# THE HONG KONG COLLEGE OF PATHOLOGISTS

# GENETIC AND GENOMIC PATHOLOGY

# TRAINING LOG BOOK

# Name:

Trainee number:

Training code:

Discipline: Haematology

# THE HONG KONG COLLEGE OF PATHOLOGISTS

# GENETIC AND GENOMIC PATHOLOGY TRAINING LOG BOOK

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**Your training log book should be kept safe and up-to-date**

**Part 1: INTRODUCTION**

The purpose of this training log book is to keep a record of your cumulative experience in Genetic and Genomic Pathology as you progress through your training program. It is a record of the milestones you achieve as you progress through the training program and also functions as a diary of your training activities.

There are areas for entries by your Educational Supervisor and you will be required to produce a copy of the relevant year for your annual review. It also records your level of competence achieved, as attested by your Educational Supervisor / trainers and together with their reports, results of formal tests / examinations, etc. will constitute your training record folder and personal development indicator.

**How to use this Training Log**

1. Complete all details of the milestones, record of training in the training log commencing at the start of your career in Genetic and Genomic Pathology.

2. Regard your Training Log Book as a diary of activity. Entries should be made whenever you complete an activity and a careful summary should be made*.*

1. The Training Log Book should encourage you to assess your own progress and decide if you have had enough experience, or put enough effort, into any one activity or learning objective. Complete the remarks box briefly whenever you make an entry and indicate whether you need to return to this topic or you have reached the required standard. If you return to the topic or activity, make a fresh entry below the original one. The Training Record is an extensive documentbecause it summarises a range of training activities - theoretical knowledge, practical laboratory experience, and clinical training. You primarily know how thoroughly these have been undertaken and hence you are responsible for completing the entries accurately.
2. Your Educational Supervisor will review your Training Log Book at regular intervals to ensure that you are keeping the record up-to-date. If you have completed a section of training, or at the 6-monthly review, the Educational Supervisor will comment on your progress, particularly in terms of areas of strength or weakness, and indicating areas which might benefit from further study or activity. **The Appendix 1** of the Log Book would be used as an annual return and this part should be sent to the Secretary of the Training and Examinations Committee as a continuous assessment of your training. This training record should be completed each year with an entry of the frequency and/or duration and date of a particular activity, and this should be counter-signed by your trainer(s). **The entire section should be returned to the Secretary of the Training and Examinations Committee before March 31st of each year.**

**Part 2: AIMS AND OBJECTIVES**

**Aims**

The aims of the College in instituting a training log book are to ensure that all trainees:

1. Receive adequate training in all aspects of Genetic and Genomic Pathology, as stated in the Regulations on Postgraduate Training and Examination in Genetic and Genomic Pathology.
2. Receive adequate training in information technology and data analysis.
3. Receive adequate training in research methods, statistics, ethics etc., and to pursue own research projects.
4. Receive adequate training in laboratory management including quality assurance, budgetary control and personnel management.
5. Receive adequate training in critical appraisal of medical/technology/healthcare literature, health technology assessment and understanding of cost-effectiveness analysis.
6. Understand the importance of audit and clinical effectiveness and be able to audit their own and their department’s activities.

**Objectives**

The objectives of the training record are to ensure that a trainee has adequately covered all the general and specialist areas of Genetic and Genomic Pathology in their preparation for obtaining the Fellowship of The Hong Kong College of Pathologists.

1. The trainee will have a personal record of his/her study of Genetic and Genomic Pathology in health and disease.
2. The trainee will have a record of clinical experience gained in out-patient clinics or other clinical meetings.
3. The trainee and training committee will be able to identify deficiencies in his/her training and arrange for these to be met as appropriate.
4. The training record will serve as part of the assessment processes during and on completion of the training program.

**Part 3: MAJOR MILESTONES**

1. Basic Medical Qualification and Year attained:
2. Fellow of HKCPath:

 Specialty: Date of attainment:

1. Other Professional Medical Qualification (if applicable):

 Date of attainment:

1. Registration as Genetic and Genomic Pathology trainee:

Date: College Trainee No.:

Educational Supervisor’s Name:

Signature: Date:

5. Change in Educational Supervisor (if any):

|  |  |  |
| --- | --- | --- |
| Name of Educational Supervisor | Signature & Date | Effective Date |
|  |  |  |
|  |  |  |
|  |  |  |

