

Training Resources for Laboratory Scientists in Biochemical Genetics

Background

Training programmes will inevitably vary between countries. This is a natural consequence of the differences in professional and institutional environment. It will also reflect genetic variation and the differing incidence of individual diseases geographically. However there are many principals of good practice and analytical techniques in common. There is much that we can learn from each other. There is also much that countries which plan to develop these services can learn from those where they are well established. This area of the ERNDIM website is a resource where information can be sought about existing training programmes and web based resources can be shared.

Existing Training Programmes

United Kingdom

National training scheme co-ordinated by a National Lead Trainer.

This training scheme was the initiative of the metabolic laboratory network, MetBioNet. It followed a manpower survey that predicted a serious shortfall in specialist scientific staff in the near future in the UK.

The English Department of Health funded in 2004 the creation of 11 supernumary training posts for scientists specialising in metabolic clinical biochemistry. To co-ordinate and monitor this training a small number of trainers were recruited and their laboratories re-imbursed for the time spent on the scheme. The trainees had already completed basic training in general clinical biochemistry and were working towards membership of the Royal College of Pathologists, MRCPPath. This is an essential requirement for any scientist who wants to head an NHS laboratory.

The training scheme has twin aims. To progress the necessary experience to gain MRCPPath and to gain a basic but comprehensive knowledge of metabolic biochemistry. Most training is provided in-house by the host laboratory where each trainee has a nominated supervisor. Each trainee is formally appraised on an annual basis by one of the MetBioNet trainers and their local supervisor. To supplement the training provided locally there are specialised training workshops. The MetBioNet trainers also organise and encourage secondments and periods of study at other centres.

In addition the training group have been creating open access training resources on the MetBioNet website.

Website: <http://www.metbio.net/>

Resources available at the metbionet website:

- Training logbook, outlines syllabus
- Minimum training guidelines for clinical scientists training in general clinical biochemistry
- Investigation guidelines
- Powerpoint presentations
- Organic acid chromatogram library (direct link to be added)
- Case reports
- Metabolic map, a training resource aimed primarily at (medical) students. Good general resource for inspiring interest in the relationship between metabolic blocks and disease.

Contact: Dr Mick Henderson, National Lead Trainer, mick.henderson@lineone.net

The Netherlands

Training resources for laboratory specialists in Biochemical Genetics

Metabolic laboratories in The Netherlands rely either on clinical Chemists with a specialisation in inborn errors of metabolism or on clinical biochemical geneticists for their patient care.

Clinical Chemists

The Dutch Society of Clinical Chemistry holds a register of clinical chemists and also registers the colleagues who have accomplished specialisation in inborn errors of metabolism (IEM). At the moment the training to become a clinical chemist takes 4 years and the specialisation in IEM a further 2 years. The training has several official exams. In view of European harmonisation the society has plans to shorten the total duration of training. There is a European register of clinical chemists as well.

Clinical Biochemical Geneticists

The Dutch Society for Genetic Laboratory Disciplines provides an alternative training. They have courses for 1. clinical cytogeneticists 2. clinical biochemical geneticists and 3. clinical molecular geneticists. The training for each takes 4 years.

Basically the 'dual society' system is an unwanted situation and discussions are ongoing between both societies to merge their training schemes for IEM clinical chemists and clinical biochemical geneticists in the future.

