



AROME

2012
20-22
June

3rd

**BASIC BIOLOGY, RADIOBIOLOGY and
DELINEATION TRAINING COURSE**

Elite World Hotel, Taksim Istanbul Turkey



COURSE COORDINATORS

Prof. Dr. Yazid Belkacemi
Prof. Dr. Nuran Bese
Prof. Dr. Abraham Kuten
Prof. Dr. Mahmut Ozsahin
Prof. Dr. Sedat Turkan

COURSE DIRECTORS

Radiobiology

Prof. Dr. Martin N. Pruschy
Prof. Dr. Barry S. Rosenstein

Basic and translational biology

Dr. Joseph Gligorov
Prof. Dr. Yosef Yarden

DELINEATION TRAINING COURSE

Prof. Dr. Yazid Belkacemi
Prof. Dr. Nuran Bese
Prof. Dr. Mahmut Ozsahin
Prof. Dr. Enis Ozyar

FACULTY

Prof. Dr. Ahmad Awada
Prof. Dr. Yazid Belkacemi
Prof. Dr. Jean-Marc Cosset
Dr. Andrea Gombos
Dr. Joseph Gligorov
Prof. Dr. Abraham Kuten
Prof. Dr. Mahmut Ozsahin
Prof. Dr. Eli Pikarski
Prof. Dr. Martin N. Pruschy
Prof. Dr. Barry S. Rosenstein
Dr. Yuval Shaked
Dr. Pelagia G. Tsoutsou
Prof. Dr. Jan Wondergem
Prof. Dr. Yosef Yarden

AROME EXECUTIVE BOARD

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Prof. Dr. Sedat Turkan (President of the Organizing committee)

Wednesday, June 20th 2012

12:00-13:00 Registration
 13:00-13:15 Introduction
 Prof. Dr. Abraham Kuten

COURSE I BASIC PRINCIPLES OF RADIOBIOLOGY

13:15-14:00 **Teacher: Prof. Dr. Barry S. Rosenstein**
The Physics and Chemistry of Radiation Absorption
 a) Types of ionizing radiation
 b) Description of electromagnetic radiation
 c) Direct and indirect ionizing radiation
 d) Direct and indirect action of radiation
 e) Photoelectric effect, Compton process and pair production
 f) Radiation chemistry
 g) Evidence suggesting DNA as the target for ionizing radiation

14:00-14:45 **Teacher: Prof. Dr. Martin N. Pruschy**
Hallmarks of Cancer and radiation
 a) The heterotypic cell biologist view of Cancer Biology
 b) 4/5 R's of Radiotherapy (Introduction)
 c) Linking Hallmarks of Cancer to 4/5 R's of Radiotherapy

14:45-15:45 **Teacher: Prof. Dr. Barry S. Rosenstein**
Cell- Survival Curves
 a) Determination of in vitro cell survival curves
 c) Linear quadratic models
 d) The α/β value and the effect of dose fractionation
 e) Effective dose- response curves
 f) Survival curve calculations
 g) Principles of tumor control probability and dose- response relationships
 h) Tumor control probability calculations
 i) Tumor control vs risk of normal tissue complications – Risk–benefit analysis

15:45-16:15 **Coffee Break**

16:15-17:00 **Teacher: Prof. Dr. Martin N. Pruschy**
DNA Damage Response
 a) Types of DNA damage
 b) DNA damage/double strand breaks sensing and DNA repair
 c) Homologous recombination and Non-homologous end joining

17:00-17:45 **Teacher: Prof. Dr. Martin N. Pruschy**
Radiation-Induced Cell Signalling
 a) Radiation and cell cycle checkpoints
 b) DNA damage-dependent signalling
 c) DNA damage-independent cell signalling

FREE EVENING

COURSE II CELL DAMAGE AND RADIATION PARAMETERS EFFECT

9:00-9:45

Teacher: Prof. Dr. Barry S. Rosenstein

Radiation Damage and the Dose–Rate Effect

- a) Potentially lethal damage repair
- b) Sublethal damage repair
- c) Effects of hypoxia and LET on PLDR and SLDR
- d) Dose rate effect
- e) Radiolabelled immunoglobulin therapy
- f) Brachytherapy – LDR and HDR; interstitial and intracavitary use

