

Christopher J. Anker
CURRICULUM VITAE

Position: Assistant professor
Department of Radiology, Division of Radiation Oncology

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EDUCATION

Year	Institution	Degree	Area of Degree, Accolades
2006-2010	University of Utah, Huntsman Cancer Hospital (Chief Resident: 2008-2009*) Salt Lake City, Utah	Resident	Radiation Oncology
2005-2006	State University of New York, Upstate Medical University, Syracuse, NY	Intern	Medicine
2001-2005	State University of New York, Upstate Medical University, Syracuse, NY	M.D.	Magna Cum Laude
1997-2001	Cornell University, College of Engineering, Ithaca, NY	B.S.	Chemical Engineering with Biomedical Engineering Concentration

LICENSES, CERTIFICATION

Year	Institution
2014-present	Medical Licensure, Vermont
2011	American Board of Radiology (Radiation Oncology), Certified
2010-2014	Medical Licensure, Utah

FACULTY POSITIONS HELD

Years	Institution	Academic Title	Department
2010-2014	University of Utah, Huntsman Cancer Hospital, Salt Lake City, Utah	Assistant Professor	Radiation Oncology
2014-Present	University of Vermont Medical Center Burlington, Vermont	Assistant Professor	Radiology, Division of Radiation Oncology

*Of the 3 residents in my postgraduate year (PGY) cohort, I was selected to be chief 1 year early.

OTHER POSITIONS AND MAJOR ADMINISTRATIVE POSITIONS HELD - none**HONORS AND AWARDS**

Year	Name of Award
2002-2005	SUNY Upstate Medical University, Dean's Letter of Commendation MS I-IV
2004	Merck Manual Award <ul style="list-style-type: none"> • Awarded to top 2.5% of medical school class
2004	AOA Junior Inductee <ul style="list-style-type: none"> • Awarded to 5% of medical school class, based on academic achievement, research, and service contributions to the community and medical university
2005	John Bernard Henry, M.D. Endowed Scholarship Award <ul style="list-style-type: none"> • Awarded for excellence in research and service contributions to the community and medical university
2008	American Brachytherapy Society, Low-Dose Rate Brachytherapy Fellowship Award <ul style="list-style-type: none"> • Awarded to resident excelling clinically and academically who demonstrated interest in advanced brachytherapy skills not available at home institution
2009	Radiological Society of North America, Roentgen Resident Research Award <ul style="list-style-type: none"> • Awarded to resident with greatest contributions to research in department of radiation oncology
2013	Association of Residents in Radiation Oncology (ARRO) Educator of the Year Award <ul style="list-style-type: none"> • Awarded to faculty member as determined by the radiation oncology residents. This was the first time the award was given at the University of Utah since 2009
2015	Outstanding Reviewer for Elsevier <ul style="list-style-type: none"> • Awarded to top 10th percentile of reviewers for <i>Practical Radiation Oncology</i>, in terms of the number of manuscript reviews completed in the last two years

KEYWORDS/AREAS OF INTEREST

Radiosensitizer, precision medicine, personalized medicine, quality of life, stereotactic ablative radiation therapy, stereotactic radiosurgery, radiation physics, radiobiology

SUMMARY OF PROFESSIONAL ACTIVITIES –OVERALL**SUMMARY OF ACCOMPLISHMENTS**

I was hired in 2014 by the Division of Radiation Oncology at UVM on the Clinician Scholar pathway to serve patients while establishing a strong academic reputation for myself and the medical center both regionally and nationally. Clinically, I am the primary radiation oncologist for the gastrointestinal, lung, melanoma/skin, and sarcoma trans-disciplinary teams. The mission of each team involves enhancing the quality of care by streamlining patient care across disciplines, providing access to clinical trials and translational research, and promoting an environment of teaching. Currently my job description is 70% clinical, 20% scholarship, 7% service, and 3% teaching/mentoring. I have intramural and extramural grants supporting my research, and I am active in the education of undergraduate and graduate students.

PROFESSIONAL SERVICE

DEPARTMENTAL SERVICE - none

COLLEGE SERVICES

<u>Years</u>	<u>Service Committee</u>	<u>Role</u>
2010-2014	Radioactive Drug Research Committee-Human Use Subcommittee (RDRC-HUS), University of Utah <ul style="list-style-type: none"> • (4 hours/month) As 1 of 2 reviewers from the department of radiation oncology, reviewed on average 2 protocols/month to assess the appropriateness of patient exposure to radiation. 	Member
2010-2014	Radiation Safety Committee, University of Utah <ul style="list-style-type: none"> • (2 hours/month) Attended monthly meeting to assure radiation was used safely throughout the University of Utah. 	Member

