Co - Organised

Oncology Care Research & Education (OncoCARE)
ΠΡΟΤΥΠΟ ΚΕΝΤΡΟ ΚΛΙΝΙΚΗΣ ΕΡΕΥΝΑΣ ΕΚΠΑΙΔΕΥΣΗΣ & ΟΛΙΣΤΙΚΗΣ ΦΡΟΝΤΙΔΑΣ ΣΤΗΝ ΟΓΚΟΛΟΓΙΑ
-Athens

METROPOLITAN HOSPITAL

Fondazione IRCCS Istituto Nazionale dei Tumori

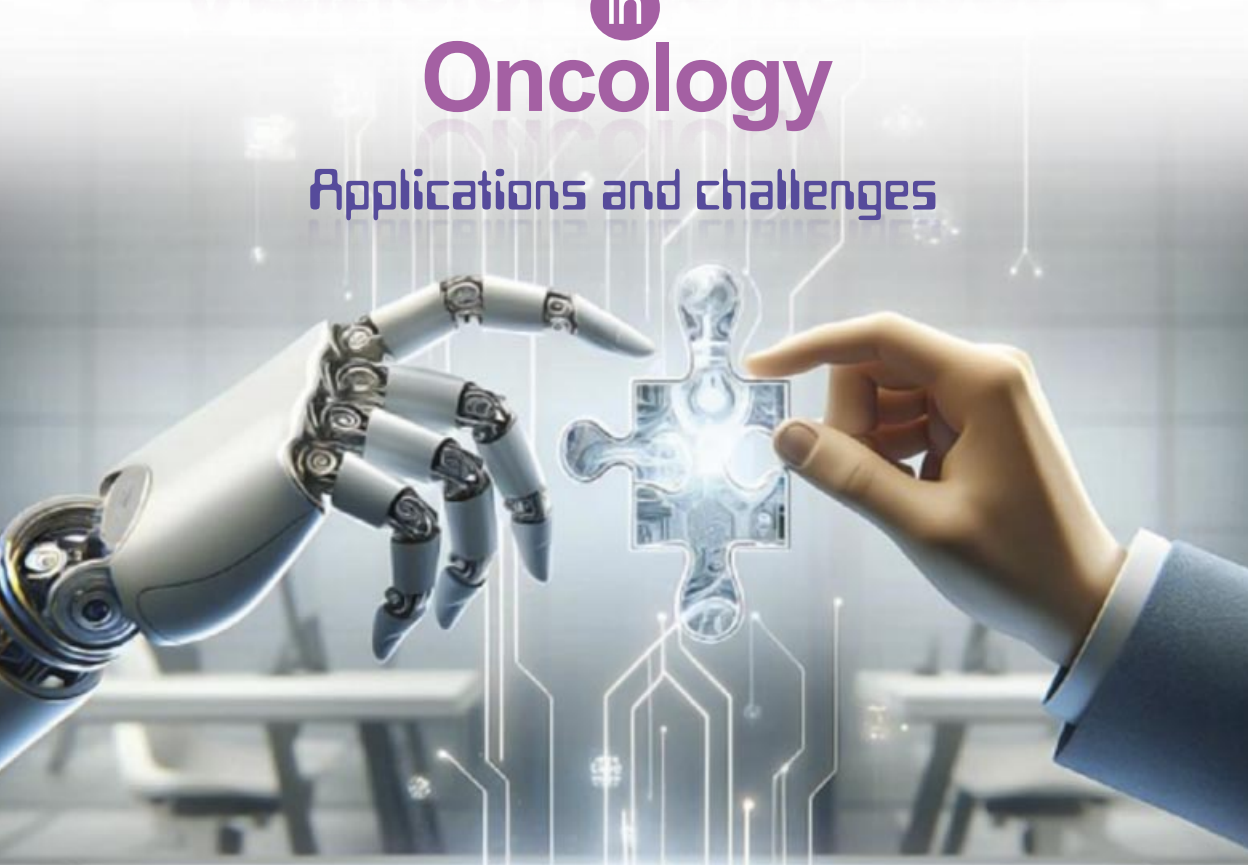
Sistema Socio Sanitario
Regione Lombardia