9:45-10:45

Teacher: Prof. Dr. Barry S. Rosentein

Time, Dose and Fractionation in Radiotherapy

- a) Strandquist plots
- b) NSD, TDF and CRE and problems with their use
- c) Evidence supporting the theory that the α/β ratio for early responding tissues and tumors is greater than the α/β for late responding tissues
- d) Relationship between biologically effective dose, total dose and fraction size
- e) Biologically effective dose (BED)
- f) Hyperfractionation
- g) Accelerated treatment
- h) BED Calculations

10:45-11:00

Coffee Break

11:00-12:00

Teacher: Prof. Dr. Martin N. Pruschy

Modes of Radiation-Induced Cell Death

- a) Different modes of RI–induced cell death
- b) Apoptosis
- c) Autophagy
- d) Senescence
- e) Mitotic catastrophe
- f) Early versus late cell death

COURSE III

HYPERTHERMIA

12:00-12:45

Teacher: Prof. Dr. Jan Wondergem

- a) Methods to achieve localized heating
- b) Possible targets heat-induced lethality
- c) Effect of pH and nutrient deficiency on sensitivity to heat
- d) Hypoxia and hyperthermia
- e) Thermotolerance and heat dose
- g) Hyperthermia combined with irradiation
- h) Thermal enhancement ratio
- i) Time sequence of heat and irradiation
- J) Hyperthermia and low dose rate irradiation
- k) Perspectives for clinical practice: “back to the future”

12:45-13:30

Lunch

Thursday, June 21st 2012

COURSE IV TISSUE RADIOBIOLOGY: TARGETS AND RISK OF TOXICITIES

13:30-14:30

Teacher: Prof. Dr. Martin N. Pruschy

Targeting Tumor Hypoxia

- a) Molecular responses to hypoxia
- b) Radiation and tumor hypoxia pathways
- c) Angiogenesis and radiation effect on the endothelium
- d) Targeting tumor hypoxia and radiation
- e) Targeting tumor angiogenesis and radiation

Targeting Tumor Repopulation

- a) Tumor repopulation
- b) Normal tissue repopulation
- c) Radiation and repopulation pathways

14:30-15:15

Teacher: Prof. Dr. Barry S. Rosenstein

Radioprotection and Radiation Exposures Risks

- a) Doses and risks associated with natural and medical radiation sources
 - i) Sources of radiation to the human population
 - ii) Effective dose equivalent
 - iii) Genetically significant dose
- b) Effects of radiation on the embryo and foetus
- c) Hereditary effects of radiation
 - i) Radiation-induced genetic effects
 - ii) Measurement-induced genetic effects
 - iii) Genetic risk in humans
- d) Radiation carcinogenesis
 - i) Stochastic and non-stochastic effects of radiation
 - ii) Irradiated populations
 - iii) Cancer incidence as a function of dose (leukaemia, breast, bone, skin and lung)

15:15-15:45

Teacher: Prof. Dr. Martin N. Pruschy

Targeting Molecular Elements for Radiosensitization

- a) Modifying radiation responses
- b) Combined radiotherapy with chemotherapy
- c) Antibodies and small molecules
- d) Cancer stem cells as targets

15:45-16:00

Coffee Break

COURSE V PRINCIPLES OF CANCER BIOLOGY: APPLICATION TO RADIOBIOLOGY

16:00-16:30

Teachers: Dr. Andrea Gombos, Prof. Dr. Ahmad Awada

Intracellular Pathways for Cell Death and Survival Governance, Angiogenesis, Hypoxia: From Biology to Clinical Practice

16:30-17:15

Teachers: Prof. Dr. Yazid Belkacemi, Prof. Dr. Mahmut Ozsahin

Benefit-Risk of Targeting Pathways With Combined Treatments in Clinical Practice

- a) Targeting EGFR/HER2
- b) Targeting P13K/Akt-pathway
- c) Toxicity prediction

COURSE VI RADIATION-INDUCED TOXICITY IN CLINICAL PRACTICE

17:15-18:30

Teachers: Prof. Dr. Jean-Marc Cosset, Prof. Dr. Abraham Kuten, Prof. Dr. Yazid Belkacemi
Risk of Radiation-Induced Acute and Late Toxicity in Clinical Practice

Tissues toxicity

- a) Skin toxicity
- b) Bone marrow toxicity
- c) GU and GI toxicities
- d) Lung toxicity

Risk of radiation exposures

- e) Total body irradiation and radiation accidents
- f) Risk of low doses after modern techniques
- g) Secondary malignancies

20:00

Gala dinner sponsored by ACCURAY



Tomotherapy and CyberKnife: from dreams to reality!

