Association for
Clinical Cytogenetics

Information on careers in Clinical Cytogenetics

See also: http://www.cytogenetics.org.uk/careers/careers.htm

WHAT IS CLINICAL CYTOGENETICS?

Clinical Cytogenetics in the NHS is a laboratory based science which involves processing and analysing the chromosomes of different types of samples with the purpose of detecting and interpreting chromosome abnormalities. These results are communicated to a wide variety of clinicians.
The work of the Cytogeneticist falls into three main categories: -

1. analysis of blood from individuals with a variety of problems including congenital abnormalities, learning difficulties, reproductive difficulties and sexual development problems;

2. prenatal diagnosis of chromosomal abnormalities from amniotic fluid or chorionic villus samples;

3. analysis of samples (usually bone marrow or blood) from patients with known or suspected haematological conditions, such as acute leukaemia, to aid in the diagnosis and management of the disease.

TECHNIQUES

The samples are cultured and harvested to obtain cells in the metaphase stage of mitosis, which are then spread onto slides. The metaphases are then banded to reveal a specific, reproducible banding pattern on each of the chromosomes.
Analysis of these metaphase spreads is performed by counting the number of chromosomes present and by analysis of the banding pattern obtained on each chromosome pair.
A technique known as fluorescence in situ hybridisation (FISH), where fluorescently labelled DNA probes are hybridised to metaphase spreads, can be used to detect sub-microscopic deletions or as an aid in chromosome identification. Increasingly, FISH on non-dividing cells (interphases) is adding to the range of cell types available to cytogenetic analysis.
Detection and interpretation of these chromosome abnormalities is the role of the cytogeneticist. Although direct contact with the patient is rare for Clinical Cytogeneticists, they work closely with a range of health professionals, including Obstetricians, Paediatricians, Haematologists and Clinical Geneticists. The results of cytogenetic investigations can have a huge impact on the patient and sometimes their family, depending on the abnormality. The cytogeneticist must be knowledgeable about the effects of the abnormality and whether the abnormality may cause problems in offspring and therefore give appropriate advice. Accuracy is highly important, coupled with the requirement of rapid reporting, particularly with reference to prenatal diagnosis.

STAFFING

2 main grades of staff are employed with Clincal Cytogenetics laboratories in the UK.

1. Genetic Technologists

As technical specialists, Genetic Technologists will be expected to take responsibility for sample processing, cell culture and preparation of chromosome materials. Chromosome analysis, FISH, and an increasing number of molecular genetic techniques will also be employed.

2. Clinical Scientists

As scientists, Clinical Scientists in cytogenetics will be expected to use their scientific skills, such as experimental design and problem solving, in their daily role when faced with challenging situations. Furthermore, service developments require thorough research and investigation before being implemented. There are also a number of national and international scientific meetings organised, which provide an ideal opportunity to present novel research and keep abreast of current trends.

CAREER STRUCTURE and TRAINING

The career structure for both Genetic Technologists and Clinical Scientists is reflected in the common pay scale the NHS has for all employees.

1. Genetic Technologists

Most Genetic Technologists within cytogenetics laboratories are employed on band 5.

Training Programme

At present there is no National Programme of Cytogenetics Training for Genetic Technologists although work on this is in progress. Most laboratories employ their own competence based training scheme.

Registration

Genetic technologists are currently able to apply for registration via the Voluntary Registration Council. This is the first step towards registration with the Health Professions Council, and is a significant development in the genetic technologist career.

Career

The band 5 payscale has 9 annual increment points and progress along this scale should continue in line with a knowledge and skills framework. To move beyond band 5, to band 6 or above, the Genetic Technologist will need to obtain a post with greater responsibility and a greater role in laboratory management.

Qualifications and How to Apply

Entry to Genetic Technologist posts is possible without a degree or HND, although most employers expect a biology-related BSc. Potential employers will be able to advise on what qualifications are acceptable. Genetic Technologist jobs are advertised either in the local or national press or on this website.

2. Clinical Scientists

Trainees are employed on band 6 and remain on this band until registration.

National Training Programme

The National Training Programme lasts for 2-3 years and has a modular structure reflecting the different sections that exist within the cytogenetics laboratory. At the end of each module, the trainee is assessed by an internal or external assessor to ensure that an appropriate level of competence has been achieved. Research and development skills are

important and a project is a key part of the training programme. A secondment of four weeks to another Cytogenetics laboratory is also included, allowing trainees to broaden their skills and experiences. Successful trainees are be awarded the Postgraduate Certificate in Clinical Cytogenetics from the Association for Clinical Cytogenetics following completion of the training programme.

Registration

Progress from band 6 to band 7 occurs when state registration with the Health Professions Council (HPC). This takes place after four years experience and requires further professional development and consolidation on basic training, culminating in submission of a 'Portfolio of Evidence' and an external assessment with the Association of Clinical Scientists (ACS) prior to application to the HPC.

Career

The band 7 payscale has 10 annual increment points and progress along this scale should continue in line with a knowledge and skills framework. To move beyond band 7 and on to band 8, the cytogeneticist will need to obtain a post with greater responsibility (e.g. Head of Section) and will require the Membership of the Royal College of Pathologists (MRCPath) part 1 examination. Band 8 is divided into four bands (A-D) reflecting different roles and levels of responsibility. Heads of laboratory are posted around band 8D to band 9 with the expectation that such candidates will have the full MRCPath qualification (part 1 and part 2)

Qualifications and How to Apply

Entrants to the Clinical Scientist training programme should have at least a 2nd class Honours degree in Genetics, a biological science or a science degree with a strong genetics component. Most entrants are recruited via a National Clearing House (details below) on an annual basis. Advertisements appear in the national and scientific press in late January/early February of the year of entry with interviews being carried out in the spring. Appointments are usually taken up in the autumn. Trainees of this type are "supernumerary" i.e. they are extra to the staffing requirements of the laboratory, and are recruited by the NHS regions on a fixed-term contract.

Further details and application forms for these training posts can be obtained from:

www.nhsclinicalscientists.info

The Clearing House also provides a handbook describing each of the posts available in England and Wales, and details of the application process. In Scotland the laboratories all advertise as a consortium in New Scientist and The Scotsman.

An alternative method of entry exists, where the trainee is part of the staffing structure of the laboratory and carries out a proportion of the diagnostic work instead of being supernumerary. This type of training post is less common.

All non-training posts within Cytogenetics are advertised in the general scientific press.

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