CPD profile

1.1 Full name:	Clinical Cytogeneticist
1.2 Profession:	Clinical Scientist
1.3 Registration number:	CSXXXX

2. Summary of recent work/practice

I work as a Clinical Scientist in a leukaemia cytogenetics department. My Trust is part of an Academic Health Science Centre (AHSC), so the laboratory has a close working relationship with the clinical haematology department in the hospital and with the academic haematology department in the university.

The laboratory is relatively small, and as such I have many different roles. I have taken on a lot of the responsibility for quality management; I have written or updated all our protocols, addressed all the issues raised following our last Clinical Pathology Accreditation (CPA) inspection and I maintain and follow an audit schedule to identify areas in which our service can be improved. I have been trained in the use of Q-Pulse and gradually transferred all our laboratory documentation to this in order to benefit from dedicated compliance management software. I monitor our stock of laboratory consumables and reagents and keep a continuous supply using an online procurement system. I am involved in all the National External Quality Assessment Scheme (NEQAS) rounds and we have achieved a satisfactory performance throughout.

I share laboratory duties and in this role I set up, culture and harvest all sample types received in the laboratory; the majority are bone marrow samples from leukaemia, lymphoma and multiple myeloma patients, but we also receive peripheral blood samples, lymph nodes and touch preparations. I prepare slides for analysis, perform chromosome banding, and set up fluorescence in situ hybridisation (FISH) tests as required. I analyse and check both G-banded chromosome preparations and FISH tests. I book in samples, note previous referral information and relevant results, allocate the appropriate tests, then monitor the reporting times to ensure results are available when required and within the recommended national guidelines. I write reports for both G-banded chromosome analysis and FISH analysis which are authorised by the Head of Department.

The AHSC has offered me the opportunity to carry out research within my department and I am currently following up some interesting array comparative genomic hybridisation (aCGH) results from a cohort of drug-resistant leukaemia patients.

The laboratory has frequent visitors and I have demonstrated cytogenetic techniques to A-level and medical students, and trained external cytogeneticists.

I have also represented clinical cytogenetics at careers fairs, and I have given various presentations and lectures at both internal and external events.

Total words: 385
(Maximum 500 words)

3. Personal statement

Standard 1: a registrant must maintain a continuous, up-to date and accurate record of their CPD activity.

I keep an up-to-date record of all my CPD activities in an electronic spreadsheet[1] under the headings given in the HCPC CPD standards, which was approved by my Training Officer.

Standard 2: a registrant must identify that their CPD activities are a mixture of learning activities relevant to current or future practice.

I have undertaken a variety of CPD studies over the past two years. In my department we have regular meetings to which I contribute, such as a chronic myeloid leukaemia (CML) interest group where we discuss papers of interest and research developments within the department, and a fortnightly laboratory meeting where we discuss anything which affects our routine work[2]. I regularly attend and present work at conferences and study days relevant to cytogenetics such as the Association for Clinical Cytogenetics (ACC) Spring conference, the British Society for Human Genetics' (BSHG) annual conference, and this year, the European School of Haematology's CML conference[3]. I have written and contributed to various peer-reviewed published articles[4] and I have also undertaken qualifications outside of clinical cytogenetics, such as the St John Ambulance First Aid at Work[5] and use of Endnote referencing software.

In summer 2009 I committed to sitting the written element of the Fellowship of the Royal College of Pathologists (FRCPath) entrance exams and in preparation for this I participated in an online study group which required extensive independent learning. I regularly encounter novel or rare chromosome rearrangements which must be researched and discussed prior to reporting, and interesting cases are often raised in multi-disciplinary meetings. I was elected to my professional body, the Association for Clinical Cytogenetics (ACC) and I have undertaken several tasks on the ACC's behalf, such as representing cytogenetics at careers fairs[6].

Standard 3: a registrant must seek to ensure that their CPD has contributed to the quality of their practice and service delivery and

Standard 4: a registrant must seek to ensure that their CPD benefits the service user.

Example 1:Training course

In May 2007, I attended a two day training course to learn a technique which was reasonably new to the laboratory - FISH of formalin-fixed paraffin-embedded (FFPE) tissue sections[7]. The course covered all aspects of the deparaffination process and subsequent FISH testing, and included a practical session in which we tested a breast cancer FFPE tissue section with a *HER2* probe; in this

example, quantification of the *HER2* amplification determines a patient's eligibility for treatment. We discussed trouble shooting approaches for the occasions when the deparaffination is suboptimal or the FISH signal weak, and the best approaches for automation of the procedure.

The application of FISH using FFPE sections is very useful, as fresh material is not always available for cytogenetic testing but it is desirable to have cytogenetic results as they can influence the diagnosis and prognosis of the patient. The techniques I learnt on the course have since been incorporated into the standard protocol for the laboratory and have resulted in an improved success rate for the tests. This has directly benefitted patients who are given a cytogenetic result when there is no fresh tumour material available - they may not have received one previously - but also the clinicians, who get a faster result on more patients, and of course my colleagues in the laboratory, who carry out the test more efficiently as more results can be issued from the first attempt.