Chairs:

Prof. Dr. Jean-Marc Cosset, Prof. Dr. Abraham Kuten

Speakers:

Introduction
Tomotherapy
CyberKnife

Hakan Baraner
Prof. Dr. Mahmut Ozsahin
Physicist (to be confirmed)

Friday, June 22nd 2012

HALLMARKS OF CANCER, BASIC AND TRANSLATIONAL BIOLOGY COURSE

8:15-08:30 Welcome and introduction by Prof. Dr. Yosef Yarden and Dr. Joseph Gligorov

COURSE I HALLMARKS OF CANCER

08:30-10:30 **Teacher: Prof. Dr. Yosef Yarden**

Hallmark Capabilities - Conceptual Progress

- a) Sustaining proliferative signalling
 - Somatic Mutations
 - Downstream Pathways
 - Proliferative Signalling
- b) Evading growth suppressors
 - Excessive Proliferative signalling and senescence
 - Contact Inhibition and its Evasion
 - TGF- β Pathway malignancy promotion
- c) Resisting cell death
 - Autophagy - cell Survival and death
 - Necrosis Has Proinflammatory and Tumor-Promoting Potential
- d) Enabling replicative immortality
 - Reassessing Replicative Senescence
 - Delayed activation of telomerase and Nneoplastic progression
 - New functions of telomerase

Teacher: Dr. Yuval Shaked

- e) Angiogenesis induction
 - Angiogenic switch
 - Natural barriers to tumor angiogenesis
 - Pericytes in tumor neovasculature
 - Bone marrow-derived cells and angiogenesis
- f) Activating invasion and metastasis
 - The EMT Program Broadly Regulates Invasion and Metastasis
 - Contributions of stromal cells to invasion and metastasis
 - Plasticity in the invasive growth program
 - Invasion in different Cancer Types
 - Metastatic colonization

10:30-11:00 **Coffee Break**

11:00-12:00 **Teacher: Prof. Dr. Eli Pikarski**

Enabling Characteristics And Emerging Hallmarks

- a) Genome instability and mutation
- b) Tumor-Promoting inflammation
- c) Reprogramming energy metabolism
- d) Evading immune destruction

12:00-13:00 **Teacher: Prof. Dr. Eli Pikarski**

The Tumor Microenvironment

- a) Cancer cells and cancer stem cells
- b) Endothelial cells
- c) Pericytes
- d) Immune inflammatory cells
- e) Fibroblasts
- f) Stem and progenitor cells of the tumor stroma
- g) Heterotypic signalling orchestrates the cells of the microenvironment

13:00-14:00 **Lunch**

COURSE II TRANSLATIONAL REASERCH IN MEDICAL ONCOLOGY

14:00-15:15

Teacher: Prof. Dr. Yosef Yarden

Targets Inventory

- a) Proliferative signalling
- b) DNA
- c) Apoptosis
- d) Angiogenesis
- e) Immunity
- f) Inflammation
- g) genes

15:15-16:15

Teachers: Prof. Dr. Ahmad Awada, Dr. Andrea Gombas

Therapeutic Targeting

- a) EGFR inhibitors
- b) Cyclin-dependant kinase inhibitors
- c) Immune activating anti-CTLA4 mAb
- d) Telomerase inhibitors
- e) PARP inhibitors
- f) Proapoptotic BH3 mimetics
- g) Selective anti-inflammatory drugs
- h) Inhibitors of HGF/c-Met
- i) Inhibitors VEGF signalling