Event Endorsed by the IASLC

IASLC INTERNATIONAL ASSOCIATION FOR THE STUDY OF LUNG CANCER
Conquering Lung & Thoracic Cancers Worldwide in the 21st Century

# Artificial Intelligence in Oncology

## Applications and challenges



## June 20-21, 2024

**Anargyrios and Korgialenios School of Spetses Foundation (AKSS)**
**Spetses, Greece**

Auspices

ΕΟΠΕ HELLENIC SOCIETY OF MEDICAL ONCOLOGY
Ελληνικό Ίδρυμα Έρευνας Καρκίνου
HeCOG Hellenic Cooperative Oncology Group
HELLENIC REPUBLIC MINISTRY OF HEALTH
HEAL Academy by HHG

12 CME/CPD CREDITS WILL BE GRANTED TO PARTICIPANTS

**Scientific program**

# Welcome Letter

Dear Colleagues,

We are delighted to welcome you to the Scientific Workshop **"Artificial Intelligence in Oncology: Applications and Challenges,"** taking place on J**une 20-21, 2024,** at the beautiful historic venue of **Anargyrios and Korgialenios School of Spetses (AKSS)**. This unique educational event is co-organized by the Metropolitan Hospital's Comprehensive Clinical Trials Center and the Istituto Nazionale dei Tumori, Milan. It is conducted under the auspices of the International Association for the Study of Lung Cancer (IASLC), the Hellenic Ministry of Health, the Hellenic Society of Medical Oncology (HeSMO), the Hellenic Foundation for Cancer Research (ELIEK), the Hellenic Cooperative Oncology Group (HeCOG) and the HEAL Academy by HHG.

We are in an era where Artificial Intelligence (AI) has the potential to transform healthcare daily, creating new realities in patient care. Our ambition with this event is to present a program of high scientific interest, bringing together, for the first time in Greece, AI specialists and oncology professionals from major centers of excellence in Europe and America. The aim is to exchange views and expertise, foster a common language, and create opportunities for collaboration and advancements in AI applications in healthcare.

A distinguished scientific faculty will explore AI methodologies, unlocking their vast potential in oncology. Biologists, pathologists, AI experts, radiologists, and medical oncologists will demonstrate the current uses of AI in biomarker discovery, clinical trial integration, prediction, and screening, among many other applications in everyday clinical practice. Discussions will also cover economic and ethical issues, the impact to patients, and future avenues for AI-powered multiomic analysis and clinical research.

Our goal is for this inaugural event to be the first of a series of annual collaborative educational events, drawing both local and international scientists and clinicians in Oncology and AI, and establishing Greece as a hub of knowledge in this crucial field that is shaping the future of oncology healthcare.

We are confident that you will share our enthusiasm and invite you to support, promote, and contribute with your participation and active presence to the success of our event. We look forward to welcoming you all to the historic and beautiful island of Spetses for a unique scientific experience.

Warm regards,

The Scientific Chairs

**Helena Linardou**
MD, PhD, Imperial College London,
Consultant Medical Oncologist,
Director - 4th Oncology Dept.,
Metropolitan Hospital

**Arsela Prelaj**
Medical Oncologist, MD, PhD in Bioengineering
and Head of AI-ON-Lab,
Fondazione IRCCS
Istituto Nazionale dei Tumori, Milan

# Scientific Program

## THURSDAY 20th June 2024

**15:00-15:20** **Registrations**

**15:20-15:30** **Welcome and introduction**

Chairs: **H. Linardou** (*Metropolitan Hospital, Greece*)
**A. Prelaj** (*Istituto Nazionale dei Tumori, Italy*)

**15:30-16:30** **Round table**
**Defining AI: Introduction to AI methodologies and their use in clinical practice**

Chairs: **A. Krithara** (*NCSR Demokritos, Greece*)
**N. Korfiatis** (*Ionian University, Greece*)

