Rome Course Syllabus
Bench to Bedside Translational Molecular Research

July 11-15, 2011

Morning Lectures 8:30AM-1:00PM (at Globus Hotel)
Afternoon Practical Workshops (at Globus Hotel and ISS)
Monday July 11

9:00 Welcome address
   Enrico Garaci  ISS President

Innovative tools for cancer research

9:30 Lance A. Liotta (GMU): Introduction to the course
   Introduction to the course. Review of cancer medicine and the basics of cancer molecular biology and cancer metastasis. Discussion of basic principles of molecular medicine, including the definition and the need for individualized diagnostics and therapeutics. Introduction to cellular proteomics and genomics.

10:15 Vikas Chandhoke (GMU): Introduction to Bioinformatics
   Definition bioinformatics. Review of bioinformatics tools. Data categories and reliability of data. Sources of bias and variability.

11:00 Coffee break

11:30 Giandomenico Russo (IRCCS/IDI, Rome): Introduction to genetics and genomics
   Sequencing the human genome. Cancer genomics. Cancer transcriptomics. Review of the major advances in these fields which have relevance to molecular medicine of the future. Application of genetics and genomics to the prediction of disease.

12:15 Clara Nervi (University of Rome "La Sapienza"): microRNAs in human cancer: from research to therapy

12:45 Lunch

Tuesday, July 12

Pathology and Surgical Oncology

8:30 Paolo De Paoli (IRCCS CRO, Aviano): CRO National Cancer Institute. Infrastructures for translational research

8:45 Virginia Espina (GMU): Clinical Pathology and Laser Microdissection
9:30  **Eoin Gaffney (St James’ Hospital Ireland): Tissue and Blood Biobanking**
Ethical and regulatory issues, patient consent, storage and retrieval, quality assurance, merit based allocation of specimens, measures of success.

10:15  **Massimo Milione (IRCCS INT, Milano): Immunohistochemistry**
Review of immunohistochemistry protocols, antigen retrieval, scoring of staining, tissue arrays.

11:00  Coffee Break

11:15  **Kirsten Edmiston (Inova): Breast Cancer Surgical Oncology**

12:00  **Claudio Belluco (IRCCS CRO, Aviano): Colorectal Cancer Surgical Oncology**
Principles of colorectal cancer diagnosis and treatment. Application of genetics and genomics to colorectal cancer. Progression of polyps to invasive carcinomas. Application of protein arrays to individualized therapy.

12:45  Lunch

**Wednesday, July 13**

**New Directions in Translational Molecular Research**

8:30  **Ruggero De Maria (ISS): Cancer Stem Cells**

9:05  **Adriana Albini (IRCCS Multimedica, Milan): Tumor Microenvironment and Angiogenesis**
Introduction to the physiologic principles of angiogenesis and tumor-host interactions. Experimental assay systems for measuring angiogenesis. Current therapeutic strategies based on the inhibition of angiogenesis.

9:40  **Paolo Vigneri (University of Catania): Drug resistance**
Development of drug resistance with targeted inhibitors, gefitinib and CML.

10:15  **Valter Gattei (IRCCS CRO, Aviano): Hematopoiesis and hematologic malignancies**
Microenvironmental interactions in CLL: the lesson of CD49d

10:50  Coffee Break

11:05  **Angela Santoni (University of Rome “La Sapienza”: Tumor Immunology**
11:40 Italia Bongarzone (IRCCS INT, Milan): Tumor hypoxia and malignant progression  
Molecular mechanisms of hypoxia associated signaling pathways in primary tumors as key factors of tumor progression and strategies for the clinical application of hypoxia markers and the development of hypoxia-targeted anticancer agents.

12:15 Virginia Espina (GMU): Chemoprevention and clinical trials  
Discussion of a novel chemoprevention trial in breast ductal carcinoma in situ.

