



INTERNATIONAL DIPLOMA PROGRAM

Artificial Intelligence and Precision Medicine Applied to Clinical Oncology

Introduction

The landscape of modern oncology is undergoing a fundamental paradigm shift, transitioning from a reactive, "one-size-fits-all" model to a proactive, precision-based discipline. This evolution is driven by the strategic convergence of high-dimensional multi-omics data including genomics, proteomics, and metabolomics and the burgeoning computational power of Artificial Intelligence (AI). In an era where clinical complexity often outpaces human processing capacity, the integration of AI is no longer a luxury but a strategic necessity. By leveraging machine learning and real-world evidence, we can move beyond generalized protocols to identify the specific biomarkers and metabolic signatures that predict therapeutic response in cancer patients. This international program represents the current frontier for clinical oncology, addressing the most critical challenges in the field such as overcoming treatment resistance, enhancing early detection, and tailoring therapies to the unique molecular signature of each tumor. Our objective is not merely to update clinical knowledge but to cultivate a new class of **"Biomedical Data in Clinical Oncology"** practitioners who possess the dual-competency required to lead in an increasingly data-driven clinical environment. In addition, this ambitious educational program aims to support clinical oncologists with AI tools to increase scientific production in international publications, international conferences and tumor meetings participation.

Link: www.internationaloncologydiploma.com

Program Objectives and Learning Outcomes

The goal of the present program is to cultivate a new class of practitioners skilled in 'Biomedical Data in Clinical Oncology' with dual competency in data science and clinical practice. Furthermore, the program empowers clinical oncologists with AI tools to elevate scientific production in international publications, conference presentations, and multidisciplinary tumor boards.

Academic Endorsement

The present program has the following endorsements:

- Centre Hospitalier de Luxembourg (CHL)
- Université de Liege (ULg)
- Universidad Internacional del Ecuador (UIDE)

Latin America Endorsement and Diffusion:

- GECO Perú
- Fundación Oncológica de Mendoza- Argentina
- Sociedade Brasileira de Oncologia Clínica - in process
- Sociedade Brasileira de Radioterapia
- Sociedad Ecuatoriana de Oncología
- ACHO- Colombia - in process
- Proyecto CURA- Latin American Cooperative Oncology Group- LACOG -in process
- Colegio Mexicano de Oncología Clínica - in process
- Sociedad Mexicana de Oncología AC - in process

Key Program Specifications

Program Duration & Hours	4 Months (March to July 2027) • 100 Academic Hours
Start Date & Inauguration	Start Date: March 13, 2027, Inauguration & Optional Teaching Event: March 13–14, 2027 at Sheraton Santiago Hotel & Convention Center, Santiago de Chile
Learning Modality	Asynchronous Virtual via ZOOM Platform, E-Learning Platform, and Mobile App ('AI and Precision Medicine')
Target Audience	Clinical Oncologists and Specialists in Related Areas
Program Languages	English and Spanish (Bilingual Delivery)
Tuition & Fee Structure	Early Registration (until Dec 31): \$2,500 USD Regular Cost: \$3,000 USD (10% Discount for members of endorsed/supporting organizations)
Digital Infrastructure	Personalized e-learning platform for evaluations & certification; Mobile App for interactive webinars and courseware access
Official Web Portal	https://www.internationaloncologydiploma.com/en/



Fellowship Program (100% Tuition Coverage)

Commitment: The program offers full tuition fellowships to the next generation of leaders in public oncology institutions, ensuring AI and precision medicine benefit public health infrastructure globally.

Eligibility: Talented oncologists under 32 years of age, currently working in public health institutions.

Application Package Requirements:

- 1. Motivation Letter:** Max 400 words detailing academic excellence, interest in AI & Precision Medicine, and justification for application.
- 2. Comprehensive CV (Résumé):** Education, work experience, complete publication list, and research experience.
- 3. Academic Credentials:** Official copies of medical and specialty diplomas.
- 4. Recommendation Letters:** Two recent letters from academic/clinical supervisors.
- 5. Identification:** Copy of valid passport.

Key Dates & Submission: Deadline: November 1, 2026 (Results notified by December 1, 2026). Complete application packages must be emailed to: coordination@internationaloncologydiploma.com

Comprehensive Curriculum Architecture

The dual-track curriculum bridges laboratory innovation with bedside oncology practice across core competencies:

- **Precision Medicine Competencies:** Advanced molecular profiling (genomics, proteomics, metabolomics); targeted therapeutic implementation (ADCs, circulating/imaging biomarkers); mechanistic oncology; tumor-specific protocols (urogenital, GI, breast, lung, melanoma, sarcoma, CNS); treatment resistance mitigation.
- **Artificial Intelligence Competencies:** Computational health data management & NLP; machine learning/deep learning for predictive diagnostics and radiomics; Clinical Decision Support Systems (LLMs like IBM Watson, ArteraAI, DeepCura); radiotherapy technical optimization (segmentation, dosimetry); AI-driven scientific dissemination (automated libraries, publication tools, conference infographics).



