

**BIOGRAPHICAL SKETCH**NAME: **Bernard, Mark Edmund**eRA COMMONS USER NAME (credential, e.g., agency login): **mark.bernard**POSITION TITLE: **Assistant Professor, Faculty Physician, University of Kentucky, Department Radiation Medicine****EDUCATION/TRAINING**

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Carnegie Mellon University	B.S.	05/2005	Chemistry
Carnegie Mellon University	Minor	05/2015	Healthcare Policy and Management
National Institutes of Health		05/2007	Cancer Research Training
University of Pittsburgh School of Medicine	M.D.	05/2012	Medicine
UPMC	Residency	07/2013	Medical Internship
UPMC	Residency	06/2017	Radiation Oncology

**A. Personal Statement****B. Positions and Honors****Positions and Employment**

2005-2007 Cancer Research Training Award Fellow, National Institutes of Health, Bethesda, MD  
2012-2013 UPMC, Internal Medicine Resident, Pittsburgh, PA  
2013-2017 UPMC, Radiation Oncology Resident, Pittsburgh, PA  
2017- Assistant Professor, University of Kentucky Radiation Medicine, Lexington, KY

**Awards and Honors**

2002 D.G. and D.L. McMahon Scholarship Grant  
2004-2005 National Dean's List and National High Dean's List  
2005-2007 Cancer Research Training Award, NCI/NIH  
2008-2009 T32AG21885, NIA/NIH Grant  
2011 ASCO Medical Student Rotation Award  
2011 Discovery Channel© Interview of Our Antioxidant Radioprotectors  
2011 ASTRO's 53rd Annual Meeting, UPMC Online Interview  
2012 Gateway Medical Society Academic Achievement Award  
2012 The Bert and Sally O'Malley Award for Outstanding Medical Student Research

2012	Jeffery Shogan Award for Excellence in Radiation Oncology Research
2014	UPMC Principles and Practice of GammaKnife RadioSurgery Program Certificate
2014	UPMC Stereotactic Ablative Radiation and SRS Training Program Certificate
2015	Best of ASTRO Travel Award
2017	NRG Oncology Uterine Corpus Committee

### Professional Memberships

2004-2005	Co-founder/Vice President, Minority Association of Pre-Health Students
2010-	Member, Christian Medical and Dental Association
2011-2012	President/Vice-President/Co-founder, Radiation Oncology Interest Group
2011-	Member, American Society for Radiation Oncology
2015-2016	Member, UPMC Rad Oncology Quality Assurance Group
2018-	Members, American Brachytherapy Society (ABS)

### C. Contributions to Science

1. During the beginning years while at the NIH, I worked in the lab of Dr. Curtis C Harris in the National Cancer Institute. I analyzed DNA from the p53 gene in human lung tissue from smokers to look for characteristic mutations indicative of smoking exposure. The DNA was isolated from frozen human lung tissue, amplified using PCR, and the mutations were found using DNA sequencing and confirmed with Single-Strand Conformation Polymorphism. I also analyzed DNA mutations from the p53 gene in mice liver which had their liver treated, in vivo, with afb1 to look for mutations characteristic of this exposure. The DNA was isolated from frozen mice liver tissue and from micro-dissected DNA slides of mice liver, amplified using PCR, and the mutations were analyzed using DNA sequencing. I also performed immunohistochemistry on micro-dissected DNA slides of afb1-treated mice to look for characteristic protein expression. Lastly, via IHC, I analyzed apoptotic markers of mice having combinations of p53 knock-out, NOS1 knock-out, and C. parvum bacteria treated and corresponded the findings with the rate and presence of tumor production.

- a. Hagiwara N, Mechanic LE, Trivers GE, Cawley HL, Taga M, Bowman ED, Kumamoto K, He P, **Bernard M**, Doja S, Miyashita M, Tajiri T, Sasajima K, Nomura T, Makino H, Takahashi K, Hussain SP, Harris CC. Quantitative detection of p53 mutations in plasma DNA from tobacco smokers. *Cancer Research*. 2006 Aug 15;66(16):8309-17.
- b. Hussain SP, He P, Subleski J, Hofseth LJ, Trivers GE, Mechanic L, Hofseth AB, **Bernard M**, Schwank J, Nguyen G, Mathe E, Djurickovic D, Haines D, Weiss J, Back T, Gruys E, Laubach VE, Wiltrout RH, Harris CC. Nitric oxide is a key component in inflammation-accelerated tumorigenesis. *Cancer Research*. 2008 Sep 1;68(17):7130-6.