6. Periodic Assessment by Educational Supervisor (ES):

|  |  |  |  |
| --- | --- | --- | --- |
| Period | Date | Signature of ES | Comments / Assessment by ES |
| 6-month |  |  |  |
| 1-year |  |  |  |
| 18-month |  |  |  |
| 2-year |  |  |  |

 **Part 4: TRAINING RECORD OVER TOTAL TRAINING PERIOD**

**1. Cross-College Component**

Cross-college training between The Hong Kong College of Pathologists and sister Colleges as listed in *Appendix B in Regulations on Postgraduate Training and Examinations in Genetic and Genomic Pathology*

Minimal requirement contact hours to fulfill training requirement: **20 hours**

|  |  |  |
| --- | --- | --- |
| **Activities** | Numbers of hours attained | Date(s) attended |
| **Offered by The Hong Kong College of Community Medicine** |  |  |
| 1. Introduction to public health policy formulation and implementation
2. Introduction to health technology assessment (HTA)
3. General principles of screening with emphasis on the importance of evaluation – using genetic screening tests as examples
4. Considerations of clinical and public health application on new tests and interventions, including ethical, social and legal implications.
 |  |  |
| **Offered by The Hong Kong College of Obstetricians and Gynaecologists** |  |  |
| 1. Prenatal Genetic Screening (Antenatal Clinic at Prince of Wales Hospital and Queen Mary Hospital)
2. Invasive Diagnostic Procedure (Antenatal Clinic at Prince of Wales Hospital and Queen Mary Hospital)
3. Prenatal / Preconception Genetic Counselling (Antenatal Clinic at Prince of Wales Hospital and Queen Mary Hospital)
4. Expanded Newborn Screening (Postnatal ward at Prince of Wales Hospital)
 |  |  |
| **Offered by The Hong Kong College of Paediatricians** |  |  |
| 1. Paediatric Genetic Diagnosis and Counselling (Genetic Clinic at Clinical Genetic Service, Queen Mary Hospital and the Hong Kong Children’s Hospital)
2. Academic Meetings / Clinical Genetics Rounds / Case Discussion / Exome Sequencing Meetings (Clinical Genetic Service and Queen Mary Hospital)
3. Expanded Newborn Screening – preanalytical experience (Clinical Genetic Service and Hong Kong Children’s Hospital)
 |  |  |
| **Offered by the Hong Kong College of Physicians** |  |  |
| 1. Haematology Meeting/Rounds
2. Thalassemia and Haemophilia clinics
 |  |  |
| **Offered by the Hong Kong College of Radiologists** |  |  |
| 1. Educational activities in targeted therapy and medicine
2. Attachment in oncology clinics
 |  |  |

Please attach copy of Certificate of Attendance for the activities attained, if applicable.

Components not listed above need to be approved by the College.

**2. Knowledge Component**

Trainees in each discipline are required to satisfy the knowledge component as listed in *Appendix C of the Regulations on Postgraduate Training and Examinations in Genetic and Genomic Pathology.*

Trainees should have gone through all of the below listed knowledge components to fulfil the minimum training requirement of the Genetic and Genomic Pathology.

**a) Core Component**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Please specify mode of learning (Postgraduate course/Overseas training/ Self-learning)\*  | Date(s) | Signature of Educational Supervisor |
| * Basic theories in genetics
 |  |  |  |
| * Extraction methods for DNA, RNA, proteins
 |  |  |  |
| * Principles of electrophoresis and immunoblotting
 |  |  |  |
| * Principles of automated DNA sequencing and various methods of genotyping and mutation analysis
 |  |  |  |
| * Principles, applications and statistical bias of quantitative-PCR (q-PCR)
 |  |  |  |
| * Principles in tissue culture
 |  |  |  |
| * Basic concepts in conventional G-banded cytogenetics and molecular cytogenetics [e.g. Fluorescence in-situ hybridization (FISH), Comparative genomic hybridization (CGH), Spectral karyotyping (SKY)]
 |  |  |  |
| * Principles in in-situ hybridization (ISH) techniques (ISH, FISH, chromogenic in-situ hybridization[CISH], silver in-situ hybridization [SISH])
 |  |  |  |
| * Principles and applications of flow cytometry
 |  |  |  |
| * Emerging technologies (e.g. massively parallel sequencing (MPS): whole genome and targeted approaches for DNA, RNA and methylation, long read sequencing)
 |  |  |  |
| * Basic bioinformatics for genetic data analysis, including MPS data and microarray data (SNP, gene expression profiling, CGH, microRNA)
 |  |  |  |
| * Laboratory management issues in genetic and genomic testing
 |  |  |  |

\* Please attach copy of Certificate of Attendance for the activities attained, if applicable. Documentation such as detailed notes with references, topic presentation in departmental seminar, or assessment by Educational Supervisor is required for self-learning.

