Clinical Scientist Training in Genomics and Molecular Pathology within the Scottish Genetics Consortium

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Overview

- Background to scientist training in Scotland
- An overview of the new scheme
- Module structure
- Assessment structure/ completion of scheme
- Progression Monitoring
- Resources and support
- Quality Assurance
- Routes to registration

Background to Clinical Scientist training in Laboratory Genetics

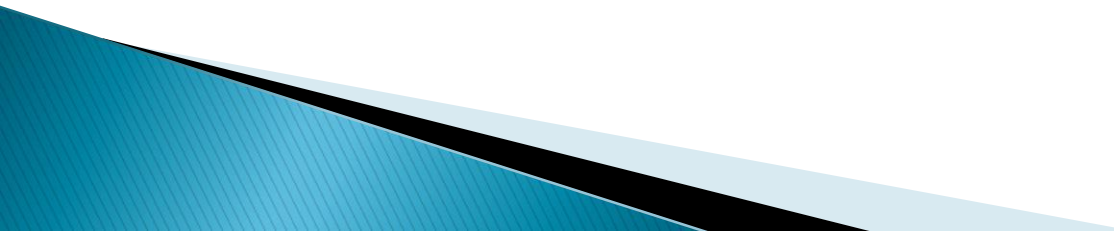Historically – 2013
- ACC A-Grade Training
- CMGS A-Grade Training

2012 – 2015
- Molecular Pathology Scheme

2014 – Present
- STP Genetics/ STP Genomics
- Scottish Consortium Molecular Pathology Scheme
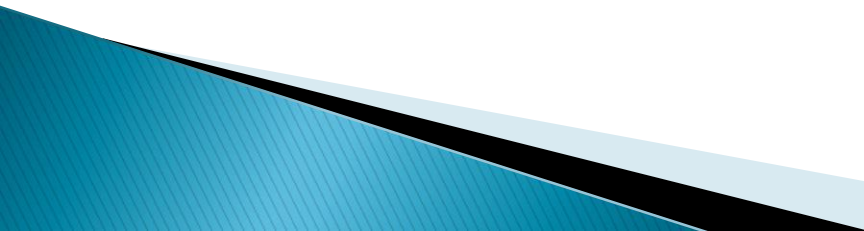- Association of Clinical Scientists Route 2 training

Present Situation

- In 2018 NHS Education for Scotland announced it could no longer afford to fully fund the required level of Clinical Scientist training through the STP route

- Three options:
- Partially fund trainees
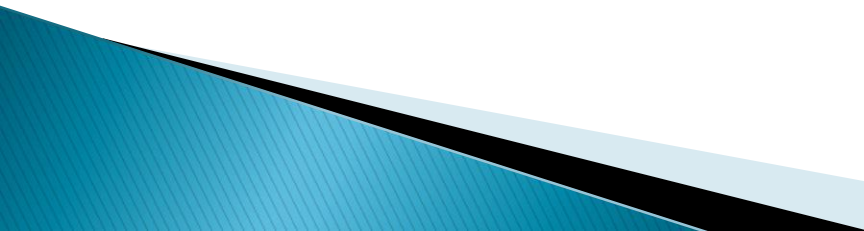- Reduce the number of trainees employed
- Write a new training scheme

Scottish Consortium Training Scheme

▸ Wealth of experience in training using various schemes

▸ Very defined ideas of what we would like in a training scheme:

- One scheme for both Genomics and Molecular Pathology
- Flexible enough to enable the training to be tailored to the individual laboratories testing repertoire and requirements
- Rigid enough to ensure consistency of training across Scotland
- Increased laboratory component
- Reduced emphasis on cross-discipline learning
- Increased service work
- Reduced written work
- Limited overlap of requirements between modules

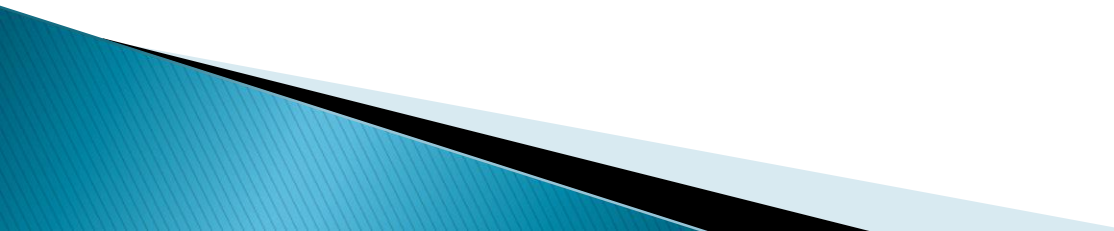# Considerations for a new scheme

- Each Scottish consortium laboratory covers core disorders
- Rare disorders are divided between the centres to enable a cost effective service
- Techniques employed not universal
- Amalgamation of Molecular Pathology services and Genetics services not universal
- Scientists across five different laboratories and four health boards would be involved