15:30-15:45 Machine learning
Speaker: **F. Trovò** (*POLIMI, Italy*)

15:45-16:00 Neural networks, deep-learning and reinforcement learning
Speaker: **M. Restelli** (*POLIMI, Italy*)

16:00-16:15 What is explainable AI and technological challenges for AI
Speaker: **A. Pedrocchi** (*POLIMI, Italy*)

16:15-16:30 Discussion

**16:30-17:30** **Round table**
**AI models and their application in cancer diagnostics**

Chairs: **K. Petraki** (*Metropolitan Hospital, Greece*)
**Ath. Dimopoulos** (*Metropolitan Hospital, Greece*)

16:30-16:50 Deep dive into digital pathology vs traditional pathology: what is the AI promise?
Speaker: **A.T. Pearson** (*University of Chicago, USA*)

16:50-17:10 Radiomics in imaging: 'what is', 'how to', and a critical reflection
Speaker: **L. Roisman** (*Shaare Zedek Medical Center, Israel*)

17:10-17:30 Commentator: **K. Varaki** (*Metropolitan Hospital, Greece*)

**17:30-17:45** **Coffee break**

## THURSDAY 20th June 2024

**17:45-18:40** **Round table**

**Multimodal data for precision diagnostics and research**

Chairs: **E. Fountzila** (*Oncogenome, Greece*)
**K. Papadopoulou** (*Hellenic Foundation for Cancer Research, Greece*)

17:45-18:05 AI-supported biomarker discovery
Speaker: **M. Ligero** (*KatherLab, Germany*)

18:05-18:20 Multimodal data integration and predictive AI for cancer therapies
Speaker: **V. Miskovic** (*POLIMI, Italy*)

18:20-18:35 From genes to treatment: enhancing NGS interpretation in oncology through AI and LLMs.
Speaker: **G. Tsaousis** (*Genekor Medical S.A., Greece*)

18:35-18:40 Commentator: **G. Nasioulas** (*Genekor Medical S.A., Greece*)

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**18:40-20:00** **Round table**

**The ethical and regulatory environment of AI in healthcare and the impact to patients**

Chairs: **I. Boukovinas** (*Bioclinic, Greece*)
**Ek. Boleti** (*Royal Free, UK*)

18:40-19:00 AI innovations in society and healthcare
Speaker: **P. Bassios** (*MSD, Greece*)

19:00-19:15 Regulatory approaches and ethics
Speaker: **H. Kayhan** (*KU Leuven, Belgium*)

19:15-19:30 Health economics
Speaker: **M. Willis** (*Swedish Institute for Health Economics, Sweden*)

19:30-19:45 What is AI in healthcare for patients?
Speaker: **K. Pateli-Bell** (*Fairlife Lung Cancer Care, Greece*)

19:45-20:00 Commentator: **N. Dollis** (*Metropolitan Hospital, Greece*)

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FRIDAY **21st June** 2024

**08:30-09:00** **Coffee - Welcome**

**09:00-10:00** **Round table**

**Data science for clinical research: challenges and opportunities in AI solutions**

Chairs: **A. Chatzidimitriou** (*INAB, Greece*)
**G. Fountzilas** (*Aristotle University of Thessaloniki, Greece* )

09:00-09:15 Large databases of real-world data and the prospects of AI
Speaker: **E. Minga** (*INAB, Greece*)

09:15-09:30 Leveraging AI for perturbational modeling in single cell data
Speaker: **G. Gavriilidis** (*INAB, Greece*)

09:30-09:45 Clinical data secondary use in Greece and implications for AI-based clinical research: the OHDSI-GR network
Speaker: **P. Natsiavas** (*INAB, Greece*)

09:45-10:00 Discussion

**10:00-11:00** **Round table**

**Building an AI-based project, a hands-on practical**

Chairs: **H. Linardou** (*Metropolitan Hospital, Greece*)
**V. Miskovic** (*POLIMI, Italy*)

10:00-10:20 Part 1: what and who do we need? Using AI tools for AI projects
Speaker: **G. Scoazec** (*Istituto Nazionale dei Tumori, Italy*)

