the method, procedure, programme, equipment, or materials used was chosen as the best (or most relevant) to use. Your example should describe how you planned and organised these to complete the task, and also how you reviewed choices –*	This year for the first time the [redacted] lab joined the "Green Impact" programme, a United Nations award-winning programme "designed to support environmentally and socially sustainable practice within organisations". By joining we accepted to take on a lab monitoring and proceed with practical actions to reduce our impact on the environment. We primarily focussed on energy and waste monitoring and reduction.

why the one you selected was the best compared to others that are available.	To reduce paper waste, for instance, the lab set up a stationary amnesty and a paper reuse station. We also set all printer in duplex mode. One of the tasks I took over was the gloves and masks recycling. We discussed glove recycling with the University waste contractor and have since settled on a third party solution. Now we recycle nitrile gloves and face masks, which used to be thrown into a general waste bin. We did pretty well on energy monitoring as well. As a lab team, we identified major uses of energy, and used a power monitor to assess energy consumption of ovens and chillers. The measured energy use was divided by the time spent recording, which gave us an average energy use per hour in kWh. This allowed us to calculate our actual typical usage per week for each appliance. As a result of this review, we made changes to our use of three categories of instruments to reduce energy consumption. We put a timer on our 100°C drying oven so that it now turns off for 13 hours overnight. This reduces its energy consumption by about half, saving around 35kWh per week. We assessed the water chiller for the graphitisation ovens used 250 kWh (equivalent to £54 of energy) over a 15-day period. The chillers are now being turned off at weekends (unless someone is graphitising over the weekend), saving over 35kWh per week.

	Moreover, only turning on the 40°C drying oven when actively in use saves approximately 12kWh per week. Following the energy audit, we decided to switch off all equipment and lights that don't need continuous running (e.g. freezers) over holiday periods longer than three days.
D3: Participate in continuous process improvement. *What we are looking for is an example of how you have improved the efficiency of a way of working, for example this could include maintenance of stock levels, improved methods, new ways to increase throughput, health and safety or ways to increase cost-effectiveness.*	I'm currently working on the improvement of the [redacted] standard protocol for Cremated bone pre-treatment for radiocarbon dating. The protocol modification increases sample yield and therefore allows the processing of small-size samples. It introduces a 5-minute ultrasonication step following digestion, before CO2 collection, and an extension of the collection time from 3 to up to 6 minutes. Cremated bone pre-treatment for radiocarbon dating at [redacted] consists of acetic acid predigestion, to remove residual organic carbon, followed by phosphoric acid digestion to liberate endogenous carbonates as carbon dioxide. The phosphoric acid digestion follows a general protocol common to other materials including shells, foraminifera and other calcified material. The phosphoric acid digestion is currently performed at 50°C for 2 to 3 hours. Afterwards, CO2 is transferred, via a -65°C water trap (for 45 seconds), into vials using liquid nitrogen (for 15 seconds). The transfer is repeated three times taking a total of 3 minutes per sample. Unlike shells and foraminifera, cremated bone takes 3.5 to 4.5 hours to turn in a dense

	liquid opaque mixture. Bubbles of trapped gas are clearly visible on the surface even after 3 minutes of CO2 collection. Through appropriate testing, I demonstrated that both ultrasonication and double-time collection increase the yield with minimal impact on date consistency, allowing for small samples (less than 500mg) to be accurately dated. An abstract of the study is currently submitted for a poster presentation at the 14C 24th Conference in Zurich, in September this year. The work is going to be published as update of the [redacted] standard protocol.

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E: PROFESSIONAL STANDARDS

E1: Comply with relevant codes of conduct and practice. *This means that you can give examples of how you comply with a code of conduct (e.g. of your professional Body) or how you work within all relevant legislative, regulatory and local requirements.*	I comply with the lab code of conduct and work safely and legally. I'm an EU citizen and since I started working in the UK after 31st December 2020, I'm still not eligible to apply for the settlement scheme. To be able to work at the [redacted], I was shortlisted and interviewed along with other applicants. When I was offered the position, I had to wait for a sponsorship by my new employer, the [redacted], and after that, I had to apply for a Skilled Worker Visa (formerly called Tier 2 worker visa). The whole process took about three months during which my position had to be covered by a part-time student. My contract was initially 6-month long and was then extended up to one year. This meant I had to repeat the whole process again. Luckily, as an extension of my former contract for the same role, with the same employer, the process was only a few weeks long and I could continue working regularly after sending my visa application. At the department and in the lab, I follow the Health and Safety Legislation. One of our senior technicians is responsible for health and safety in our side of the building. Two more colleagues are involved into the health and safety managements as well. They take track of general and specific checks, including instruments maintenance and report to our safety audits every six months. Other technicians and students as well as any new visitor have to be informed about our safety system. Each newcomer is assisted by one of our team that introduce them to the protocols they need to pursue and in parallel inform them about relevant health and safety regulations.

	The [redacted] also have a local code of practice. We offer an important radiocarbon dating service to research laboratories from external institutions. Thus, we set up a list for rules regarding samples archiving, output data treatment, personal data treatment of the submitters and more. For instance, our politics tent to discourage the submission of material for non-research related purposes. One of radiocarbon dating applications is the evaluation of authenticity of ancient objects. If the purpose of the authentication is or is, suspected to be, selling, we tend not to accept the material. This decision is not directly up to lab technicians as it's the manager how evaluate a submitter request, but we still have to be aware of the provenience of the material we treat.
E2: Maintain and enhance competence in own area of practice through professional development activity. *This means that you can give an example of an activity you have undertaken to enhance your competence in your own area of practice i.e. Continuing Professional Development (CPD) and reflect on its impact on you and others. We are not looking for a list of courses here but evidence of how your CPD benefits your practice and benefits others. Your CPD may include work-based learning, professional activity, formal/educational, self-directed learning.*	I always like to improve my knowledge and my abilities. My interests span from biochemical and molecular lab techniques to broad biological and archaeological contexts. Here's why I took various chances to participating in practical and taught workshops. Of course, a learning activity is even more appreciated when it shows it fruit in spendable skills and knowledge, as my experience with fossil handling. In August-September 2018 and 2019 I took part in two fieldwork seasons in Olduvai Gorge, Tanzania. The first year, we started excavations at a new site along the gorge and retrieved a large number of bone specimens of large mammals.

(Note registrants will need to comply with the Science Council CPD Standards)	In the following season at Leaky camp, I joined the team of palaeontologists in the onerous work of sample cataloguing. For about 20 days I helped with anatomic and taxonomic identification of zoologic bone fragments. With a massive pdf atlas and a series of bones collected during surface surveys as our reference, we identified more than 500 bone fragments. Two almost completed skeletons of a canid species were laid on a table and many other parts of savanna mammals were put in bags, each one with its label. We also performed the Structure from Motion technique to collect pictures for 3D modelling from all the specimens, followed by short demos on 3D models reconstruction in Agisoft Metashape. It has been a full immersion in the application of my comparative anatomy notions for the bachelor's degree. Thanks to the advice provided by the team members, I learnt how to handle ancient bones, clean them, recognise specific morphologies and determine the degree of taphonomic modification. Cataloguing is not as fun as digging, but I'm so glad I had the chance to spend some time on it, as fossil handling skills are highly precious in my current job at ORAU. Every pretreatment start from sampling and many of our specimens are bones. Thanks to my previous experience it's much easier to recognise bone parts and choose the most compact one for a better yield and a more reliable dating. It's also important to avoid destroying diagnostic portions of a bone. It would result in a loss

	of information which is undesirable if the same fragment were supposed to be used for multiple analyses.