MEDICAL CENTER SERVICE

<u>Years</u>	<u>Service Committee</u>	<u>Role</u>
2014-present	Protocol Review and Monitoring Committee (PRMC), University of Vermont Medical Center <ul style="list-style-type: none"> (2 hours/month) Review scientific merit of non-cooperative group trials under consideration for activation at UVM. Assess each protocol's feasibility in terms of enrollment and resource allocation. Review protocols open at UVM to assess whether accrual goals are being met. 	Member
2014-2015	Gastrointestinal Cancer Trans-Disciplinary Team, University of Vermont Medical Center	Member
2015-present	Gastrointestinal Cancer Trans-Disciplinary Team, University of Vermont Medical Center <ul style="list-style-type: none"> • (8 hours/month) Lead gastrointestinal (GI) group in managing its research portfolio. In 2015 helped double number of GI patients enrolled on cooperative group trials compared to 2014. Stewarded the opening of 5 upper and lower GI trials in 2015. Began journal club to improve team's didactics. 	Associate Director

2015-present	Melanoma Cancer Trans-Disciplinary Team, University of Vermont Medical Center <ul style="list-style-type: none"> • (3 hours/month) Lead radiation oncologist for the group's clinical and research efforts. 	Member
2015-present	Lung Cancer Trans-Disciplinary Team, University of Vermont Medical Center <ul style="list-style-type: none"> • (6 hours/month) Lead radiation oncologist for the group's clinical and research efforts 	Member
2015-present	Sarcoma Cancer Trans-Disciplinary Team, University of Vermont Medical Center <ul style="list-style-type: none"> • (2 hours/month) Lead radiation oncologist for the group's clinical and research efforts. 	Member
2015-present	NRG Oncology, University of Vermont Medical Center <ul style="list-style-type: none"> • (2 hours/month) Primary manager of research trial portfolio for NRG Oncology at UVM, 1 of 2 national oncology research cooperative group organizations with which UVM participates. Work with trans-disciplinary teams to bring the highest quality trials to UVM and maintain our member status within the NRG Oncology institution. 	Contact PI

UNIVERSITY SERVICE - none

GOVERNMENT - none

SOCIETY MEMBERSHIPS - none

SERVICE TO PROFESSIONAL ORGANIZATIONS

Years	Service Committee	Role
2006-Present	American Society for Radiation Oncology (ASTRO) <ul style="list-style-type: none"> • (8 hours/year from 2014-2016) Invited to personally review approximately 80 gastrointestinal abstracts/year, and then participate in conference call to discuss and select the highest quality studies for presentation at the annual meeting. • (4 hours/year from 2014-2015) Invited to moderate the scientific research oral presentation sessions at the annual meeting for hepatopancreaticobiliary cancer in 2014 and colorectal cancer in 2015. 	Member
2010-2014	National Comprehensive Cancer Network (NCCN), Melanoma <ul style="list-style-type: none"> • (12 hours/year) First radiation oncologist invited to serve on the NCCN melanoma guidelines committee. Led creation of "Principles of Radiation Therapy" section of the NCCN guidelines. Revised text related to radiation oncology within NCCN manuscript to reflect 	

latest literature.

2010-Present NRG Oncology
 2015-Present NRG Oncology Colorectal Cancer Gastrointestinal Core Committee
 2015-Present NRG Oncology Non Colorectal Gastrointestinal Core Committee

- (10 hours/year) For these national GI committees that meet bi-annually, I aid in protocol design, and I select the trials with the highest impact for patients at UVM and foster their success.

2013-Present Eastern Cooperative Oncology Group (ECOG), Melanoma Committee

- (20 hours/year) First radiation oncologist invited to serve on this national committee in approximately 20 years. Advise committee at bi-annual meetings and monthly conference calls regarding integration of radiation into care of melanoma patients.

2013-Present Society of Surgical Oncology, Surgical Oncology Self-Assessment

Program (SOSAP) Committee

- (4 hours/year) Authored/revised 3 questions pertaining to clinical and ethical concerns related to melanoma/dermatologic malignancies.

SERVICE TO PROFESSIONAL PUBLICATIONS

Referee for *Oncotarget*

Referee for *Advanced Drug Delivery Reviews*

Referee for *Australasian Journal of Dermatology*

Referee for *Dermatologic Surgery*

Referee for *British Journal of Dermatology*

Referee for *Brachytherapy*

Referee for *International Journal of Radiation Oncology*Biology*Physics*

Referee for *Practical Radiation Oncology*

Referee for *Medical Dosimetry*

Referee for *Cancer*

Referee for *Journal of Applied Clinical Medical Physics*

Referee for *The Journal of Urology*

(4 hours/month) Review 1-2 articles/month for the peer reviewed journals listed above.

