BIOGRAPHICAL SKETCH

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NAME: Deek, Matthew Pierre

eRA COMMONS USER NAME (credential, e.g., agency login): matthewpierredeek

POSITION TITLE: Assistant Professor, Department of Radiation Oncology, Rutgers University

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
New Jersey Institute of Technology/Rutgers University	B.A.	05/2011	Biology (double major with Physics)
Robert Wood Johnson Medical School, Rutgers University	M.D.	05/2016	Medicine
Robert Wood Johnson Medical School, Rutgers University	Internship	06/2017	Internal Medicine
Johns Hopkins Hospital	Residency	06/2021	Radiation Oncology

A. Personal Statement

My passion for cancer care and research began during my time as a resident at Johns Hopkins Hospital where I had the opportunity to mature as a clinician and develop into a physician-scientist. During my residency I had the privilege to partake in a rigorous clinical training program which allowed me the opportunity to learn from world-renowned physicians and scientists, garnering the knowledge needed to become a competent and forward-thinking practitioner. I was also able to expand my research portfolio through clinical trial design and development of novel translational science approaches. My main areas of interest include oligometastatic disease, prostate cancer, and lung cancer attempting to develop treatment paradigms to improve patient outcomes, minimize treatment side effects following radiation therapy, and develop biomarkers that might aid in the personalization of cancer care.

Following the completion of my residency, I became an Assistant Professor in the Department of Radiation Oncology at Rutgers University with a clinical practice focusing on oligometastatic disease, lung, and prostate cancer. In this position I continue to build upon my work integrating radiation therapy into the treatment of metastatic disease. To date, this has culminated in several high-profile publications that have helped define the standard of care within the field of oligometastases. I remain passionate about this work and understand much is still required to push the boundaries within this field in order to pursue our goal of improving outcomes and quality of life for patients with cancer. The proposed project is in line with these aims and has the potential to provide novel insights into the biological understanding and treatment of cancer.

a. **Matthew P. Deek**, Colburn Yu, Ryan Phillips, et al. Radiation Therapy in the Definitive Management of Oligometastatic Prostate Cancer: The Johns Hopkins Experience. Int J Radiat Oncol Biol Phys. 2019 105(5): 948 – 956
b. **Matthew P. Deek***, Kekoa Taparra*, Ryan Phillips, et al. Metastasis Directed Therapy Prolongs Efficacy of Systemic Therapy and Improves Clinical Outcomes in Oligoprogressive Castration-Resistant Prostate Cancer. Eur Urol Oncol 2021. 4(3): 447 - 455

c. Phil Sutera, …, **Matthew P. Deek**. Definitions of disease burden across the spectrum of metastatic castration-sensitive prostate cancer: comparison by disease outcomes and genomics. Prostate Cancer and Prostatic Diseases. 2022. 25(4): 713-719. PMID: 35013522
d. **Matthew P. Deek**, Ryan Phillips, Phuoc T Tran. Radiotherapy in the Management of Metastatic Hormone-Sensitive Prostate Cancer: What is the Standard of Care? Cancer J. 2020 26 (1) 87-93.

B. Positions, Scientific Appointments, and Honors

Positions

2021 -	Assistant Professor, Department of Radiation Oncology, Rutgers University
2020-2021	Chief Resident, Radiation Oncology, Johns Hopkins Hospital
2017-2019	Resident, Radiation Oncology, Johns Hopkins Hospital
2016	Biomedical Ethics Adjunct Professor, Department of Humanities - NJIT

Scientific Appointments

2018-	NRG oncology Genitourinary (GU) translational committee
2017-	Ad hoc reviewer for *Journal of Clinical Oncology*, *Int. J. of Radiation Oncology, Biology, Physics* and *Eur Urol Oncology*
2015-	American Society for Radiation Oncology (ID# 135218763)

Honors

2022	ASTRO Annual Meeting Basic Transitional Award, 2022
2022	Visiting Professor, Mayo Clinic
2021	RSNA R&E Foundation Roentgen Resident/Fellow Research Award Recipient
2014	Winner of American College of Physicians Medical Student National Abstract Competition
2014	Omicron Delta Kappa National Leadership Honor Society, member
2011	Valedictorian, New Jersey Institute of Technology/Rutgers University
2009	Outstanding Student Leader Award

C. Contributions to Science

1. Precision medicine for oligometastatic disease managed with metastasis directed therapy. My current work revolves around clinical and translational efforts in oligometastatic disease. Our group has recently reported the ORIOLE trial, a prospective randomized trial of stereotactic ablative radiotherapy (SABR) versus observation in men with oligometastatic castration sensitive prostate cancer (oligo mCSPC), which demonstrated the use of radiation therapy prolongs progression free survival. Our currently accruing follow up trial, RAVENS, is enrolling men with oligometastatic prostate cancer and randomizes individuals to SABR +/- Radium-223. We also have reported on patterns of failure and modes of progression following metastasis directed therapy in order to inform future trial design. Our translational efforts have focused on characterizing the genomic landscape of oligometastatic prostate cancer within the spectrum of castration sensitive metastatic disease in order to elucidate biological definitions of oligometastatic prostate cancer. We have identified alterations in *TP53* and DNA double strand break repair genes as being able to stratify metastatic category and predict metastatic lesion number, and *TP53* mutations additionally appear prognostic in individuals with metachronous oligorecurrence. Additionally, WNT pathway signaling is able to predict for patterns of distant recurrence (bone and visceral). These findings are supported by exploratory analyses of the ORIOLE and STOMP trial suggesting a high-risk mutational signature consisting of *TP53*, *BRCA1/2*, *RB1*, and *ATM* are prognostic and predictive for outcomes following metastasis directed therapy. This work is currently funded by the Department of Defense to allow for further discovery of biomarkers to better personalize patient selection for metastasis directed therapy.