10:20-11:00 Part 2: phase 1, data collection
Phase 2/3, model construction and deployment (training, validation, evaluation)

Speakers/Hands-on examples:
**A. Ferrarin** (*POLIMI, Italy*)
**A. Zec** (*POLIMI, Italy*)
**N. Spathas** (*Metropolitan Hospital, Greece*)
**M. Megapanou** (*Metropolitan Hospital, Greece*)

FRIDAY **21st June** 2024

**11:00-12:10** **Round table**

**AI for patient and disease monitoring: digital health in oncology**

Chairs: **G. Lo Russo** (*Istituto dei Tumori, Italy*)
**Z. Saridaki** (*HESMO, Greece*)
**P. Skarlos** (*Metropolitan Hospital, Greece*)

11:00-11:20 Integrating AI tools in clinical research: examples from ovarian and breast cancer
Speaker: **M. Crispin-Ortuzar** (*University of Cambridge, UK*)

11:20-11:40 AI applications in clinical trials
Speaker: **L. Provenzano** (*Istituto dei Tumori, Italy*)

11:40-12:00 Digital health interventions
Speaker: **Th. Kosmidis** (*CareAcross, Greece*)

12:00-12:10 Commentator: **E. Sarris** (*Metropolitan Hospital, Greece*)

**12:10-12:30** **Coffee break**

**12:30-13:40** **Round table**

**Applying data to understand disease pathology and applications in different therapeutic areas in oncology - The future is now**

Chairs: **A. Christopoulou** (*St Andrew Hospital, Greece*)
**N. Hatzinikolaou** (*Biologist, Greece*)
**C. Proto** *(Istituto dei Tumori, Italy)*

12:30-12:50 AI/Radiomics 2.0: lessons learned from a European funded project in prostate cancer
Speaker: **N. Papanikolaou** (*Center for the Unknown, Champalimaud Foundation, Portugal*)

12:50-13:05 Examples of AI-based applications in other solid tumours (breast, lung, etc)
Speaker: **G. Lainakis** (*Metropolitan Hospital, Greece*)

13:05-13:25 AI for hematological malignancies - acute and chronic leukemias
Speaker: **A. Srisuwananukorn** (*Ohio State University, USA*)

13:25-13:40 AI in bronchoscopy for diagnosis and staging of lung cancer
Speaker: **N. Koufos** (*Metropolitan Hospital, Greece*)

FRIDAY **21st June** 2024

**13:40-14:20** **Round table** *sponsored by* AstraZeneca
Chairs: **E. Galani** (*Metropolitan Hospital, Greece*)
**G. Mountzios** (*Henry Dunant Hospital, Greece*)

13:40-14:00 The evolution of precision medicine and how is AI transforming healthcare
Speaker: **Ch. Antonopoulos** (*AstraZeneca Greece*)

14:00-14:20 Digital and computational pathology
Speaker: **P. Foukas** (*Attikon University Hospital, Greece*)

**14:20-15:20** **Round table**
**AI in academic oncology research: The state of the art**
Chairs: **P. Kosmidis** (*Hygeia Hospital, Greece*)
**A. Psyrri** (*Attikon University Hospital, Greece*)
**H. Linardou** (*Metropolitan Hospital, Greece*)

14:20-14:40 The most important clinical needs in lung cancer that could be addressed with AI
Speaker: **E. Felip** (*VHIO, Spain*)

14:40-15:00 Machine learning in precision oncology, the multiomics perspective (the example of I3LUNG)
Speaker: **A. Prelaj** (*Istituto Nazionale dei Tumori, Italy)*)

15:00-15:20 Applications and perspectives of AI for drug discovery
Speaker: **M. Garassino** (*University of Chicago, USA*)

**15:20-15:30** **Closing remarks | Take-home messages**
**H. Linardou** (*Metropolitan Hospital, Greece*)
**A. Prelaj** (*Istituto Nazionale dei Tumori, Italy*)