Example 2: Study group

My preparation for the FRCPath exam and in particular my participation in the online study group has entailed a huge number of literature searches. The subject was split into eight topics, and for each topic, a participant was allocated a sub-topic which needed to be researched in depth and subsequently written up into concise and accurate notes, to be shared amongst the whole group in preparation for the writing of a practice exam question[8].

Contributing to the study group was intensive and time-consuming, and I learnt to be more organised and efficient in order to meet the regular deadlines. Some of the sub-topics were from areas of constitutional cytogenetics that I have not worked in for several years, so I benefitted from updating my knowledge in these areas whilst supplementing my knowledge in those areas of acquired cytogenetics that I was more familiar with. I am now able to respond to enquiries from clinical colleagues more confidently and more accurately and write cytogenetic reports more concisely and clearly.

Example 3: Student lecture

In December 2009 I delivered a lecture to medical students taking a BSc in Haematology, as part of their Leukaemia, Lymphoma and Multiple Myeloma module[9]. I explained what cytogenetic testing involves and introduced them to some of the techniques we use in the laboratory, such as G-banded chromosome analysis and FISH testing. I compared the advantages and disadvantages of cytogenetics relative to molecular genetics, using the example of CML, where G-banded chromosome analysis is commonly used at diagnosis to detect the t(9;22)(q34;q11.2), FISH can be used for patients with variant rearrangements result in a cryptic *BCR-ABL1* fusion gene, and reverse transcriptase polymerase chain reaction (RT-PCR) is commonly used for detection of *BCR-ABL1* transcripts for follow-up once patients have achieved complete cytogenetic remission. I explained how cytogenetic testing can influence the diagnosis and subsequent treatment of haematological neoplasms and allow prognostication, using the examples of acute myeloid and acute lymphoid leukaemia. I also gave a brief overview of the International System for human Cytogenetic Nomenclature (ISCN) which they may see in the future and need to understand.

At the end of the lecture I took questions from the students which allowed me to see areas in which I needed to elaborate more on in future lectures and areas in which they were particularly interested. Later, I received some positive feedback from the course organisers about how the students had rated how well I engaged the students in my lecture, how I explained the concepts, and how my lecture was structured. I have previously given various talks to other cytogeneticists and geneticists, but this was the first occasion I had lectured students; so above all, I felt that delivering this lecture had increased my communication skills and in particular, my confidence in public speaking.

Example 4: User survey

In response to a comment made during our CPA inspection, I conducted a user survey to see what our users thought of the service we provide. I used an online survey tool to collect the opinions from 12 of our most frequent referrers, and the collated the responses for discussion in our laboratory meeting[10]. We learnt that most of our users were not aware of our department's user manual which contains a lot of useful information for our referrers, such as contact details, opening hours, sample requirements and turnaround times for different sample types. I updated the user manual and circulated both paper and electronic copies to current referrers, then posted it on both internal and external websites for prospective referrers.

In preparing the user survey, I became familiar with the CPA standards for evaluation and quality assurance and how these can be applied in the laboratory, which has been valuable experience; I have since taken on more quality management tasks within the laboratory and will be repeating the user survey shortly to gain further insight into our users' opinions of our service. The user survey has enabled our referrers, both internal and external, to give us feedback about the work we do and tell us what they would like done differently. We have been able to implement changes—such as the wider availability of the user manual—in response to their requests. This has, in turn, benefitted the patients themselves, as the referrers always know what sample to take for a specific test, where to send the samples, what collection tubes to use, and so on. This prevents unnecessary tests, delays and wastage and enables us to issue results more efficiently.

Total words: 933

(Maximum 1500 words)

4. Summary of supporting evidence submitted

Evidence number	**Brief description of evidence**	**Number of pages, or description of evidence format**	**CPD Standards that this evidence relates to**
Example	Eg: 'Case studies' or 'Critical literature review'	Eg: '3 pages', 'photographs', or 'video tape'	Eg: Standards 2 and 4
1	Summary of CPD activities	6 pages	1
2	Example reports	5 reports	2,3 & 4
3	Conference posters	3 posters	2,3 & 4
4	Abstract from *CGC* paper	1 abstract	2,3 & 4
5	SJA First Aid at Work Certificate	1 certificate	2,3 & 4
6	Careers website screenshot	1 screenshot	2,3 & 4
7	Attendance certificate from study day	1 certificate	2,3 & 4
8	FRCPath revision notes	4 pages	2,3 & 4
9	Slides from BSc lecture	4 pages	2,3 & 4
10	User satisfaction survey results	4 pages	2,3 & 4