2. During medical school, I worked in the translational research lab of Dr. Joel S. Greenberger. I investigated the role of drug therapy designed to increase the survival and decrease the side effects associated with radiation therapy using cell cultures and mice models. This involved investigating the relationship between antioxidant therapy and the increase survival for Fanconi Anemia (FA) patients using cell cultures and mice models of FA. In addition, I determined the role of bone marrow stem cells after thoracic radiation therapy. This project showed that after thoracic radiation therapy eliminates lung stem cells, the stem cell niche could be repopulated with hematopoietic stem cells. My final project involved determining the cardiovascular effects of total body irradiation as well as the neurocognitive effects of total body irradiation.

- a. Epperly MW, Goff JP, Li S, Gao X, Wipf P, Dixon T, Wang H, Franicola D, Shen H, Rwigema JC, Kagan V, **Bernard M**, Greenberger JS. Intraesophageal Administration of GS-Nitroxide (JP4-039) Protects Against Ionizing Irradiation-Induced Esophagitis. *In Vivo*. 2010 Nov-Dec;24(6):811-9.
- b. Kim H, **Bernard ME**, Goff J, Farkas A, Houghton F, Shields D, Franicola D, Dixon TM, Zhang X, Epperly MW, Wang H, Cobanoglu MC, and Greenberger JS. Ionizing Irradiation Protection and Mitigation of Murine Cells by Carbamazepine is p53 and Autophagy Independent. *In Vivo*. 2011; *In Vivo*. 2012 May;26(3):341-54.

- c. Kim H, **Bernard ME**, Flickinger J, Epperly MW, Wang H, Dixon TM, Shields D, Houghton F, Zhang X, Greenberger JS. The Autophagy Inducing Drug Carbamazepine is a Radiation Protector and Mitigator. *Int J Radiat Biol.* 2011 Oct;87(10):1052-60.
- d. **Bernard ME**, Kim H, Epperly MW, Franicola D, Zhang X, Houghton F, Shields D, Wang H, Bakkenist CJ, Frantz MC, Wipf P, and Greenberger JS. GS-Nitroxide (JP4-039) Mediated Radioprotection of Human Fanconi Anemia Cell Lines. *Radiat Res.* 2011 Nov;176(5):603-12.
- e. Kim H, **Bernard ME**, Epperly MW, Shen H, Dixon TM, Amoscato A, Doemling AS, Li S, Gao X, Wipf P, Wang H, Zhang X, Kagan VE, and Greenberger JS. Amelioration of Radiation Esophagitis by Orally Administered p53/Mdm2/Mdm4 Inhibitor (BEB55) or GS-Nitroxide. *In Vivo.* 2011 Nov;25(6):841-8.
- f. **Bernard ME**, Kim H, Rwigema JC, Epperly MW, Kelley, EE, Dixon T, Murdoch GH, and Greenberger JS. Role of the Esophageal Vagus Neural Pathway in Ionizing Irradiation-induced Seizures in Nitric Oxide Synthase-1 Homologous Recombinant Negative NOS1-/- Mice. *In Vivo.* 2011 Nov;25(6):861-9.
- g. **Bernard ME**, Kim H, Rajagopalan MS, Stone B, Salimi U, Rwigema JC, Epperly MW, Goff J, Franicola D, Dixon T, Cao S, Shen H, Zhang X, Stripp B, Reynolds SD, and Greenberger JS. Repopulation of the Irradiation Damaged Lung with Marrow Derived Cells. *In Vivo.* 2012 Jan;26(1):9-18.
- h. Greenberger JS, Berhane H, Shinde A, Rhieu BH, **Bernard M**, Wipf P, Skoda EM, Epperly MW. Can Radiosensitivity Associated with Defects in DNA Repair be Overcome by Mitochondrial-Targeted Antioxidant Radioprotectors. *Front Oncol.* 2014 Feb 17;4:24.

3. The later years of my training involved mainly clinical research investing the use of Stereotactic Body Radiation Therapy for the treatment of various malignancies. My senior mentor for these projects was Dr. Dwight E. Heron. These were mainly clinical projects involving both prospective trials and retrospective reports.