FRIDAY **21st June** 2024

## I3Lung Consortium | Closed Annual Meeting

**16:00-16:15** — **Welcome**

Welcome Metropolitan group
I3LUNG Chair Welcome
General achievements
Focus point on the upcoming objectives - **A. Prelaj** INT group

**16:15-16:25** — **Project management & coordination**

Year 2's results and next steps for year 3 - **MSIR group**

**16:25-18:00** — **Platform, data capturing & integration**

- Overview: update on the studies' recruitment - **INT group**
- Clinical study advancement: protocol amendment status, sites collaboration, eCRF completion plan - **MSIR group**
- Platforms update - **ML3 group**
- Clinical data results from the retrospective cohort - **Metropolitan group**
- Retrospective Translational OMICs - status updates - **INT group**

Q&A

**18:00-18:30** — **Coffee break**

**18:30-19:00** — **Radiomic and digital pathology**

- Radiomics: Retrospective features update, and future steps on the prospective cohort - **SZMC group**
- Digital Pathology: results from the retrospective data and future steps on the prospective cohort - **UoC group**

**19:00-19:30** — **Retrospective tool**

PDSS 1st version (retrospective data). Description and updates on the tool - **POLIMI group**

Q&A

**19:30-20:00** — **EU Commission Report**

Output of the interactions with the EU Commission meeting: suggestions, adjustments, and project goals for year 3 - **INT group**

Q&A

# Participants

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| **Antonopoulos Christos** | MD, PhD, EMBA, Director and Board Member, Oncology/ Hematology Business Unit, AstraZeneca Pharmaceuticals Greece & Cyprus |
| **Bassios Panos** | Digital, Data & Analytics Director, MSD Greece |
| **Boleti Ekaterini** | MD, PhD, FRCP, Consultant in Medical Oncology, Royal Free London NHS Foundation Trust |
| **Boukovinas Ioannis** | MD, PhD, PharmaD, Head of Oncology Department, Bioclinic Thessaloniki |
| **Chatzidimitrou Anastasia** | Director, Institute of Applied Biosciences, CERTH (INAB/CERTH) |
| **Christopoulou Athina** | MD, MSc, PhD, Head, Department of Internal Medicine, Division of Clinical Oncology, St. Andrews General Hospital of Patras |
| **Crispin-Ortuzar Mireia** | Group Leader, Early Cancer Institute, University of Cambridge |
| **Dimopoulos Athanasios** | MD, PhD, Venia Docendi Medical University of Vienna, Fmr ESTRO Faculty Member, Medical Director, Department of Radiation Oncology, Metropolitan Hospital, Athens |
| **Dollis Nina** | Clinical Health Psychologist, 4th Oncology Department, Metropolitan Hospital |
| **Felip Enriqueta** | MD, PhD, Section in Chief, Medical Oncology Department, Director Thoracic Oncology Unit, Vall d'Hebron University Hospital, Vall d'Hebron Institute of Oncology (VHIO), Professor of Medicine, UAB |
| **Ferrarin Alberto** | Fellowship Researcher, Department of Electronics, Information and Bioengineering (DEIB), Politecnico di Milano |
| **Foukas Periklis** | Professor of Pathology, National and Kapodistrian University of Athens, School of Medicine, Attikon University Hospital, Athens, Greece |
| **Fountzila Elena** | Medical Oncologist, Clinical Associate Professor, EUC, St. Luke's Hospital, Thessaloniki, Greece |
| **Fountzilas George** | Professor Emeritus, Aristotle University of Thessaloniki |
| **Galani Eleni** | Medical Oncologist, Associate Director, 2nd Oncology Clinic, Metropolitan Hospital |
| **Garassino Marina** | MD, Professor of Medicine, Director, Thoracic Oncology Program, The University of Chicago, Department of Medicine, USA |
| **Gavriilidis George** | Post-Doctoral Researcher in single-cell omics, Institute of Applied Biosciences (INAB), Centre for Research and Technology Hellas (CERTH), Thessaloniki |
| **Hatzinikolaou Nikolaos** | Biologist, Greece |
| **Kayhan Halid** | Researcher, KU Leuven Centre for IT & IP Law (CiTiP), Belgium |
| **Korfiatis Nikolaos** | Professor of Data Science and AI, University of East Anglia, UK and Ionian University, Greece |
| **Kosmidis Paris** | Medical Oncologist, Director, 2nd Oncology Clinic, HYGEIA Hospital |

