

**UNIVERSITY OF MARYLAND DEPARTMENT OF RADIATION ONCOLOGY  
22nd ANNUAL DR. KARL PRADO PHYSICS & RADIOBIOLOGY REVIEW COURSE**

**Radiobiology - Monday, May 5, 2025 (day 1)**

7:50 - 7:55 AM ET	Sarah McAvoy, MD	Welcome Remarks from the Vice Chair of Education
7:55 - 8:00 AM ET	France Carrier, PhD	Opening Remarks - Radiobiology Portion
8:00 - 9:15 AM ET	Elaine Zeman, PhD	Radiation Induced DNA Damage and Repair & Chromosome Aberrations
9:15 - 10:15 AM ET	Gayle Woloschak, PhD, FASTRO	Cell Survival Curves
10:15 - 10:25 AM ET	<b>AM Break</b>	
10:25 AM - 11:25 PM ET	Jason Molitoris, MD, PhD	Cancer and Molecular Signaling
11:25 AM - 12:25 PM ET	Gayle Woloschak, PhD, FASTRO	Cell Cycle, Cell & Tissue Kinetics, SLDR/ PLDR
12:25- 1:00 PM ET	<b>Lunch Break</b>	
1:00 PM ET	Return to the WebEx meeting	
1:00 - 2:00 PM ET	Matthew Ferris, MD	Immunotherapy
2:00 - 3:00 PM ET	Elizabeth Balcer-Kubiczek, PhD	Linear energy transfer, relative biological effectiveness, and oxygen effect - Radiobiology behind hadron radiotherapy
3:00 - 3:10 PM ET	<b>PM Break</b>	
3:10 - 4:10 PM ET	Minesh Mehta, MBChB, FASTRO	Radiobiological Aspects of Alternative Delivery Strategies: Radiosurgery, Proton Therapy, Neutron Therapy
4:10 - 5:10 PM ET	Zaker H. Rana, MD	Normal Tissue Damage - Total Body Irradiation

**Radiobiology (AM) - Friday, May 16, 2025 (day 2)**

8:00 - 9:15 AM ET	Elaine Zeman, PhD	The Tumor Microenvironment
9:15 - 10:15 AM ET	Ioannis (Yiannis) Verginadis, PhD	Radiation-Induced Hereditary Effects, Teratogenesis and Radiation Protection
10:15 - 10:25 AM ET	<b>AM Break</b>	
10:25 - 11:35 AM ET	France Carrier, PhD	Radiosensitizers, Radioprotectors, Bio-Reductive Drugs and ChemoRadiation Strategies
11:35 AM - 12:35 PM ET	Elaine Zeman, PhD	Time, Dose, Fractionation, and the Therapeutic Ratio
12:35 - 1:05 PM ET	Constantino Koumenis, PhD	The Biology of FLASH
1:05 - 1:35 PM ET	<b>Lunch Break</b>	
1:35 PM ET	Return to the WebEx meeting	

**Physics (PM) - Friday, May 16, 2025 (day 2)**

1:35 - 1:40 PM ET	Amit Sawant, PhD	Opening Remarks - Physics Portion
1:40 - 2:40 PM ET	Jochen Cammin, PhD	Medical Imaging and its Applications in Radiotherapy
2:40 - 3:40 PM ET	Birjoo Vaishnav, PhD	Linear Accelerators and Radiation Producing Machines
3:40 - 3:45 PM ET	<b>PM Break</b>	
3:45 - 5:00 PM ET	Yannick Poirier, PhD	Radiation Detection and Measurement
5:00 - 5:30 PM ET	Lei Ren, PhD	Clinical Applications of AI in Radiotherapy

**Physics - Wednesday, May 21, 2025 (day 3)**

8:00 - 9:00 AM ET	Junliang Xu, PhD, DABR	Electron Beams and Interactions
9:00 - 10:00 AM ET	Michael J. MacFarlane, PhD	Radiation Safety, Protection, Shielding and Quality Assurance
10:00 - 10:10 AM ET	<b>AM Break</b>	
10:10 - 11:25 AM ET	Stewart Becker, PhD	Dose Ratios and Accelerator Monitor-Unit Calculations
11:25 AM - 12:40 PM ET	Todd McNutt, PhD, FAAPM	Advanced Treatment Planning (Advanced Dose Calculation Algorithms, MLCs, Inverse Planning, IMRT, Treatment Plan Optimization: Physical and Biological)
12:40 - 1:10 PM ET	<b>Lunch Break</b>	
1:10 PM ET	Return to the WebEx meeting	
1:10 - 2:10 PM ET	Elizabeth Balcer-Kubiczek, PhD	X-ray Interactions
2:10 - 3:10 PM ET	Stewart Becker, PhD	Special and Advanced Treatment Procedures (SRS, SBRT, TBI)
3:10 - 3:20 PM ET	<b>PM Break</b>	
3:20 - 4:20 PM ET	Arun Gopal, PhD	Brachytherapy
4:20 - 4:50 PM ET	Sina Mossahebi, PhD	Proton Beam Therapy
4:50 - 5:50 PM	Chaitanya Kalavagunta, PhD	Patient Simulation and Classical Treatment Planning
5:50 - 5:55 PM ET	Amit Sawant, PhD	Closing Remarks