Detailed Syllabus

TRACK 1: PRECISION MEDICINE & MOLECULAR ONCOLOGY	TRACK 2: ARTIFICIAL INTELLIGENCE & HEALTH DATA SCIENCE
• Precision medicine in oncology: Current uses, future perspectives, and ethics • Clinical genetics: Diagnosis in rare diseases, cancer genetics, and ethics • Foundations in multidisciplinary molecular profiling technologies: Genetics, genomics, proteomics, and metabolomics • Molecular Biology of Cancer: Oncogenes, tumor suppressor genes, and metabolic alterations • Omics techniques applied to genomic medicine: Targeted therapies, Antibody-Drug Conjugates (ADCs), and immunotherapy guidance • Overcoming tumor heterogeneity and treatment resistance mechanisms • Precision Medicine in urogenital tumors • Precision Medicine in gastrointestinal tumors (gastric, colon, pancreatic, liver) • Precision Medicine in breast and lung cancer • Precision Medicine in melanoma, sarcoma, and CNS (Glioblastoma molecular biology) • Radiation biology and translational biomedical imaging of disease & therapy	• AI in Health: Legislative and ethical overview, health data lifecycle governance • Introduction to clinical data & Natural Language Processing (NLP) for clinical data interpretation • Data integration and management for oncology research • Evaluations of AI applications in healthcare: Communication and ePatient care • Machine Learning for cancer diagnosis, prognosis, and predictive modeling • AI for Clinical Decision Support Systems (CDSS) in Clinical Oncology • AI for real-world evidence (RWE) generation and precision medicine implementation • Chatbots and virtual assistants for clinical decision support: IBM Watson for Oncology, ArteraAI, OncoMark, DeepCura, Google Health, Evidation, Sage Bionetworks • AI Workshop on Radiation Oncology: Segmentation, dosimetry applications, radiomics, radiogenomics & deep learning image analysis • Innovation, Patents, and Clinical Translation



• Circulating and imaging biomarkers for targeted care • Human genetic disease: From mutations to therapy Cancer stem cells • The future of precision oncology and clinical genomics	• Scientific Dissemination Workshop: AI tools for automated scientific libraries, conference presentations, posters, and AI-generated infographics
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Program Evaluation & Certification Criteria

- **Activity Completion:** Completion of at least 80% of asynchronous virtual activities and interactive quizzes on the e-learning platform.
- **Practical Capstone Project:** Presentation of a real-world clinical case utilizing AI tools, formatted in the style of an international conference presentation.
- **Final Examination:** Passing score on the comprehensive final evaluation.

International Scientific Committee & Faculty Profiles

The program is directed by a world-class strategic alliance of international experts from top European and American clinical centers, clinical trial groups, and research laboratories spanning Belgium, Luxembourg, Italy and Spain.

The faculty comprises a multidisciplinary group of exceptional calibers, the synergy of their specialties enables them to address current knowledge challenges in Artificial Intelligence and Precision Medicine in Clinical Oncology.

The Scientific Committee and speakers serve as the strategic core of global research agendas, ensuring that continuing medical education initiatives in clinical oncology meet the highest quality standards. The strategic oversight provided by this group of experts ensures the scientific integrity and global clinical relevance and excellence content of this educational program.

Guy Berchem MD, PhD-Scientific Committee and Speaker

Dr. Berchem serves as the vital conduit between the Luxembourg Institute of Health (LIH) and frontline clinical practice, specializing in the translation of functional molecular data into actionable oncology strategies.