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|---|---|
| **Kosmidis Thanos** | CEO, CareAcross |
| **Koufos Nikolaos** | Pulmonologist , Metropolitan Hospital |
| **Krithara Anastasia** | Associate Researcher, Institute of Informatics & Telecommunications, NCSR "Demokritos", General Secretary of Hellenic Artificial Intelligence Society (EETN) |
| **Lainakis Georgios** | MD, MSc, Medical Oncologist, Associate Director, 4th Oncologic Dpt., Metropolitan Hospital |
| **Ligero Marta** | Postdoctoral researcher, Kather Lab for Clinical AI, EKFZ, Dresden, Germany |
| **Linardou Helena** | MD, PhD, Imperial College London, Consultant Medical Oncologist, Director - 4th Oncology Dept., Metropolitan Hospital |
| **Lo Russo Giuseppe** | MD, PhD, Thoracic Oncology Unit, Medical Oncology, Department 1, Fondazione IRCCS Istituto Nazionale dei Tumori, Milan |
| **Megapanou Maria** | Associate Doctor, 4th Oncology Department, Metropolitan Hospital, Greece |
| **Minga Evangelia** | Electrical and Computer Engineer, Functional Scientific Personnel, Institute of Applied Biosciences (INAB), Centre for Research and Technology Hellas (CERTH), Thessaloniki, Greece |
| **Miskovic Vanja** | Post Doc Researcher, Politecnico di Milano and Istituto Nazionale dei Tumori |
| **Mountzios Giannis** | MD, MSc, PhD, Medical Oncologist, Director, 4th Oncology Department and Clinical Trials Unit, Henry Dunant Hospital Center, ONCOLIFE Network Founder |
| **Nasioulas Georgios** | PhD, Chief Scientific Officer, Genekor Medical S.A. |
| **Natsiavas Pantelis** | Software Engineer, Researcher (Grade C), Institute of Applied Biosciences, Centre for Research and Technology Hellas (INAB\|CERTH) |
| **Papadopoulou Kyriaki** | PhD, Mres, MSc, Biologist, Director, Laboratory of Molecular Oncology, Hellenic Foundation for Cancer Research (H.F.C.R) |
| **Papanikolaou Nickolas** | Head of Computational Clinical Imaging Group, Centre for the Unknown, Champalimaud Foundation, Lisbon, Portugal, Machine Learning Imaging Lead, Royal Marsden, London, UK, Honorary Reader, The Institute of Cancer Research, London, UK, Affiliated Researcher, Karolinska Institute, Sweden, Senior Affiliated Researcher, Institute of Computer Science, FORTH, Heraklion, Greece |
| **Pateli-Bell Korina** | Founder & President, FairLife Lung Cancer Care |
| **Pearson Alexander T.** | MD, PhD, The University of Chicago, Director, Center for Computational Medicine and Clinical Artificial Intelligence, Director, Head/Neck Cancer Program |
| **Pedrocchi Alessandra** | Professor, Department of Electronics, Information and Bioengineering, Politecnico di Milano |