**b) Discipline-based Components**

Trainees are required to fulfil the training requirement as stipulated in the *Regulations on Postgraduate Training and Examinations in Genetic and Genomic Pathology* in his / her discipline.

|  |  |  |
| --- | --- | --- |
| **Pathology Specialty** | **Discipline-based Components** | **Date of Completion** |
| Anatomical Pathology(any 2 of the components) | Clinical Applications of Genetic and Genomic Testing including Pharmacogenetics and Personalised MedicineGenetic and Genomic Testing for diagnosis and treatment of Hereditary DisordersLiquid Biopsy for the Assessment of Cancers |  |
| Chemical Pathology(any 2 of the components) | Genetic and Genomic Investigations of Constitutional DisordersGenetic and Genomic Testing in Newborn ScreeningCancer Diagnostics and Applications of Circulating Nuclei AcidsPharmacogenetics, Pharmacogenomics and Precision MedicineInvestigations of Human Genetic and Genomic Diversity |  |
| Haematology | Cytogenomics of Haematolymphoid MalignanciesGenetics and Genomics of Inherited & Acquired Haematological Diseases and Transfusion Medicine |  |
| Immunology(any 2 of the components) | Clinical Applications of Genetic Testing for Primary Immunodeficiency and Other Immunological Diseases, Newborn Screening and PharmacogeneticsRole of Traditional Immunological Techniques in Workup and Diagnosis – From Phenotype to GenotypeClinical Applications of Major Histocompatibility Complex (MHC) Genotyping and Other Immunogenetics Tests |  |

Please see **Appendix 2** for detailed requirements of each specialty

**3. Professionalism and Ethics**

The references listed in **Appendix 3** are a minimum reading list. Trainees are required to complete the Continuous Medical Education exercise on Professionalism and Ethics on the web-based platform after reading.

|  |  |  |
| --- | --- | --- |
| **Category** | **Title** | **Signature of Educational Supervisor** |
| Confidentiality | Confidentiality |  |
| Confidentiality | Disclosing information for education and training purposes |  |
| Confidentiality | Disclosing information for employment, insurance and similar purposes |  |
| Confidentiality | Disclosing medical records after death |  |
| Confidentiality | Good practice in handling patient information |  |
| Confidentiality | Responding to criticism in the media |  |
| Ethics | Consent to research |  |
| Ethics | Raising concern |  |
| General | Code of professional conduct |  |
| General | Declaration of Geneva |  |
| General | Ethical guidelines on practice of telemedicine |  |
| General | Hong Kong doctors |  |
| General | Leadership and management for all doctors |  |
| General | Quality assurance of professionalism |  |
| General | Strategic Development of Genomic Medicine in Hong Kong |  |
| General | WMA international code of medical ethics |  |
| Professionalism | Doctors' use of social media |  |
| Professionalism | Ending your professional relationship with a patient |  |
| Professionalism | Financial and commercial arrangements and conflicts of interest |  |
| Professionalism | Maintaining a professional boundary between you and your patient |  |
| Professionalism | Personal beliefs and medical practice |  |
| Professionalism | Sexual behaviour and your duty to report colleagues |  |

**4. Workplace-Based Assessment**

Four assessments should be held within the training period, of which at least three should be held within the post-fellowship training period.

Any component under the Core or Discipline-based category under Knowledge Component can be tested. Core and Discipline-based knowledge should at least be covered once among the four assessments.

An assessment with unsatisfactory results can be repeated. Four satisfactory assessments are required before the trainee is eligible for oral examination.

Assessors may include the Education Supervisor, trainers (pathologists or scientific officers), peers, bedside clinicians, and technical staff. For each assessment, at least three assessors of different backgrounds as listed above should be included.

The assessments can be conducted in the following formats. More than one format type should be adopted among the four assessments:

* Instruction to a technologist to undertake an experiment, defining rationale for each step, and explaining the expected practical outcomes
* A short presentation of the trainee’s own piece of work on genetic and genomic testing
* Presentation and discussion at a multidisciplinary team meeting or a clinicopathologic conference
* Clinical consultation

 Please see **Appendix 4** for detailed requirements on the workplace-based assessment record.