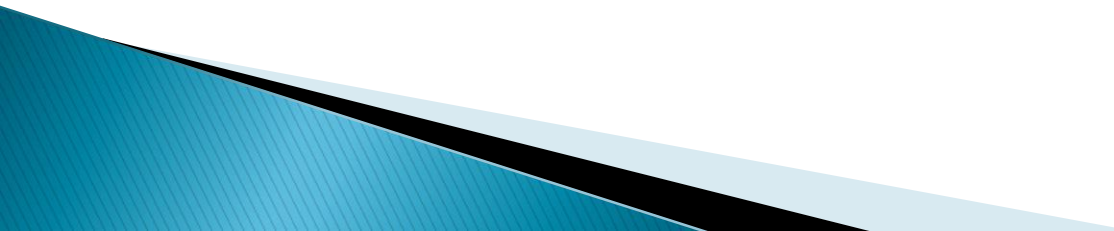# Overview of the scheme

- Core/ Rotational/ Specialist modules
- Compulsory/ Optional modules
- Suggested timings for all modules
- Credits applied to all modules
- Full programme specification in place
- 34 modules requested across the centres
- Funding for 3 years so completion planned in 2.5 years to allow for registration process

Core and Rotational Modules

- Introduction to Laboratory Genetics (Compulsory)
- Genomic Methodologies and General Understanding (Compulsory)
- Introduction to ……… (Optional)
- Bioinformatics (Compulsory)
- Professional Skills, Leadership and Quality Management (Compulsory)
- Research Methods (Optional)
- Rotational Modules (Optional)

Specialist Modules (all optional)

- Research Project
- Hereditary Cancer Syndromes
- Prenatal Genomics
- Mitochondrial Disorders
- Neurological Disorders
- Cardiomyopathy and Arrhythmias
- Sarcoma
- Lymphoproliferative Malignancies and Myeloma
- Chimerism and Stem Cell Transplant………

Suggested Programme for Genomics

	Module title	Suggested Timing	Optional/ Compulsory	Credits
Core Modules	Introduction to Laboratory Genetics	3 weeks	Compulsory	5
	Genomic Methodologies and General Understanding	18 weeks	Compulsory	20
	Bioinformatics	Concurrent	Compulsory	5
	Professional Skills, Leadership and Quality Management	Concurrent	Compulsory	10
	Introduction to Genomic Counselling	2 weeks	Optional	5
	Reproductive Science	6 weeks	Optional	10
Specialist Modules	Introduction to Common Constitutional Disorders	8 weeks	Optional	10
	Haematological malignancies	8 weeks	Optional	10
	Introduction to Carcinoma	8 weeks	Optional	10
	Hereditary Cancer Syndromes	6 weeks	Optional	10
	Research Project	16 weeks	Optional	20
	Prenatal Genomics	10 weeks	Optional	15
	Mitochondrial Disorders	6 weeks	Optional	10
	Neurological Disorders	12 weeks	Optional	10
	Cardiomyopathy and Arrhythmias	6 weeks	Optional	10
Total weeks		110	Total credits	160

Suggested Programme for Mol. Path.

	Module title	Suggested Timing	Optional/ Compulsory	Credits
Core Modules	Introduction to Laboratory Genetics	3 weeks	Compulsory	5
	Genomic Methodologies and General Understanding	18 weeks	Compulsory	20
	Bioinformatics	Concurrent	Compulsory	5
	Professional Skills, Leadership and Quality Management	Concurrent	Compulsory	10
	Research Methods	3 weeks	Optional	5
	Introduction to Haematology	6 weeks	Optional	10
	Introduction to Histopathology	6 weeks	Optional	10
	Introduction to Cytopathology	6 weeks	Optional	10
Specialist Modules	Introduction to Common Constitutional Disorders	8 weeks	Optional	10
	Haematological malignancies	8 weeks	Optional	10
	Introduction to Carcinoma	8 weeks	Optional	10
	Genomics of Solid Tumour Malignancies	6 weeks	Optional	10
	Hereditary Cancer Syndromes	6 weeks	Optional	10
	Research Project	16 weeks	Optional	20
	Lymphoproliferative Malignancies and Melanoma	12 weeks	Optional	10
	Neuropathy	6 weeks	Optional	10
Total weeks		112	Total credits	165

Layout of all Modules

- Knowledge and Understanding

- Practical Training

- Experiential Learning

- Assessment

Module name:	
Module Type:	Core/ Specialist Module (delete as appropriate)
Credits:	
Pre-requisites:	(Modules which should have been completed first if applicable)

1. Module Aims

Overall aims of the module including the compulsory/ optional practical elements

2. Learning Outcomes: Knowledge & Understanding

On successful completion of this module the trainee will understand the following:
1.

3. Learning Outcomes: Practical Tasks

On successful completion of this module the trainee will have carried out the following practical tasks:
1.

