information

OBJECTIVE

General objective: The overall aim of the course is to provide an understanding of the use and applications of fluorescent *in situ* hybridization (FISH) in the diagnosis, prognosis and monitoring of hematological neoplasms.

Specific objective: By the end of the course, students should be capable of performing the technique in their own laboratories, designing the strategy to be applied in each case (choosing the right probe and the tissue to be used), processing samples and evaluating and interpreting results.

Who is it aimed at?

1. Hematology consultants and residents wishing to acquire a greater understanding of FISH techniques and their application in the diagnosis and prognosis of hematological neoplasms.
2. Consultants and residents in pathology.
3. Other health science professionals: biologists, clinical analysts, pharmacists and other graduates or diploma holders involved in hematology.

Teaching staff

Directors

BLANCA ESPINET, FRANCESC SOLÉ

Teachers

MARTA SALIDO, MAR MALLO, VERA ADEMÀ, ANNA PUIGGROS

Laboratori de Citogenètica Molecular. Servei de Patologia. Hospital del Mar. Parc de Salut Mar. Barcelona

Blanca Espinet is an Associate Biologist at the Cytogenetics Molecular Biology Laboratory in the Pathology Department at Barcelona's Hospital del Mar and a Researcher at the Municipal Institute for Medical Research (IMIM-Hospital del Mar). She has a degree in Biology and Pharmacy from the Barcelona Autonomous University and a doctorate in Biology from the Barcelona University. At present she is working on genetic studies haematological neoplasms along with other research work. She has been the recipient of various awards, including the Award for Diagnostic and Therapeutic Innogenetics in Human Genetics for young researchers. She has participated as a member of the research team in over 40 funded projects and has published over 110 scientific papers. She is the coordinator of the Spanish Haematological Cytogenetic Cooperative Group.

Francesc Solé is Dr. in Fundamental Biology from the Barcelona Autonomous University (UAB). He has been an Associate at Haematological Cytology Laboratory in the Haematology Departments of three hospitals until he was nominate Head of Department at the Cytogenetic and Molecular Biology Laboratory in the Pathology Department at Barcelona's Hospital del Mar and head of the Research Group: Unitat de Reserca Traslacional en Tumors Solids (Unit for Translational Research into Solid Tumours) at the Parc de Reserca Biomedica in Barcelona (Barcelona Biomedical Research Park). He was the recipient of the Visa Tubau Award, the Shering España Award, and the Top Award at the XXXVII National Conference of the Haematology and Chemotherapy Association. He is member of the Health Commission of the Biologists Association, the experts Committee of the Revista Medicina Clínica, the European Quality Control Committee for Cytogenetic and Haematology, Eurogentest, and the Experts committee for IPSS reviews, MDS Foundation. He has written over 207 articles and has delivered over 112 conference papers. At present he is a Researcher on 46 projects, on 12 of which he is the main investigator.

Mar Mallo is a PhD student in the Molecular Cytogenetics Laboratory from Pathology Department in Hospital del Mar. She is graduated in Biology (2006) by the Pompeu Fabra University. She obtained a grant from the spanish government to develop her PhD, which is focused on myelodysplastic syndromes (MDS) genetics. She has large experience in the application of FISH and SNP arrays. She has nine publications in haematological journals (six of them as first author). Additionally, she usually participates in collaborative studies with the Spanish Haematological Working Group as well as the Spanish Group of MDS, which she belongs to.

Anna Puiggros completed the degree in biotechnology at the Autonomous University of Barcelona in 2009 and received her MSc degree in biomedicine at the University of Barcelona in 2010. She joined the Molecular Cytogenetics Laboratory of the Hospital del Mar as a predoctoral student in July 2009. Her current work is focused in cytogenetic analysis of Chronic Lymphocitic Leukemia (CLL). She participates in cooperative projects and develops techniques such as conventional cytogenetics, FISH or Cytogenetics Whole-Genome 2.7M Array (Affymetrix) for the detection of prognostic cytogenetic markers in CLL.

Marta Salido graduated and Master in Biology, is a Medical Associate in the Molecular Cytogenetics Laboratory from the Pathology Service in Hospital del Mar, Barcelona and Researcher from the Hematological Neoplasms Translational Research Unit at the IMIM-Hospital del Mar. She specialized on cytogenetics at the Brigham and Women's Hospital (Boston, MA, US) with Dra. Paola Dal Cin. Marta has been investigator of more than 20 public financed research projects, with more than 60 original manuscripts published.)