a. **Matthew P. Deek,** Kim Van der Eecken, Philip Sutera et al. Long Term Outcomes and Genetic Predictors of Response to Metastasis Directed Therapy vs Observation in Oligometastatic Castration-Sensitive Prostate Cancer: An Analysis of the STOMP and ORIOLE Trials. J Clin Oncol. 2022. 40(29): 3377-3382

b. Ryan Phillips, William Yue Shi, **Matthew P. Deek**, et al. A phase II randomized trial of Observation versus stereotactic ablative RadiatIon for OLigometastatic prostate CancEr (ORIOLE). JAMA Oncology. 2020 6(5): 650-659.
c. **Matthew P. Deek**, Kekoa Taparra, Dyda Dao, et al Patterns of Recurrence and Modes of Progression Following Metastasis Directed Therapy in Oligometastatic Castration Sensitive Prostate Cancer. Int J Radiat Oncol Biol Phys. 2021 109(2): 387-395
d. **Matthew P. Deek**, Kim Van der Eecken, Ryan Phillips, et al. The Mutational Landscape of Metastatic Hormone-Sensitive Prostate Cancer – The Spectrum Theory Revisited. Eur Urol. 2021. 80(5): 632-640.

2. Normal tissue toxicity mitigation in radiation therapy

I have a clinical research interest in identifying and mitigating normal tissue toxicity caused by radiation therapy. Our group performed early work in identifying the significant cardiac comorbidities associated with chemoradiation in Non Small Cell Lung Cancer (NSCLC), which is now known to be associated with inferior overall survival following treatment. Additionally, we were one of the first groups to identify the association of bone marrow irradiation with drops in hematologic counts during a course of chemoradiation for NSCLC. We further identified these hematologic toxicities are responsible for missed chemotherapy sessions which is association with inferior clinical outcomes. From these insights, we identified radiation dosimetric correlations with treatment toxicities and developed dose constraints to help mitigate these side effects.

a. **Matthew P. Deek**, Brian Benenati, Sinae Kim, et al. Thoracic Vertebral Body Irradiation Contributes to Acute Hematologic Toxicity During Chemoradiation Therapy for Non-Small Cell Lung Cancer. Int J Radiat Oncol Biol Phys, 2016. 94(1): p.147-154.
b. **Matthew P. Deek**, Sairaman Nagarajan, Sinae Kim, et al. Clinical characteristics and dose-volume histogram parameters associated with the development of pleural effusions in non-small cell lung cancer patients treated with chemoradiation therapy. Acta Oncol, 2016. 55(8): p.1029-1035.
c. **Matthew P. Deek**, Sinae Kim, Inaya Ahmed, et al. Prognostic Impact of Missed Chemotherapy Doses During Chemoradiation Therapy for Non-Small Cell Lung Cancer. Am J Clin Oncol, 2018. 41(4): p362-366.
d. Nikhil Yegya-Raman, Kyle Wang, Sinae Kim, Meral Reyhan, **Matthew P. Deek**, et al. Dosimetric Predictors of Symptomatic Cardiac Events After Conventional-Dose Chemoradiation Therapy for Inoperable NSCLC. J Thorac Oncol, 2018. 13(10): p.1508-1518.

3. Molecular biomarkers for cancer treatment. My other research interests are in molecular biomarker discovery in lung, pancreatic, and prostate cancers. Our group demonstrated overexpression of Excision Repair Cross Complementing-1 gene (*ERCC1*) may predict local recurrence after definitive chemoradiation for NSCLC. We have also documented *Smad4* loss correlates with higher rates of local and distant recurrence in pancreatic adenocarcinoma treated with adjuvant chemoradiation. Additionally, we have identified Wnt pathway mutations as a potential predictive biomarker for response to metastasis directed therapy in prostate cancer.

a. Salma K. Jabbour, **Matthew P. Deek**, Parima Daroui, et al. Overexpression of Excision Repair Cross Complementing-1 Gene May Predict Local Recurrence After Definitive Chemoradiation for Unresectable Non-Small Cell Lung Cancer. Int J Radiat Oncol Biol Phys. 2015;93: S160.
b. Joseph M. Herman, Salma K. Jabbour, Steven H. Lin, **Matthew P. Deek** et al. Smad4 Loss Correlates With Higher Rates of Local and Distant Failure in Pancreatic Adenocarcinoma Patients Receiving Adjuvant Chemoradiation. Pancreas. 2018;47: 208-212.
c. Philip Sutera, **Matthew P. Deek**, Kim Van der Eecken, et al. WNT pathway mutations in metachronous oligometastatic castration-sensitive prostate cancer. Int J Radiat Oncol Biol Phys. 2023; In press

A full list of publications can be found at (Total > 50 and Google Scholar H-index 14):
https://www.ncbi.nlm.nih.gov/myncbi/14syiiKJOowokn/bibliography/public/