**Appendix 1**

**TRAINEE ANNUAL RETURN AND ASSESSMENT BY EDUCATIONAL SUPERVISOR (Year \_\_of 2)**

Please ask your Educational Supervisor to complete this annual return at the end of each year of training. It is your responsibility to file in the return to the Secretary of the Training and Examinations Committee. You should keep a duplicate of the return in your Log Book for reference.

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Trainee number: Position code: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

This is a report on the period from \_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_ (please specify long leave, if any, that is more than 90 continuous calendar days: \_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_)

The trainee has now finished \_\_\_\_\_ months of training in Genetic and Genomic Pathology.

Training locations, including electives details:

(1)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dates: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(2)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dates: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Professional qualifications (e.g. FRCPath, Ph D):

(1)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dates: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(2)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dates: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Trainee’s signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Overall appraisal:**

( ) The performance including professionalism and ethics during the period is satisfactory.

( ) The training programme for the period has been successfully completed but the performance is not satisfactory.

 ( ) Other comments, please specify:

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Official use only

Vetted by Chief Examiner on

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Educational Supervisor’s Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Please return the completed form to: Dr WONG Chi Kin Felix, Secretary, Training and Examinations Committee, c/o Division of Chemical Pathology, Department of Pathology, Queen Mary Hospital, 102 Pokfulam Road, Hong Kong.
Tel: (852) 2255 1293; Email: wck457@ha.org.hk

**Appraisal by Chief Examiner (to be completed at the end of the programme):**

**Overall appraisal:**

( ) The training programme for the period has been successfully completed.

( ) Other comments, please specify:

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chief Examiner‘s Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Appendix 2**

**Test list for discipline-based components**

The following provides an outline of the test spectrum and related molecular genetics / and cytogenetics procedures in haematology. This is not intended to be exhaustive or exclusive.

To fulfil the training requirements:

- Trainees must attain an **overall of at least 97 credits** (70% of the total credits)

AND

- Trainees must attain at least 60% of the total credits from each of **Section A (40 credits)**, **Section** **B (17 credits) and Section C (26 credits)**

AND

- Trainees must attain **all credits that are marked mandatory**

|  |
| --- |
| 1. **Molecular Genetics**
 |
|  | **Period of Training/Hands-on Performance**  |
| 1. **Basic techniques**
 |  |
| * 1. DNA extraction and quality assessment
 | (1 credit) |
| * 1. RNA extraction and quality assessment
 | (1 credit) |
| * 1. Polymerase chain reaction
 |  |
| * + - 1. Allele-specific PCR/Amplification-refractory mutation system
 | \*(1 credit) |
| * + - 1. Gap-PCR
 | \*(1 credit) |
| * + - 1. RT-PCR
 | \*(1 credit) |
| * + - 1. Real-time/Q-PCR
 | \*(1 credit) |
| * 1. Gel electrophoresis
 | (1 credit) |
| * 1. Capillary electrophoresis
 | (1 credit) |
| * 1. Allele-specific hybridisation and blotting
 | (1 credit) |
| * 1. Sanger sequencing
 | \*(1 credit) |
| * 1. Others (please specify)

*e.g. Multiplex ligation-dependent probe amplification* | (1 credit) |
|  | **Period of Training** |
| 1. **Advanced platforms**
 |  |
| * 1. Next generation sequencing
 | \*(1 credit) |
| * 1. Digital PCR
 | \*(1 credit) |
| 3. Others (please specify) *e.g. Arrays* | (1 credit) |