Training schemes for the IEM specialisation in Clinical Chemistry and for the Clinical Biochemical Geneticists are available. The metabolic laboratories in the Netherlands are situated in the country's University Hospitals. They are generally well equipped and collaborate closely with a clinical metabolic department. The laboratories can each provide the training facilities for the clinical chemists and the clinical biochemical geneticists. After finishing their training the professional clinical chemists and metabolic biochemical geneticists have to follow a life long post educational training program with a re-registration every 4-5 years ('education permanente'). In daily practice the clinical chemist / metabolic biochemical geneticist is responsible for the quality of the laboratory techniques and of the laboratory results. They are responsible for the professional interpretation of their laboratory results against the background of the clinical signs and symptoms of the patient and against the background of other available technical investigations on the patient. Also they provide suggestions for further diagnostic work-up or follow-up of the patient. In their clinical letters they communicate directly with referring clinicians. Most of the metabolic laboratories in the Netherlands have an official accreditation with an independent quality assurance organisation. All clinical and laboratory professionals in the Netherlands are united in the ESN, The Dutch Society for Inborn Errors of Metabolism. Contact person for training issues in The Netherlands is Prof. Ron Wevers, Nijmegen. Tel: +31 24 3614567, e-mail: r.wevers@cukz.umcn.nl.

France

A "Diplôme Inter-Universitaire" is organized every year. It is open to Medical Doctors and Scientists with a degree in Pharmacy. The teaching is common for clinicians and biochemists. There is a two week course of lectures. Students undergo a period of training either in a clinical unit or in a lab. A certificate is issued for those who are successful in the final exam which consists a written paper and oral exam.

A brief prospectus is sent to all French metabolic units before the start of each academic year. Contact person for copies of the course details and further information:

daniel.rabier@nck.ap-hop-paris.fr

Switzerland

There is no formal scheme for metabolic biochemistry at the post-graduate level. The syllabus for a head of a clinical chemistry laboratory (FAMH) contains general physiology of relevant areas of metabolism but no specific reference to inborn errors of metabolism. One condition for a head of a clinical chemistry laboratory, which would also cover inborn errors of metabolism, is to undertake continuous education. 80 hours recognized tuition is requested per year of which 30h can be just autodidactic (reading papers) and teaching is recognized as CE.

More fundamentally there is a legal requirement that any analysis performed as service for patients has to be reliable, useful from a scientific background and economic. Thus for guidance of lab technicians a clinical scientist (either MD or PhD) is required with an appropriate postgraduate training. Our definition of clinical scientists is best described in the European Syllabus for Post-Graduate Training in Clinical Chemistry, version 2 published in 1999.

[Go to Educational Documents Downloads pdf 1](#)

See also the publication "The Practice of Clinical Chemistry in the European Union" which compares clinical chemistry practice and is relevant to clinical chemistry in general if not IEM specifically.

[Go to Educational Documents Downloads pdf 2.](#)

Contact: Brian Fowler Brian.Fowler@unibas.ch

Dialogue

We would like to hear from you if you have suggestions for additional material that would enhance this site.

Please contact: Mick Henderson mick.henderson@lineone.net or Brian Fowler Brian.Fowler@unibas.ch

Training resources directly available from this site

- Training syllabus approved by SSIEM
http://www.ssiem.org/docs/syllabus/training_syllabus_laboratory.pdf
- MetBioNet training log [Go to Educational Documents Downloads pdf 3](#)
- Information about the French training scheme 2006-7 (In French) [Go to Educational Documents Downloads pdf 4](#)
- Metabolic map [Go to Educational Documents Downloads pdf 5](#)

Training Initiatives

ERNDIM is collaborating with the SSIEM to provide training days for scientists. At present this will be restricted to a one day event that will precede the annual SSIEM meeting. Further details will be posted as they become available.

Training Links

OMIM,
<http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=OMIM>

International Union of Biochemistry and Molecular Biology, IUBMB, metabolic maps and animaps
<http://www.tcd.ie/Biochemistry/IUBMB-Nicholson/>

British Inherited Metabolic Disease Group, BIMDG, case reports and notice of meetings
<http://www.bimdg.org.uk/>

UK Newborn Bloodspot Programme Centre. Very useful source of information about current antenatal and newborn screening programmes with supporting literature that can be downloaded.
<http://www.gosh.nhs.uk/newborn/index.htm>

Children Living With Metabolic Disease, CLIMB, UK umbrella group for parent organisations.
Useful disease based literature
<http://www.climb.org.uk/>