16:15-16:30

Coffee Break

COURSE III

FROM BIOLOGY TO CLINICAL PRACTICE

16:30-18:30

Teacher: Dr. Joseph Gligorov

Prediction of Efficacy and Evaluation

Teacher: Prof. Dr. Ahmad Awada

Management of Targeted Therapy Toxicity

18:30

Closing Remarks

Dr. Joseph Gligorov

FREE EVENING

Friday, June 22nd, 2012

LOCATION: ACIBADEM MASLAK HOSPITAL

Sponsored by VARIAN

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08:30-09:00

Registration

Only 24 participants who had pre registered will attend the course

Welcome By Prof. Dr. Nuran Bese

09:00-17:00

Teachers:

Prof. Dr. Nuran Bese & Prof. Dr. Yazid Belkacemi (Breast Cancer)

Prof. Dr. Enis Ozyar & Prof. Dr. Mahmut Ozsahin (Head and Neck Cancer)

Delineation training session (using ECLIPSE)

13:00-14:00

Lunch

17:00

Closing Remarks

Prof. Dr. Mahmut Ozsahin

GENERAL INFORMATION

COURSE VENUE

Elite World Hotel, Taksim – İstanbul / TURKEY

ADDRESS

Şehit Muhtar Caddesi No:42 34435 Taksim - İstanbul / TURKEY

LOCATION

Elite World Hotel is 25 km away from İstanbul Atatürk Airport and approx. 30 minutes. From İstanbul Atatürk Airport to Taksim, you can take the Havaş bus from the airport. It takes about 45 minutes to an hour to get to Taksim. When you leave the airport building, you will certainly see Havaş busses standing around. It stops near by the Cumhuriyet Cd (on the map), it takes a few minutes by walk to the course venue. Transportations will be covered by participants. If you need an assistance, please contact with the organization secreteriat (hande.boyacioglu@serenas.com.tr).



COURSE DATES

Radiobiology Course: 20–21 June 2012

Basic Biology Course: 22 June 2012

3D-Conformal Radiotherapy Delineation Course: 22 June 2012*

* Only 24 participants who had pre registered will attend the course. This course will be held in **ACIBADEM MASLAK HOSPITAL**.

Address: Büyükdere Cad. No: 40 34457 Maslak / İstanbul

Tel : +90 (212) 304 44 44

<http://www.acibadem.com.tr/en/Hospital-Maslak.asp>

Transportation from Taksim: You can take a Metro Train from Taksim station and get off from the last station (Darrusafaka).

LUNCH, COFFE BREAK AND DINNER

*Lunches and coffee breaks will be served at the course venue, as detailed in the scientific program.

*Gala dinner will be held on 21 June 2012, sponsored by Accuray. Free registration is needed for all participants, kindly invited by AROME and ACCURAY.

*FREE evenings: 20th and 22nd of June.

REGISTRATION

You can see registration details on registration page. Please contact with the organization secreteriat before transfer the registration fee.

ACCOMMODATION

To book bed and breakfast accommodation in **Cartoon Hotel Taksim**, you need to pay **390 Euro** deposit before your arrival. After arrival, AROME will reimburse for all students registered with-out sponsoring their deposit.

Please contact the organization secretariat before any transfer the accommodation fee.

Address: Tarlabaşı Bulvarı No: 36-38 34435 Taksim / İstanbul

Tel : +90 (212) 238 92 28



REGISTRATION FEES FOR ALL PARTICIPANTS

Radiobiology Course	50 Euro
Biology Course	30 Euro
Delineation Course*	100 Euro

* Delineation Course is limited to 24 participants only. Please book early to guarantee your place. Registration fee includes coffee breaks, lunches and gala dinner.

ACCOMMODATION FEES

Guests, individual and departments registration: To book an bed and breakfast accommodation in **Cartoon Hotel Taksim**, you need to pay **390 Euro** deposit before your arrival. After your arrival, AROME will reimburse your deposit to you. Check in on June 20th 2012 and check out on June 23rd 2012

Registration supported by Pharma Industry and other institutional structures: 3 nights bed and breakfast accommodation in **Cartoon Hotel Taksim** is **390 Euro** as check in on June 20th 2012 and check out on June 23rd 2012.

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