- **Academic Titles & Degrees:** MD (Université Libre de Bruxelles); PhD (Paris-Sud University/Gustave Roussy); Postdoctoral Fellowship (Lombardi Comprehensive Cancer Center, Georgetown University).
- **Current Executive & Clinical Appointments:** Head of the Department of Hemato-Oncology at Centre Hospitalier de Luxembourg; Associate Medical Director at the Luxembourg Institute of Health (LIH); Honorary Professor of Medical Oncology at the University of Luxembourg; President of the Institut National du Cancer (INC).
- **Research Axes & Leadership:** Governance of over 50 clinical trials across lung cancer, melanoma, myeloma, and urological tumors. His recent research includes personalized functional profiling in spheroids for metastatic colorectal cancer and the investigation of anti-PD-1 immunotherapy via the Akr2 receptor in melanoma.
- **Legacy Journals:**
 - *The New England Journal of Medicine (NEJM)*
 - *The Lancet*
 - *Nature Communications*
 - *NPJ Precision Oncology*
 - *Blood*
 - *Science Advances*
 - *Cancer Research*

María del Carmen Cabezas MD, PhD-Scientific Committee and Speaker

Dr. Cabezas has exerted a transformative impact on Latin American educational and health systems by fostering strategic collaborations with European and Canadian academic organizations.

- **Academic Titles & Degrees:** MD and PhD (University of Liège); Specialty training in Epidemiology (Erasmus University); Problem-Based Learning certification (Maastricht University).
- **Current Executive & Clinical Appointments:** General Manager of Health & Research Services; Researcher Professor at Universidad Internacional Ecuador (UIDE); Committee member for international scientific journals indexed in ScienceDirect.
- **Research Axes & Leadership:** Coordination of Phase I-IV clinical trials with a specialized focus on epidemiology and the public health implications of Pharmacoeconomics. **Specialized Training Portfolio** | Training Focus | Institution || Epidemiology | Erasmus University (Rotterdam) || Problem-Based Learning | Maastricht University || Specialty & Doctorate | University of Liège (ULg) || Clinical Trial Governance | Health & Research Services |

Rodrigo Dienstmann MD, MBA, PhD-Speaker

Dr. Dienstmann provides a significant strategic advantage to the cohort by combining a PhD in molecular diagnostic efficiency with an MBA from ESADE. This dual background allows him to bridge the gap between clinical efficacy and system sustainability, ensuring the economic viability and scaling of precision medicine programs.

- **Academic Titles & Degrees:** MD; PhD in Molecular Diagnostic Program Efficiency (University of Vic); MBA (ESADE Business School).



- **Current Executive & Clinical Appointments:** Principal Investigator of the Oncology Data Science Group at VHIO (Spain); Medical Director of the Precision Medicine and Big Data Laboratory at Oncoclínicas & Co; Editor-in-Chief of *ESMO Real World Data and Digital Oncology*.
- **Research Axes & Leadership:** Strategic implementation of molecular diagnostic programs; former research fellow at Massachusetts **General Hospital** (Boston) and VHIO.
- **High-Impact Publications & Awards:** Over 200 publications in peer-reviewed journals, including editorial leadership at *ESMO Open*.

Pierre Foidart MD, PhD-Speaker

Reflecting a prestigious Harvard Medical School, Dr. Foidart focuses on aggressive tumor types through a range of highly specialized research axes, while maintaining robust clinical practice in breast cancer and gastrointestinal tumors.

- **Academic Titles & Degrees:** MD and PhD (University of Liège); Graduate of the Global Clinical Scholars Research Training Program at Harvard **Medical School**.
- **Current Executive & Clinical Appointments:** Senior Medical Oncologist at CHU de Liège; Professor at the University of Liège Faculty of Medicine.
- **Research Axes & Leadership:**
- **Triple-negative breast cancer:** Identification of therapeutic targets and the impact of whole-genome duplication.
- **Pancreatic adenocarcinoma:** Research into immune sensitization and radioligands.
- **Immunotherapy Toxicity:** Early detection of immunotherapy-related side effects.
- **High-Impact Publications & Awards:** *Nature Communications, Science Translational Medicine, Cancer Cell, PNAS, Clinical Cancer Research*.

Pierre Frères MD, PhD-Speaker

Dr. Frères balances the management of clinical oncology units with sophisticated research into molecular biomarkers for treatment response.

- **Academic Titles & Degrees:** MD and PhD (University of Liège).
- **Current Executive & Clinical Appointments:** Head of the Clinical Oncology Unit at CHU de Liège; Associate Professor at the University of Liège Faculty of Medicine.
- **Research Axes & Leadership:** Research into circulating **microRNAs (miR-34a and miR-122)** as predictive markers for chemotherapy response; management of febrile neutropenia. The evolution of oncological care necessitates a shift from purely clinical observation to the precision afforded by biochemical signaling and mechatronic modeling.

Michaël Herfs MSc, PhD-Speaker

With an h-index of 31 and over 2,800 citations, Dr. Herfs serves as a global benchmark for scientific influence in the study of viral-induced carcinogenesis.