4. Clinical and Laboratory Experiential Learning

Clinical Experiential Learning: the trainee will have:
1.

Laboratory Experiential Learning: the trainee will have:
1.

5. Assessment

Competencies:
1.
2.
- (Number) Case Based Discussions
- (Number) Direct Observation of Practical Skills (DOPS)/ Observed Clinical Event (OCE)

Suggested DOPS Titles	Suggested OCE Titles

Assessment Structure

- Case Based Discussions
- Direct Observation of Practical/ Procedural Tasks
- Observed Clinical Events
- Written Competencies
- Mid Point Viva Voce
- End Point Viva Voce

- Templates are in place to standardise assessments
- Each module must conform to the minimum requirements for assessment:
  - 2 CBDs/ DOPs/ OCEs per 5 credits
  - A minimum of 2 competency evidence submissions per 5 credits

Completion of the Scheme

- In order to qualify for completion of the scheme the trainees must have completed the following aspects:

- A minimum of 150 credits in total must be obtained

- All assessments (CBD, DOP, OCE, competencies) marked as satisfactory or action plan completed

- Pass grade received for the mid-point Viva assessment with external assessor

- Pass grade received for the final Viva assessment with external assessor

Progression Monitoring

- Progression monitoring is imperative

- No electronic tracking system available (e.g. OLAT/ Onefile)

- Each centre will track progress using an appropriate method

- Progress will be assessed at the Mid-Point Viva Voce
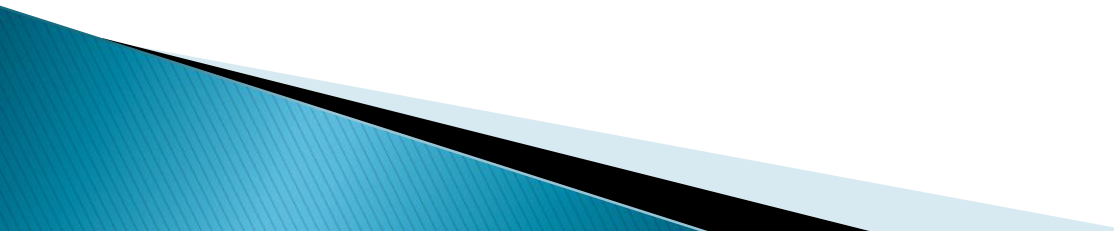
Progression Monitoring – Glasgow

- Progress is monitored using Ideagen Q-Pulse People Module

- All completed assessment templates are scanned

- Regular meetings to discuss progress

Resources and Support

▸ Supernumerary trainees – time allocated for theoretical studies

▸ No academic support in place

▸ Funding for conferences, training events, and meetings
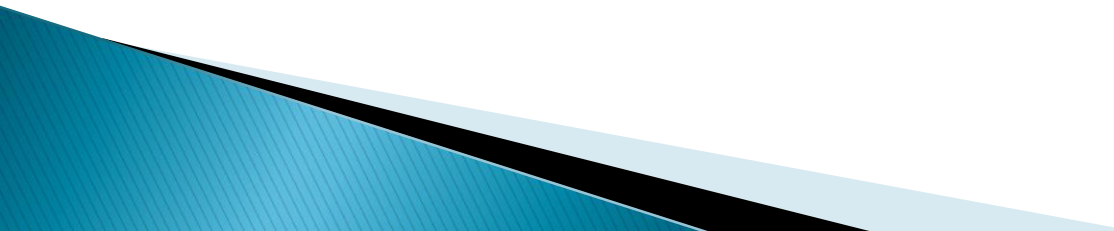
▸ Textbooks, journals and e-resources available

Knowledge Hub (https://www.khub.net/group)

▶ A resource for:

❖ Sharing training scheme information

❖ Sharing resources between trainees

❖ Sharing resources between centres

❖ Sharing information on upcoming events

❖ Enabling trainee to trainee support via a forum

❖ Contains contact information for all trainees and allows direct messaging…..

Quality Assurance

- Consortium wide QA through external assessment

- NHS Education for Scotland QA processes and policies:

  ❖ Centre training accreditation

  ❖ Annual Review of Competency Progression

  ❖ Training Plan submission

  ❖ Trainer Resume

  ❖ Confidential trainee questionnaire

  ❖ Multiple policies in place e.g. Special Measures

Routes to Registration

- This scheme is un-ratified

- Trainees are eligible to apply for registration via

  ❖ AHCS Equivalence route

  ❖ ACS Route 2

Questions Welcome

▸ With thanks to colleagues involved in the preparation of this programme:

❖ Kathy Walsh/ Anthony Bench

❖ Christine Bell

❖ Lynsey Bayer

❖ Jennifer Fleming

❖ Various other colleagues within the Genetics Consortium

NHS Tayside

NHS Greater Glasgow and Clyde

NHS SCOTLAND

Scottish Genetics Laboratory Consortium

Clinical Scientist Training Programme

NHS Grampian

NHS Lothian