12:50 Lunch

Thursday, July 14

Biomarkers and Molecular Imaging

8:30 Emanuel Petricoin (GMU): Application of blood biomarkers to early diagnosis of cancer blood biomarkers  

9:10 Alessandra Luchini (GMU): Nanotechnology  
Advances in nanotechnology for biomarker discovery and measurement. Application of nanotechnology to drug delivery and functional imaging. Nano machines for medicine

9:50 Antonio Marchetti (University of Chieti): Molecular Diagnostics  
New developments in molecular diagnostics with relevance to individualized therapy of cancer.

10:30 Coffee Break

10:45 Giorgio Stassi (University of Palermo): Cancer stem cell (CSC) targeting  
Cytokines as survival factors in CSCs. Control of CSC migration and invasion. Exploiting CSC differentiation for tumor therapy. Targeting autocrine survival signals in CSCs.

11:25 Carlo Greco (University of Pisa): Molecular imaging for target delineation and outcome prediction in high-precision image-guided radiotherapy  
The presentation will cover the already established role as well as on-going cutting-edge research in the field of molecular imaging (18F-FDG PET, PET hypoxia tracers, Dynamic Contrast Enhanced MRI, MR spectroscopy) to improve accuracy in tumor edge definition for high-precision hypofractionated and single-fraction IGRT. The potential role of molecular imaging to predict treatment outcome defining custom-tailored therapeutic strategies will also be addressed.

12:05 Cristina Messa (University of Milan, Bicocca): Preclinical and Clinical Molecular Imaging of Cancer  
Radionuclide imaging technologies allow to examine in-vivo specific molecular events, and their role in the carcinogenic process in animal models as well as in human. In particular PET imaging is suited to characterize at a clinical level the cancer, by means of
radiopharmaceuticals investigating biochemical changes in the cell’s energy metabolism, protein synthesis, expression of receptors and antigens, hypoxia, and neo-angiogenesis.

12:45 Lunch

Friday, July 15

Bench to Bedside: Vision for the future.

8:30 Michele Milella (IRCCS IFO-IRE, Rome): Targeting survival pathways in cancer
Roles of the Raf/MEK/ERK pathway in cell growth, malignant transformation and drug resistance. Antiangiogenic and antitumor role of mTOR targeting. Induction of apoptosis and differentiation following retinoids and kinase inhibitors.

9:10 Maria Grazia Daidone (IRCCS INT, Milan): Personalized therapies in cancer

9:50 Federico Cappuzzo (Ospedale Riuniti, Livorno): Targeted therapy in cancer
The aim of the presentation is to show available data on biomarkers potentially useful in clinical practice for selection of non-small cell lung cancer patients candidate for anti-Epidermal Growth Factor Receptor therapies. Presentation is focused on mechanisms involved in sensitivity and resistance to the monoclonal antibody cetuximab and the tyrosine kinase inhibitors gefitinib and erlotinib.

10:30 Coffee Break

10:45 Lucio Crinò (Perugia Hospital): Lung Cancer Clinical Oncology
New developments in molecular targeted inhibitors with relevance to individualized therapy of lung cancer.

11:25 Susan Mulroney (Georgetown University): Renal disease
Basic principles of renal function, including current status of research, developments in basic and translational investigation and medical management of renal disease.

12:05 Adam Myers (Georgetown University): Cardiac diseases
Understanding of atherosclerosis, from current basic science insights, hypothesis and recent discoveries to the implication to prevention, early diagnosis and treatment.

12:45 Lunch
Daily Hands-on Workshops Monday-Wednesday Afternoons

1. Lance Liotta, GMU - Anatomic and Clinical Pathology: Practical Case Studies
2. Virginia Espina, GMU / Michele Signore, ISS - Laser Capture Microdissection
3. Marta Baiocchi, ISS - Confocal Microscopy
4. Mauro Biffoni, ISS - Flow Cytometry
5. Francesco Facchiano, ISS / Serena Camerini, ISS - Mass Spectrometry

Scientific Committee

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ISS Department of Hematology, Oncology and Molecular Medicine / Director

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George Mason University Applied Proteomics and Molecular Medicine Department / Co - Director

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General Information

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