- **Academic Titles & Degrees:** MSc in Biomedical Sciences; PhD in Biomedical and Pharmaceutical Sciences (University of Liège).
- **Current Executive & Clinical Appointments:** Research Associate with the Belgian Fund for Scientific Research (F.R.S.-FNRS) at the Laboratory of Experimental Pathology.



- **Research Axes & Leadership:** Investigation of the tumor microenvironment and the mechanisms of immune evasion by the human papillomavirus (HPV).
- **High-Impact Publications & Awards:** 70 academic publications; recipient of competitive Belgian grants including Télémie and FRIA.

Guy Jerusalem MD, PhD-Scientific Committee

Dr. Jerusalem maintains profound influence on international standard-of-care through his roles on steering committees for landmark global clinical trials.

- **Academic Titles & Degrees:** MD and PhD (University of Liège).
- **Current Executive & Clinical Appointments:** Head of Medical Oncology and Director of the Breast Clinic at CHU de Liège; Professor of Medical Oncology; Principal Investigator for EORTC, IBCSG, and BCIRG.
- **Research Axes & Leadership:** Leadership in international trials including CONFIRM, BOLERO 3/6, SOLE, MONALEESA 3, and APHINITY.
- **High-Impact Publications & Awards:** *The Lancet Oncology, Journal of Clinical Oncology (JCO), Annals of Oncology, Cancer Research.*

Guillermo Alfredo Mosquera MSc-Speaker

MSc Mosquera represents the strategic integration of mechatronics and digital engineering into the medical landscape, particularly through "Industry 4.0" applications.

- **Academic Titles & Degrees:** MSc in Mechatronics and Digital Engineering.
- **Current Executive & Clinical Appointments:** Director of the Mechatronics School at Universidad Internacional del Ecuador (UIDE).
- **Research Axes & Leadership:** Development of "**Digital Twins**" for robotic arms, facilitating the simulation of advanced robotic surgical systems; high-efficiency solar technology; integration of mechatronic design in community outreach.

Marie-Julie Nokin MSc, PhD-Speaker

Dr. Nokin's work is critical in identifying the metabolic drivers that facilitate therapeutic resistance in lung and prostate cancers.

- **Academic Titles & Degrees:** MD and PhD (University of Liège); MSc in Biomedical Sciences.
- **Current Executive & Clinical Appointments:** Assistant Professor at the Laboratory of Tumor and Developmental Biology (GIGA-Cancer), University of Liège.
- **Research Axes & Leadership:** Investigation of metabolic vulnerabilities and therapeutic resistance in lung adenocarcinoma; study of Dentin Matrix Protein 1 (DMP1) in human prostate cancer.
- **High-Impact Publications & Awards:** *Nature Communications, Cancer Research, Clinical Cancer Research, Journal for Immunotherapy of Cancer.*

Elisa Onesti Concetta MD, PhD-Speaker

Dr. Onesti's international trajectory—spanning Rome, Gustave Roussy, and Liège—underscores her expertise in fundamental cancer research and clinical trial management.

- **Academic Titles & Degrees:** MD (University of Rome “Sapienza”); PhD (University of Liège, GIGA Research Center); Research Fellow (Institut de Cancérologie Gustave Roussy).
- **Current Executive & Clinical Appointments:** Medical Oncologist at IRCCS National Cancer Institute "Regina Elena" (Rome).
- **Research Axes & Leadership:** High expertise in translational cancer research and sub-investigation of clinical trials.
- **High-Impact Publications & Awards:** Author and co-author of more than fifty articles and abstracts in international oncology. The research presented by these specialists informs the following section, which focuses on the direct implementation of findings within high-level clinical and surgical settings.

Marc Peeters MD, PhD-Speaker

Following elite training at Memorial Sloan Kettering (MSK) and Gustave Roussy, Dr. Peeters has transitioned into major leadership roles influencing European gastrointestinal oncology.

- **Academic Titles & Degrees:** MD and PhD (Katholieke Universiteit Leuven); Specialist in Hepato-Gastroenterology.
- **Current Executive & Clinical Appointments:** CEO and Chairman of Qurin BV; Medical Director of Elmedix BV; Full Professor of Oncology at the University of Antwerp.
- **Research Axes & Leadership:** Leadership in European gastrointestinal oncology trials (PETACC-1, PETACC-3); expert auditor for the European Neuroendocrine Tumor Society (ENETS).

Charles Pottier MD, PhD-Speaker

Dr. Pottier is a specialist in rare tumors and early-phase clinical research, recognized by numerous prestigious academic honors in Belgium.