- a. DeFoe SD, **Bernard ME**, Rwigema JC, Heron DE, Ozhasoglu C, Quinn A, Burton SA. Stereotactic Body Radiotherapy (SBRT) for Presacral Recurrence of Rectal Cancer. *Journal of Cancer Research and Therapeutics.* *J Cancer Res Ther.* 2011 Oct;7(4):408-11.
- b. **Bernard ME**, Wegner RE, Reineman K, Heron DE, Kirkwood J, Burton SA, Mintz AH. Linear accelerator based stereotactic radiosurgery for melanoma brain metastases. *J Cancer Res Ther.* 2012 Apr-Jun;8(2):215-21.
- c. Quan K, Xu KM, Lalonde R, Horne Z, **Bernard ME**, McCoy C, Clump DA, Burton SA, Heron DE. Treatment Plan Technique and Quality for Single-Isocenter Stereotactic Ablative Radiotherapy of Multiple Lung Lesions with Volumetric-Modulated Arc Therapy or Intensity-Modulated Radiosurgery. *Front Oncol.* 2015 Oct 6;5:213.
- d. Holt DE, **Bernard ME**, Quan K, Engh JA, Burton SA, Heron DE. Outcomes of Salvage Radiosurgery for Recurrent Glioblastoma Multiforme. *J Cancer Res Ther.* 2016 Oct-Dec;12(4):1243-1248.
- e. Q uan K, Sutera P, Xu K, Bernard ME, Burton SA, Wegner RE, Zeh H, Bahary N, Lembersky B, Stoller R, Heron DE. Results of a prospective phase 2 clinical trial of induction gemcitabine/capecitabine followed by stereotactic ablative radiation therapy in borderline resectable or locally advanced pancreatic adenocarcinoma. *Pract Radiat Oncol.* 2017 Oct 7. pii: S1879-8500(17)30312-0.
- f. Sutera PA, **Bernard ME**, Quan K, Harper KK, Gill BS, Bahary N, Burton SA, Zeh H, Heron DE. One vs. Three Fraction Pancreatic SBRT for Pancreatic Carcinoma. Single Institution Retrospective Review. *Front. Oncol.* 7:272. doi: 10.3389/fonc.2017.00272

- g. Sutera PA, **Bernard ME**, Gill BS, Quan K, Engh JA, Burton SA, Heron DE. Salvage stereotactic radiosurgery for recurrent gliomas with prior radiation therapy. Accepted in Future Oncology. August 2017
- h. Quan K, Sutera P, Xu K, **Bernard ME**, Burton SA, Wegner RE, Zeh H, Bahary N, Lembersky B, Stoller R, Heron DE. Interim Results of a Prospective Phase II Clinical Trial of Induction Gemcitabine/Capecitabine Followed by Stereotactic Ablative Radiotherapy in Borderline Resectable or Locally-Advanced Pancreatic Adenocarcinoma. Accepted to Practical Radiation Oncology. October 2017.
- i. Sutera PA, **Bernard ME**, Wang H, Bahary N, Burton SA, Zeh H, Heron DE. Stereotactic Body Radiation Therapy for Locally-Progressive and Recurrent Pancreatic Cancer after Prior Radiation. Front Oncol. 2018 Mar 7;8:52. doi: 10.3389/fonc.2018.00052

4. I have also performed clinical research on various malignances treated with radiation therapy including vulvar carcinoma and non-small cell lung cancer.

- a. Gill BS, **Bernard ME**, Lin JF, Balasubramani GK, Rajagopalan MS, Sukumvanich P, Krivak TC, Olawaiye AB, Kelley JL, Beriwal S. Impact of adjuvant chemotherapy with radiation for node-positive vulvar cancer: A National Cancer Data Base (NCDB) analysis. Gynecol Oncol. 2015 Jun;137(3):365-72.
- b. **Bernard ME**, Clump DA, Lalonde R, Beriwal S. Radiation therapy for locally advanced lung cancer. Translational Cancer Research. 2015; 4; 356-371.

*A complete list of peer-reviewed publications and abstracts are available upon request*

#### D. Additional Information: Research Support and/or Scholastic Performance

##### Ongoing Research Support

ALLIANCE A02501    Cavnar (PI)    08/2017 - present  
 This is a prospective trial evaluating the use of pre-operative chemotherapy against pre-operative chemotherapy plus hypofractionated radiation therapy for borderline resectable adenocarcinoma of the head of the pancreas. We are attempting to determine the value of hypofractionated radiation therapy in this patient cohort.  
 Role: Sub-investigator

NCI-CIRB-LAO-MA036-10021    Schoenfeld (PT)    09/2017 - present  
 This is a phase 2 Study evaluating the addition of low-dose radiation to Durvalumab and Tremelimumab in Metastatic Colorectal and NSCLC.  
 Role: Sub-investigator