XVII ALEXANDER HOLLAENDER COURSE

April 16 - 28, 2012

Montevideo - Uruguay

Environmental genetics, epigenetics and genomic instability

Capacity building on new analytical tools

Coordinators: Gustavo A. Folle and Wilner Martínez-López

Organizing Committee: **María Vittoria Di Tomaso, Leticia Méndez-Acuña, Wilner Martínez-López, Gustavo A. Folle, Carlos F. Menck, Graciela Spivak, Phillip Hanawalt**

INSTITUTIONS AND PARTICIPATING LABORATORIES

Instituto de Investigaciones Biológicas Clemente Estable (IIBCE)

Department of Genetics,
Epigenetics and Genomic Instability Laboratory,
Cell Sorting and Flow Cytometry Core
Biodosimetry Unit

Institut Pasteur de Montevideo

Unidad de Bioquímica y Proteómica Analíticas

Facultad de Ciencias
Universidad de la República

Sección Genética Evolutiva

Course Selection Committee

Phillipe Hanawalt (USA), Carlos F. Menck (Brazil)

Main topics to be covered

1-Genomic instability
2-Cell cycle checkpoints, arrest and programmed cell death DNA
3-DNA repair mechanisms
4-Epigenetics in DNA damage and repair
5-Epigenetics and Cancer
6-Nuclear architecture and DNA damage response
7-Proteome analysis through mass spectrometry
8-Mass sequencing for genome analysis

Faculty Members

Carlos F. Menck, University of San Pablo, Brasil
Enrique Boccardo, University of San Pablo, Brasil
André Schuch, University of San Pablo, Brasil
Vanessa Gottifredi, Leloir Institute, Argentina
Bernardo Bertoni, Faculty of Medicine-PEDECIBA, UDELAR, Uruguay
Mónica Capetta, Faculty of Medicine-PEDECIBA, UDELAR, Uruguay
Rosario Durán, IIBCE-PEDECIBA and IPMONT, Uruguay
Carlos Battiani, IIBCE-PEDECIBA and IPMONT, Uruguay
José Sotelo, IIBCE-PEDECIBA and Faculty of Sciences, UDELAR, Uruguay
Marcelo Larramendy, La Plata University, Argentina
Elia Nunes, Faculty of Medicine-PEDECIBA, UDELAR, Uruguay
María V. Di Tomaso, IIBCE-PEDECIBA, Uruguay
Wilner Martínez-López, IIBCE-PEDECIBA, Uruguay
Leticia Méndez Acuña, IIBCE-PEDECIBA, Uruguay
Gustavo Folle, IIBCE-PEDECIBA, Uruguay
Ruben Perez, Facultad de Ciencias-PEDECIBA, Uruguay
Phill Hanawalt, Stanford University, USA
Graciela Spivak, Stanford University, USA
Ofelia Olivero, National Cancer Institute, USA
Fabrizio Palitti, Tuscia University Italy

PRELIMINARY PROGRAM

The XVI Alexander Hollaender Course will have plenary lectures (mornings) as well as Symposiums (afternoons) during the first week. Besides, three poster sessions are foreseen to be developed in the afternoons of the first week. Around 50 participants from the regions are expected to attend this part of the Alexander Hollaender Course.

Practical demonstrations will be running during the whole course for selected local and regional participants (maximun 20 young researchers) although mainly concentrated during the second week.