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| **Petraki Kalliopi** | MD, PhD, Pathologist, Head of Pathology Department, Metropolitan Hospital |
| **Prelaj Arsela** | Medical Oncologist, MD, PhD in Bioengineering, and Head of AI-ON-Lab, Fondazione IRCCS, Istituto Nazionale dei Tumori, Milan |
| **Proto Claudia** | MD, Medical Oncology Department, Fondazione IRCCS Istituto Nazionale Tumori, Milan |
| **Provenzano Leonardo** | MD, PhD Student, Medical Oncology Department, Fondazione IRCCS Istituto Nazionale dei Tumori, Milan |
| **Psyrri Amanda** | MD, FACP, Professor of Medical Oncology, Chair of Medicine, Attikon University Hospital, Athens, Greece |
| **Restelli Marcello** | Associate Professor of Computer Science and Engineer, Dipartimento di Elelttronica, Informazione e Bioingegneria, Politecnico di Milano |
| **Roisman Laila** | PhD, Head of Precision Oncology and Innovation, Shaare Zedek Medical Center, Jerusalem Israel, Senior Lecturer Adj. Ben Gurion University |
| **Saridaki Zenia** | MD, PhD, Medical Oncologist, President of the BoD of the Hellenic Society of Medical Oncology (HeSMO), Director at the 1st Oncology Dept. Metropolitan Hospital, Athens, Scientific Director of the Oncology Department "Asklepios DIAGNOSIS", Heraklion, Crete |
| **Sarris Evangelos** | MD, MSc, Medical Oncologist, Consultant, 4$^{th}$ Oncology Department, Metropolitan Hospital |
| **Scoazec Giovanni** | Scientific Directorate, Fondazione IRCCS, Istituto Nazionale dei Tumori |
| **Skarlos Pantelis** | MD, PhD, Deputy Director of Radiotherapy Department, Metropolitan Hospital |
| **Spathas Nikolaos** | MD, Medical Oncologist, Consultant, 4$^{th}$ Oncology Department, Metropolitan Hospital |
| **Srisuwananukorn Andrew** | Assistant Professor, Division of Hematology, The Ohio State University Comprehensive Cancer Center |
| **Trovò Francesco** | PhD, Assistant Professor (Artificial Intelligence and Robotics), Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano |
| **Tsaousis Georgios** | PhD, Group Leader of Bioinformatics, Genekor Medical S.A. |
| **Varaki Kalliopi** | MD, PhD, Radiologist, Director of Radiology Department, Metropolitan Hospital |
| **Willis Michael** | PhD, Research Director, The Swedish Institute for Health Economics |
| **Zec Aleksandra** | PhD Student, Department of Electronics, Information and Bionegineering, Politecnico di Milano |

# General Information

**Co-organised by:**
OncoCaRE Metropolitan Hospital, Athens, Greece
Istituto Nazionale dei Tumori, Milan, Italy

**Under the auspices of:**
HESMO (Hellenic Society of Medical Oncology)
ELIEK (Hellenic Foundation for Cancer Research)
HeCOG (Hellenic Cooperative Oncology Group)
Ministry of Health
HEAL Academy - HHG

**Endorsed by:**
IASLC (International Association for the Study of Lung Cancer)

**Workshop dates:**
20 - 21 June 2024

**Workshop venue:**
Anargyrios and Korgialenios School of Spetses Foundation (AKSS)
Spetses Island, Greece

**Registration:**
Registration and attendance are allowed only to healthcare professionals, undergraduate/graduate students. Registrations require presentation/proof of professional capacity or status. Participants who wish to attend the Workshop should have completed their registration online via the website www.events.gr.

**Watch On Line**
The Workshop will take place in Hybrid format and will be available simultaneously online through www.livemed.gr. If you are a new user, click the Register button at the top right of the page, and then complete the registration form with the necessary information. In the case that you are already a registered user, click the Log In button on the main page, and then fill in the Username and your password in the required fields. Once you have logged in with your Livemed passwords, go to the **Live** section. From there, select the event you want to watch and press the **Go Virtua**l or **Go Live**.

Then, select **"Conference Hall"**, from the menu at the bottom of your screen

**Important Note:** In case you wish to receive a certificate of attendance, it is required that you have completed your registration through the virtual **"Congress Secretariat"**.

**CME - CPD credits:**

The workshop has been accredited with 12 CME - CPD credits according to EACCME-UEMS criteria.

**Certificate of attendance:**

Please note that a barcode system will be used and in order to obtain CME credits you must complete 60% participation of the scientific program. The certificates will be sent by the end of the Workshop.

**Disclaimer: The event will be photographed, videotaped and broadcasted live.**

**Secretariat:**

ets Events & Travel Solutions

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