Vera Ademà achieved the degree in Biology at the Universitat Autònoma de Barcelona (UAB) in 2008. She received her MSc degree at Universitat Autonoma de Barcelona (UAB) in 2009, in the field of Cancer and Cytogenetics. From July 2009 to the present she has been working as a predoctoral student in the Cytogenetics Molecular Laboratory of Hospital del Mar, Barcelona. She is focusing her research on Myelodisplasic Syndromes (MDS) and Splenic Marginal Zone Lymphoma (SMZL) participating in cooperative projects. She currently develops different techniques as conventional cytogenetics, Fluorescence in situ Hybridization and SNP Array 6.0 (Affymetrix®).

Places

Maximum number of students: 6.

101223.00

XIII-XV courses

Fluorescence *in situ* hybridization (FISH) applied to the diagnosis of myelodysplastic syndromes and other hematological neoplasms

Dates

Choose from:

18th - 19th October 2011 or
8th - 9th November 2011 or
22nd - 23rd November 2011

Venue

Escola de Citologia Hematològica Soledad Woessner/IMAS.
Laboratori de Citogenètica Molecular.
Parc de Recerca Biomèdica de Barcelona.
IMIM-Hospital del Mar.
HOSPITAL DEL MAR.
BARCELONA

Hospital del Mar

Parc de Salut MAR Barcelona

SEHH SOCIEDAD ESPAÑOLA DE HEMATOLOGÍA Y HEMOTERAPIA

Celgene

Schedule

Day 1

08:45-09:00 Welcome. Introduction

THEORY

09:00-10:15 Introduction to *in situ* hybridization techniques. *Marta Salido*

- Methodology
- Types of samples: fresh, imprints, cell extensions, frozen material, paraffin-embedded tissue
- Types of probes used in diagnosis: centromeric probes, locus-specific probes for detection or amplification, locus-specific probes for translocations (single fusion, double fusion, split or break-apart, etc.)
- Types of probes used in research: multicolor FISH probes (M-FISH, SKY), labeling, comparative genomic hybridization

10:15-11:00 Application of fluorescence *in situ* hybridization probes in the diagnosis and follow-up of hematological malignancies. *Blanca Espinet*

- Acute myeloid leukemia
- Chronic myeloproliferative neoplams
- Acute lymphoblastic leukemia
- Mature B-cell neoplams
- Mature T-cell neoplams

11:00-11:30 Coffee - break

PRACTICAL CLASSES

11:30-13:30 Preparing samples for hybridization

- Peripheral blood, bone marrow and lymph node slides using conventional cytogenetic culture material
- Preparing lymph node imprints
- Deparaffinization of paraffin-embedded lymph node sections

13:30-14:30 Lunch

14:30-17:00 Performing FISH techniques

- Pre-treatments
- Denaturalization
- Hybridization

Schedule

Probes to be used

MDS:

- LSI EGR1 (5q31)/LSI 5p15.2 dual color probe
- LSI 7q31/CEP 7 dual color probe
- LSI 20q12 (D20S108)
- CEP8

Other hematological neoplasms

- BCR/ABL dual color dual fusion translocation probe
- BCL2/IGH dual color dual fusion translocation probe
- BCL6 dual color break-apart probe
- CLL1(LSI TP53/LSI ATM)/CLL2 (CEP12/LSI13q14/LSI13q34)

NB: probes may be changed if students express a particular interest in any

Day 2

09:00-09:45 Cytogenetic and molecular alterations in MDS. *Fracesc Solé*

09:45-10:15 The application of *in situ* hybridization probes and genomic arrays in the diagnosis and management of MDS

10:15-10:45 Coffee - Break

10:45-12:45 Performing FISH techniques

- Post-hybridization washes
- Counterstaining

12:45-13:30 Observing FISH resultsunder the microscope and evaluating findings

- Counting, normal limits
- Expressing FISH results
- Writing reports

13:30-15:00 Lunch

15:00-15:45 Endpoints for the FISH technique and ISCN 2009 nomenclature. *Vera Ademà, Anna Puiggros*

15:45-17:00 Revision and questions. *Anna Puiggros*