*\* mandatory*

|  |
| --- |
| **A. Molecular Genetics (continued)** |
|  | **Period of Training / Hands-on Performance** |
| 1. **Basic operation of key instruments**
 |  |
| * 1. Automated nucleic acid extraction system
 | (1 credit) |
| * 1. Thermal cycler
 | (1 credit) |
| * 1. Real time PCR machine
 | (1 credit) |
| * 1. Automated DNA analyser
 | (1 credit) |
| * 1. Gel documentation system
 | (1 credit) |
|  | **Period of Training** |
| 1. **Data interpretation and data management**
 |  |
| * 1. Analysis of raw data from basic molecular genetic techniques
 |  |
| * + - 1. Point mutation detection and identification by AS-PCR/ARMS, real-time PCR, Sanger sequencing
 | \*(1 credit) |
| * + - 1. Indel and tandem duplication detection and identification by fragment length analysis and Sanger sequencing
 | \*(1 credit) |
| * + - 1. Large deletion detection by gap-PCR or MLPA
 | (1 credit) |
| * + - 1. Gene fusion and translocation detection by RT-PCR and Sanger sequencing
 | \*(1 credit) |
| * + - 1. Relative and absolute quantitation of PCR products by real time PCR
 | \*(1 credit) |
| * + - 1. Clonal gene rearrangement detection by multiplex PCR and fragment length analysis
 | \*(1 credit) |
| * + - 1. Others (please specify)
 | (1 credit) |
| * 1. Principles and basic practice of raw data analysis generated from specialized platforms
 | (1 credit) |
| * 1. Bioinformatics
 |  |
| * + - 1. Use of open source and proprietary software for sequence alignment and variant calling
 | (1 credit) |
| * + - 1. Use of open source and proprietary software for variant annotation
 | (1 credit) |
| * + - 1. HUGO and HGVS nomenclature
 | \*(1 credit) |
| * + - 1. Use of public databases to look for information on genes and genetic diseases due to inherited and acquired mutations
 | \*(1 credit) |
| * + - 1. Developing and reporting a professional opinion
 | \*(1 credit) |
| * 1. Data storage and retrieval
 | (1 credit) |

*\* mandatory*

**A. Molecular Genetics (continued)**

|  |  |  |
| --- | --- | --- |
|  | **Period of Training** | **Sign-out Report** **(No. of Cases)** |
| 1. **Result interpretation and reporting**
 |  |  |
| * 1. Diagnosis and prognostication of major types of haematological neoplasms based on mutation profile, including specifically:
 |  |  |
| * + - 1. Mutation in acute myeloid leukaemia e.g. *NPM1*, *FLT3-ITD* and *CEBPA*
 | \*(1 credit) | (minimum 10 cases) |
| * + - 1. Mutation in myeloproliferative neoplasms e.g. *CALR*, *JAK2, MPL*, *ASXL1*, *IDH1/2*, *EZH2*, *SRSF2*, *U2AF1*
 | \*(1 credit) | (minimum 10 cases) |
| * + - 1. Recurrent translocations and gene fusions in acute myeloid and acute lymphoblastic leukaemia
 | \*(1 credit) | (minimum 10 cases) |
| * + - 1. Others (please specify)
 | (1 credit) | (minimum 10 cases) |
| * 1. Minimal residual disease monitoring, including specifically:
 |  |  |
| * + - 1. qRT-PCR monitoring and IS ratio reporting of chronic myeloid leukaemia
 | \*(1 credit) | (minimum 20 cases) |
| * + - 1. qRT-PCR monitoring and reporting of acute myeloid leukaemia with specific gene fusion
 | (1 credit) | (minimum 5 cases) |
| * + - 1. Others (please specify)
 | (1 credit) | (minimum 5 cases) |
| * 1. Clonality assessment of B and T lymphoid neoplasms
 | \*(1 credit) | (minimum 5 cases) |
| * 1. Diagnosis of thalassaemias, haemoglobinopathies and hereditary persistence of foetal haemoglobin
 | (1 credit) | (minimum 5 cases) |
| * 1. Diagnosis of inherited coagulation and thrombophilic disorders, including specifically:
 |  |  |
| * + - 1. F8 gene rearrangement in haemophilia A
 | (1 credit) | (minimum 1 case) |
| * 1. Diagnosis of inherited haemolytic anaemias
 | (1 credit) | (minimum 1 case) |
| * 1. Diagnosis of inherited platelet disorders
 | (1 credit) | (minimum 1 case) |
| * 1. Diagnosis of inherited bone marrow failure syndromes
 | (1 credit) | (minimum 1 case) |
| * 1. Chimerism study
 | (1 credit) | (minimum 3 cases) |
| * 1. Others (please specify)
 | (1 credit) | (minimum 5 cases) |