Confirmed Lectures (Mornings, 16-20)

DNA repair pathways
(Phillipe Hanawalt, Stanford University, USA)

Genotypes and phenotypes in diseases of DNA damage repair
(Graciela Spivak, Stanford University, USA)

Molecular signatures
(Ofelia Olivero, National Cancer Institute, USA)

Mechanisms of formation of chromosomal aberrations. Insights from DNA repair deficient mammalian cell lines.
(Fabrizio Palitti, University of Tuscia, Italy)

DNA damage and tumor cell killing
(Carlos F. Menck, USP, Brazil)

DNA damage measurements for environmental sunlight
(André Passaglia Schuch, USP, Brazil)

Oncogenic viruses and genomic instability
(Enrique Boccardo, USP, Brazil)

Translesion DNA synthesis
(Vanesa Gottifredi, Leloir Institute, Argentina)

Apoptosis induction by pesticides
(Marcelo Larramendy, La Plata University, Argentina)

Regulatory networks of the genomic stability
(Elia Nunes, Faculty of Medicine, Uruguay)

Epigenetic Epidemiology
(Bernardo Bertoni, Faculty of Medicine, Uruguay)

Epigenetics mechanisms in nucleotide excision repair
(Wilner Martínez-López, IIBCE, Uruguay)

Chromatin structures analyzed by deep sequencing strategies
(J.R. Sotelo, IIBCE, Uruguay)

Proteomic strategies for identification of protein post-translational modifications
(Rosario Duran, IPMONT, Uruguay)

Nuclear architecture and chromosome breakpoints localization
(Gustavo A. Folle, IIBCE, Uruguay)

Symposiums (Afternoons, April 16-20)

Session: Environmental genetics and genomic instability
Chairmans: Phillipe Hanawalt and María Vittoria Di Tomaso

Session: Cell cycle checkpoints and programmed cell death
Chairmans: Vanesa Gottifredi and Elia Nunes

Session: Epigenetics, DNA repair and cancer
Chairmans: Carlos F. Menck and Wilner Martínez-López

Session: Nuclear architecture and genetic damage
Chairmans: Ofelia Olivero and Gustavo A. Folle

Practical Demonstrations (April, 16-28)

1) Ultraviolet damage detection with enzymatic and immunologic methods
(André Passaglia Schuch, USP, Brazil).

2) Analysis of DNA methylated sequences
(Monica Capetta and Bernardo Bertoni, Facultad de Medicina, Uruguay)

3) Analysis of DNA content, cell cycle and apoptosis by flow cytometry
(Gustavo A. Folle, IIBCE, Uruguay)

4) Specific DNA lesion detection by Comet Assay
(Graciela Spivak, University of Stanford, USA)

5) Molecular markers for translesion synthesis
(Vanesa Gottifredi, Leloir Institute, Argentina).

6) Analysis of acetylated histones by mass spectrometry
(Rosario Duran and Carlos Battiani, IPMONT, Uruguay).

7) Generating chromatin capture comnformation (4C) libraries
(J.R. Sotelo, IIBCE, Uruguay).

8) Protein extraction methodologies for histones enrichments
(Wilner Martínez-López, IIBCE, Uruguay)

9) Analysis of γH2AX foci by epifluorescence and confocal microscopy
(Leticia Méndez-Acuña and María Vittoria Di Tomaso, IIBCE, Uruguay)

10) Analysis of chromosomal aberrations by FISH using human and hamster DNA probes. Comparative genome hybridization (CGH)
(Marcelo Larramendy, La Plata University, Argentina)

Facilities

Two complete cell culture units including 3 biosafety laminar flows, 2 CO_2 incubators, 2 inverted microscopes, centrifuges, microcentrifuge, porator and 2 liquid nitrogen cell repositories.

Three epifluorescence microscopes with complete filter sets (in collaboration with the Genetics Section of the Faculty of Sciences).

A complete metaphase finder microscope system including a complete set of filters for epifluorescence studies and appropriate softwares for FISH and Comet assay analyses.

Real Time PCR and MicroArray analyzer.

Three flow cytometers: FACSVantage and MoFlo cell sorters as well as a Cyan analyzer (in collaboration with the Pasteur Institute at Montevideo).

Two Mass Spectrometer: 4800 MALDI TOF/TOF Analyzer (Abi Sciex) and LTG Velos + ETD (Thermo) from Pasteur Institute at Montevideo.