- **Academic Titles & Degrees:** MD and PhD (University of Liège); Inter-university Diploma in the "Diagnosis and Management of Sarcomas and Mesenchymal Tumors" (Paris Cité University).
- **Current Executive & Clinical Appointments:** Chief Resident in Medical Oncology at CHU de Liège; Faculty at the University of Liège.
- **Research Axes & Leadership:** Management of the sarcoma section at CHU de Liège and leadership of Phase 1 clinical trials (DITEP seminars at Gustave Roussy).
- **High-Impact Publications & Awards:** Recipient of the Royal Academy of Medicine Prize and the "Fondation Henri Lempereur."

Guillermo Velasco Díez MSc, PhD-Speaker

Dr. Velasco Díez is a global authority on autophagy and cannabinoid signaling, exploring their potential to treat aggressive brain tumors through personalized molecular targeting.

- **Academic Titles & Degrees:** PhD in Biochemistry and Molecular Biology (Complutense University of Madrid).



- **Current Executive & Clinical Appointments:** Full Professor at Complutense University; President of the Spanish Society for Autophagy Research (SEFAGIA).
- **Research Axes & Leadership:** Elucidating cannabinoid antitumor activity; personalized glioblastoma therapies targeting the MDK/ALK axis; FLASH radiotherapy research using tissue-on-chip devices.
- **High-Impact Publications & Awards:** *Nature Reviews Cancer, Cancer Cell, Nature Cell Biology, EMBO Journal, Journal of Experimental Medicine.*

Philippe Westerlinck MD, PhD-Speaker

Dr. Westerlinck bridges the gap between traditional radiation oncology and preventive digital health through technological innovation.

- **Academic Titles & Degrees:** MD and PhD (University of Liège); Management en Leadership voor artsen (KUL).
- **Current Executive & Clinical Appointments:** Chief of Clinical Service at CHU de Liège; Radiation Oncologist specializing in 4D simulation, stereotactic therapy, and IORT.
- **Research Axes & Leadership:** Developer of the "Cancer Risk Calculator" mobile app; conducted a pivotal cost-benefit analysis of multislice cardiac CT demonstrating significant savings in intermediate-risk profiles.
- **High-Impact Publications & Awards:** Published in European *Heart Journal* and the *Journal of Cardiovascular Computed Tomography*.

Precision Medicine Competencies

- **Advanced Molecular Profiling:** Mastering the foundations of genetics, genomics, proteomics, and metabolomics as they apply to clinical precision.
- **Targeted Therapeutic Implementation:** Utilizing circulating and imaging biomarkers to guide immunotherapies and Antibody-Drug Conjugates (ADCs).
- **Mechanistic Oncology:** Understanding the molecular biology of cancer, with a focus on oncogenes, tumor suppressor genes, and metabolic alterations.
- **Tumor-Specific Precision:** Applying specialized protocols to urogenital, gastrointestinal, breast, lung, melanoma, and sarcoma cases.
- **Resistance Mitigation:** Identifying mechanisms of tumor heterogeneity and treatment resistance to refine longitudinal patient care.

Artificial Intelligence Competencies

- **Computational Health Data Management:** Navigating the lifecycle of health data and utilizing Natural Language Processing (NLP) for clinical interpretation.

- **Predictive Diagnostics:** Applying machine learning and deep learning techniques for cancer diagnosis, prognosis, and radiomics.
- **Clinical Decision Support Systems (CDSS):** Integrating Large Language Models (LLMs) and chatbots (e.g., IBM Watson, ArteraAI) to enhance real-world evidence generation.
- **Technical Radiotherapy Optimization:** Utilizing AI-driven workshops for segmentation, dosimetry, and radio genomics.
- **Impact Dissemination:** Mastering AI tools for the creation of scientific libraries, conference posters, and high-impact infographics and publications.

Strategic Impact

- **Enhanced Clinical Outcomes:** The synergy of AI-driven insights and molecular precision reduces toxicity and maximizes the efficacy of targeted treatments.
- **Research Visibility and Workflow Efficiency:** Training clinicians to use AI for professional output is not merely a technical skill; it is a strategic tool for increasing **the visibility and impact of research in the global scientific community.**

Global Institutional Network

Country	Participating Elite Institutions
Belgium	University of Liège, CHU Liège, University of Antwerp, AZ Geel Hospital & ZNK
Luxembourg	Centre Hospitalier de Luxembourg (CHL), Luxembourg Institute of Health (LIH)
Italy	IRCCS Regina Elena National Cancer Institute (Rome)
Netherlands	University of Maastricht
Spain	Vall d'Hebron Institute of Oncology (VHIO), Universidad Complutense de Madrid