*\* mandatory*

**A. Molecular Genetics (continued)**

|  |  |
| --- | --- |
|  | **Period of Training** |
| 1. **Quality assurance**
 |  |
| * 1. Establishment of standard operation procedures
 | (1 credit) |
| * 1. Design and execution of quality control procedures for different testing techniques
 | \*(1 credit) |
| * 1. Selection / setting up appropriate external quality assessment programmes and result analysis
 | \*(1 credit) |
| * 1. Knowledge of accreditation requirements on personnel, instrumentation, reagents, testing procedure and environment for molecular genetic testing
 | (1 credit) |
| * 1. Participation in activities to establish knowledge and proficiency e.g. clinical round, laboratory management meeting, audits or reviews of internal control procedures or external quality assurance results, evaluation of new tests.
 | \*(1 credit) |
| 1. **Clinical liaison and consultation**
 |  |
| * 1. Indication, test selection and test limitations
 | \*(1 credit) |
| * 1. History taking, provision of or referral for genetic counselling
 | (1 credit) |
| * 1. Sample acquisition, storage and transport requirements
 | (1 credit) |
| 1. **New test establishment**
 |  |
| * 1. Assessment of clinical demand
 | (1 credit) |
| * 1. Literature review
 | (1 credit) |
| * 1. Selection of methodology and platform
 | \*(1 credit) |
| * 1. Primer/probe design
 | (1 credit) |
| * 1. Test validation including establishment of analytical sensitivity
 | \*(1 credit) |
| * 1. Quality control
 | \*(1 credit) |
| * 1. Test limitation
 | \*(1 credit) |
| * 1. Establishment of standard operating procedure
 | (1 credit) |
| * 1. Reporting format and comments
 | (1 credit) |
| * 1. Resource implications
 | (1 credit) |

*\* mandatory*

|  |
| --- |
| 1. **Conventional Cytogenetics**
 |
|  | **Period of Observation/Training** |
| 1. **Basic techniques**
 |  |
| * 1. Synchronised/non-synchronised and stimulated/unstimulated cell culture/mitogen stimulated culture
 | (1 credit) |
| * 1. Harvesting
 | (1 credit) |
| * 1. Slide preparation
 | (1 credit) |
| * 1. G-Banding
 | (1 credit) |
| 1. **Basic operation of key instruments**
 |  |
| * 1. Cell culture incubator
 | (1 credit) |
| * 1. Bright field microscopy
 | (1 credit) |
| * 1. Automated karyotyper
 | (1 credit) |
| 1. **Data interpretation and data management**
 |  |
| * 1. Karyotyping
 | \*(1 credit) |
| * 1. Principles and basic practice of raw data analysis generated from specialized techniques
 | (1 credit) |
| * 1. ISCN nomenclature
 | \*(1 credit) |
| * + - 1. Use of public databases to look for information on karyotypic abnormalities in haematological neoplasms
 | \*(1 credit) |
| * 1. Data storage and retrieval
 | (1 credit) |
|  | **Period of Training** | **Sign-out reports** **(No. of cases)** |
| 1. **Result interpretation and reporting**
 |  |  |
| * 1. Diagnosis and Prognostication of major types of haematological neoplasms, including specifically:
 |  |  |
| * + - 1. Acute myeloid/lymphoblastic leukaemia
 | \*(1 credit) | (minimum 5 cases) |
| * + - 1. Myelodysplastic syndrome
 | \*(1 credit) | (minimum 5 cases) |
| * + - 1. Primary myelofibrosis
 | \*(1 credit) | (minimum 3 cases) |
| * + - 1. Chronic myelomonocytic leukaemia
 | (1 credit) | (minimum 3 cases) |
| * + - 1. Chronic eosinophilia leukaemia
 | (1 credit) | (minimum 1 case) |
| * + - 1. Plasma cell myeloma
 | \*(1 credit) | (minimum 3 cases) |
| * + - 1. Lymphoid malignancy e.g. Burkitt lymphoma, chronic lymphocytic leukaemia
 | (1 credit) | (minimum 5 cases) |
| * + - 1. Chimerism study
 | (1 credit) | (minimum 3 cases) |

*\* mandatory*

|  |  |  |
| --- | --- | --- |
| **B.** **Conventional Cytogenetics (continued)** |  |  |
|  | **Period of Training** |
| 1. **Quality assurance**
 |  |
| * 1. Establishment of standard operation procedures
 | (1 credit) |
| * 1. Design and execution of quality control procedures
 | \*(1 credit) |
| * 1. Selection of appropriate external quality assessment programmes and result analysis
 | \*(1 credit) |
| * 1. Knowledge of accreditation requirements on personnel, instrumentation, reagents, testing procedure and environment for conventional cytogenetics
 | (1 credit) |
| * 1. Participation in activities to establish knowledge and proficiency e.g. clinical round, laboratory management meeting, audits or reviews of internal control procedures or external quality assurance results, evaluation of new tests.
 | \*(1 credit) |
| 1. **Clinical liaison and consultation**
 |  |
| * 1. Indication and test limitations
 | (1 credit) |
| * 1. History taking
 | (1 credit) |
| * 1. Sample acquisition, storage and transport requirements
 | (1 credit) |

 *\* mandatory*

1. **Fluorescence In-situ Hybridisation**

|  |  |
| --- | --- |
|  | **Period of Training** |
| 1. **Basic techniques**
 |  |
| * 1. Cytospin
 | (1 credit) |
| * 1. Metaphase slide preparation
 | (1 credit) |
| * 1. Fixation
 | (1 credit) |
| * 1. Hybridization
 | (1 credit) |
| * 1. Cell sorting
 | (1 credit) |
| 1. **Specialised techniques**
 |  |
| 1. M-FISH
 | (1 credit) |
| 1. M-band
 | (1 credit) |
| 1. Chromosome painting
 | (1 credit) |
| 1. FICTION
 | (1 credit) |
| 1. MGG-FISH
 | (1 credit) |
| 1. **Basic operation of key instruments**
 |  |
| 1. Programmable slide-based hybridization system
 | (1 credit) |
| 1. Fluorescence microscopy
 | (1 credit) |
| 1. Automated FISH analysis system
 | (1 credit) |
| 1. **Data interpretation and data management**
 |  |
| * 1. Probe signal analysis for interphase and metaphase FISH
 |  |
| * + - 1. Centromeric probes
 | \*(1 credit) |
| * + - 1. Fusion probes
 | \*(1 credit) |
| * + - 1. Break-apart probes
 | \*(1 credit) |
| * + - 1. Locus-specific probes
 | \*(1 credit) |
| * 1. Principles and basic practice of raw data analysis generated from specialized techniques
 | (1 credit) |
| * 1. ISCN nomenclature
 | \*(1 credit) |
| * 1. Data storage and retrieval
 | (1 credit) |

*\* mandatory* **C.****Fluorescence In-situ Hybridisation (continued)**

|  |  |  |
| --- | --- | --- |
|  | **Period of Training** | **Sign-out reports** **(No. of cases)** |
| 1. **Result interpretation and reporting**
 |  |  |
| * 1. Diagnosis of major types of haematological neoplasms, including specifically:
 |  |  |
| * + - 1. *MYC*, *BCL2* and *BCL*6 rearrangement in mature B-cell lymphoma
 | \*(1 credit) | (minimum 3 cases) |
| * + - 1. Recurrent genetic translocations in acute leukaemia
 | \*(1 credit) | (minimum 5 cases) |
| * + - 1. Intrachromosomal amplification of chromosome 21 in B acute lymphoblastic leukaemia
 | (1 credit) | (minimum 1 case) |
| * + - 1. *ABL1* amplification in T acute lymphoblastic leukaemia
 | (1 credit) | (minimum 1 case) |
| * 1. Prognostication of major types of haematological neoplasms, including specifically:
 |  |  |
| * + - 1. Plasma cell myeloma
 | \*(1 credit) | (minimum 5 cases) |
| * + - 1. Chronic lymphocytic leukaemia
 | \*(1 credit) | (minimum 3 cases) |
| * + - 1. Others (please specify)
 | (1 credit) | (minimum 3 cases) |
|  | **Period of Training** |
| 1. **Quality assurance**
 |  |
| * + 1. Establishment of standard operation procedures
 | (1 credit) |
| 1. Design and execution of quality control procedures for different testing techniques
 | \*(1 credit) |
| 1. Selection / setting up appropriate external quality assessment programmes and result analysis
 | \*(1 credit) |
| 1. Knowledge of accreditation requirements on personnel, instrumentation, reagents, testing procedure and environment for fluorescence in-situ hybridisation
 | (1 credit) |
| 1. Participation in activities to establish knowledge and proficiency e.g. clinical round, laboratory management meeting, audits or reviews of internal control procedures or external quality assurance results, evaluation of new tests.
 | \*(1 credit) |

*\* mandatory* **C.****Fluorescence In-situ Hybridisation (continued)**

|  |  |
| --- | --- |
|  | **Period of Training** |
| 1. **Clinical liaison and consultation**
 |  |
| * 1. Indication, test selection and test limitations
 | (1 credit) |
| * 1. History taking, provision of or referral for genetic counselling
 | (1 credit) |
| * 1. Sample acquisition, storage and transport requirements
 | (1 credit) |
| 1. **New test establishment**
 |  |
| * + 1. Assessment of clinical demand
 | (1 credit) |
| * + 1. Literature review
 | (1 credit) |
| * + 1. Selection of probes
 | (1 credit) |
| * + 1. Test validation including establishment of analytical sensitivity
 | \*(1 credit) |
| * + 1. Quality control
 | \*(1 credit) |
| * + 1. Test limitation
 | \*(1 credit) |
| * + 1. Establishment of standard operating procedure
 | (1 credit) |
| * + 1. Reporting format and comments
 | (1 credit) |
| * + 1. Resource implications
 | (1 credit) |

 *\* mandatory*

**Appendix 3**

**REFERENCES ON PROFESSIONALISM AND ETHICS**

**Please complete the Continuous Medical Education exercise on Professionalism and Ethics on the web-based platform after reading.**

Confidentiality

<https://www.gmc-uk.org/ethical-guidance/learning-materials/confidentiality-decision-tool>

Disclosing information for education and training purposes

<https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/confidentiality---disclosing-for-education-and-training-purposes>

Disclosing information for employment, insurance and similar purposes

<https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/confidentiality---disclosing-information-for-employment-insurance-and-similar-purposes>

Disclosing medical records after death

<https://www.gmc-uk.org/ethical-guidance/learning-materials/disclosing-medical-records-after-death>

Good practice in handling patient information

<https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/confidentiality>

Responding to criticism in the media

<https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/confidentiality---responding-to-criticism-in-the-media>

Consent to research

<https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/consent-to-research>

Raising concern

<https://www.gmc-uk.org/ethical-guidance/learning-materials/raising-concerns---a-colleagues-behaviour>

Code of professional conduct

[https://www.mchk.org.hk/english/code/files/Code\_of\_Professional\_Conduct\_(English\_Version)\_(Revised\_in\_October\_2022).pdf](https://www.mchk.org.hk/english/code/files/Code_of_Professional_Conduct_%28English_Version%29_%28Revised_in_October_2022%29.pdf)

Declaration of Geneva

<https://www.mchk.org.hk/english/code/files/Declaration_of_Geneva_2018.pdf>

Ethical guidelines on practice of telemedicine

<https://www.mchk.org.hk/files/PDF_File_Ethical_Guidelines_on_Telemedicine.pdf>

Hong Kong doctors

<https://www.mchk.org.hk/english/publications/files/HKDoctors.pdf>

Leadership and management for all doctors

<https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/leadership-and-management-for-all-doctors>

Quality assurance of professionalism

[https://bimhse.med.hku.hk/fme/2010/(Prof%20Grace%20Tang)%20Quality%20Assurance%20in%20Professionalism%20Frontiers%20in%20Med%20&%20Health%20Education%20Dec%202010.pdf](https://bimhse.med.hku.hk/fme/2010/%28Prof%20Grace%20Tang%29%20Quality%20Assurance%20in%20Professionalism%20Frontiers%20in%20Med%20%26%20Health%20Education%20Dec%202010.pdf)

Strategic Development of Genomic Medicine in Hong Kong

<https://www.fhb.gov.hk/en/press_and_publications/otherinfo/200300_genomic/index.html>

WMA international code of medical ethics

<https://www.wma.net/policies-post/wma-international-code-of-medical-ethics/>

Using social media as a medical professional

<https://www.gmc-uk.org/professional-standards/professional-standards-for-doctors/using-social-media-as-a-medical-professional>

Ending your professional relationship with a patient

<https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/ending-your-professional-relationship-with-a-patient>

Identifying and managing conflicts of interest

<https://www.gmc-uk.org/professional-standards/professional-standards-for-doctors/identifying-and-managing-conflicts-of-interest>

Maintaining personal and professional boundaries <https://www.gmc-uk.org/professional-standards/professional-standards-for-doctors/maintaining-personal-and-professional-boundaries>

Personal beliefs and medical practice

<https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/personal-beliefs-and-medical-practice>

Identifying and tackling sexual misconduct

<https://www.gmc-uk.org/professional-standards/ethical-hub/identifying-and-tackling-sexual-misconduct#Overview>

**Appendix 4**

**RECORD OF WORKPLACE-BASED ASSESSMENT**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Components assessed | Brief description of the assessment format and the scenario.  | Assessment results | Name and department of assessors, with signature  | Date(s) | Educational Supervisor |
| WBA 1 |  |  |  |  |  |  |
| WBA 2 |  |  |  |  |  |  |
| WBA 3 |  |  |  |  |  |  |
| WBA 4 |  |  |  |  |  |  |