PUBLIC SERVICE

Years

2007

Service Role

Prostate Cancer Support Group Volunteer at Utah Cancer Wellness House
 – Salt Lake City, UT

- 2009 Led discussion and answered questions of patients and their family members regarding prostate cancer treatment and side effects.
Oral/Head & Neck Cancer Screening Clinic, Huntsman Cancer Hospital, Salt Lake City, UT
- 2006-2011 Provided free head and neck screening to people in community Survivors at the Summit Volunteer at Snowbird, Salt Lake City UT
Volunteer at Cancer Wellness House event held annually honoring those who have faced the challenges associated with cancer diagnosis.
- 2012 Pan American Society for Pigment Cell Research, Park City, UT
Answered questions as panel member at melanoma patient support session.
- 2015 Dragon Boat Festival, Volunteer, Burlington, VT
Raised money for cancer survivors and paddles in the festivals' dragon boat race.
- 2015 Local News Segment, ABS/FOX News 22/44, Burlington, VT
"How Cancer Research Works at UVM"
- 2016 Across the Fence, WCAX Channel 3, Burlington, VT
"Screening and Treatment: Colorectal Cancer Awareness"

SUMMARY OF SERVICE ACTIVITIES

Nationally, for the past 3 years I have been selected to review approximately 80 gastrointestinal (GI) abstracts/year for the American Society for Radiation Oncology (ASTRO) annual conference, which is the premier academic meeting for our field. I have been chosen to moderate GI research oral presentation sessions at this conference for the past two years. My service includes evaluating 1-2 articles/month for various peer-reviewed journals, including top radiation oncology journals such as *International Journal of Radiation Oncology*Biology*Physics*, *Practical Radiation Oncology*, and *Brachytherapy*. I was the first radiation oncologist on the NCCN melanoma guidelines committee, and I led the creation of the "Principles of Radiation Therapy" section of the guidelines. I've been selected to advise two major cooperative groups (NRG Oncology and ECOG) regarding the development of clinical trials that accrue patients nationally and internationally.

Locally and regionally, I work to bring the trials developed by the national ECOG and NRG Oncology groups back to the UVM Medical Center. In early 2015, I was selected to be associate director of the UVM Medical Center GI Committee Trans-disciplinary Team (TDT), and within this role I led the group to double the patients enrolled on GI trials in 2015 compared to 2014. Within my own department, I lead a monthly research-in-progress meeting to improve academic productivity and collaborations between faculty and students/trainees. Regarding process improvement, I have created standardized radiation planning goal worksheets also used by my partners in the treatment of gastrointestinal, lung, and central nervous system malignancies. I began the program for liver stereotactic ablative radiation therapy (SABR) here at UVM, allowing patients access to this important therapy. Regarding public service, I have made two television appearances emphasizing the importance of colorectal screening and research at UVM. I have spoken at multiple patient-oriented venues addressing patient concerns about various malignancies.

TEACHING

FORMAL SCHEDULED CLASSES

Year	Course Title	Course R E	Hours	Number of Learners	Learner Level
2014	Clinical Oncology*	x	12	8	Undergraduate
2015	Clinical Oncology*	x	9	9	Undergraduate
2016	Clinical Oncology*	x	9	9	Undergraduate

R-required; E-elective; Hours-approx. per semester (instruction as per the COM Teaching Academy Portfolio)

*I teach this course to undergraduate students in training to become radiation therapists, and also spend time teaching them in the clinic. - none

POSTGRADUATE AND OTHER COURSES - none

PREDOCTORAL STUDENTS SUPERVISED OR MENTORED

Dates	Name	Program or School	Role	Current Position
2009-2015	Richard Hymas, PhD	Medical Student, Univ. of Utah	Research Mentor/ Faculty Advisor	PGY-4 Radiation Oncology Resident, Beaumont, MI
2010-Present	Samual Francis	Medical Student, Univ. of Utah	Research Mentor/ Faculty Advisor	PGY-2 Radiation Oncology Resident, Univ. of Utah, UT
2015-Present	Nishan Bingham	Medical Student, Univ. of Vermont	Research Mentor	4 th year Medical Student, Univ. of Vermont, VT (Accepted to Anesthesiology Residency at NYU, NY)
2015-Present	David Arsanious	Medical Student, Univ. of Vermont	Research Mentor	2 nd year Medical Student, Univ. of Vermont, VT
2015-Present	Hyunsoo No	Medical Student , Univ. of Vermont	Research Mentor	1 st year Medical Student, Univ. of Vermont, VT

DISSERTATION/THESIS COMMITTEE MEMBERSHIP - none

POSTDOCTORAL FELLOWS AND RESIDENTS DIRECTLY SUPERVISED OR MENTORED

Dates	Name	Residency	Faculty Role	Current Position
2010 – 2012	Amol Ghia, MD	University of Utah, Huntsman Cancer Hospital	Clinical Supervision	MD Anderson Cancer Center, TX (Academic Practice)
2010 – 2012	Ellen Cooke, MD	University of Utah, Huntsman Cancer Hospital	Clinical Supervision	Advanced Cancer Therapies, KS (Private Practice)
2010 – 2013	Michael Montejo, MD	University of Utah, Huntsman Cancer Hospital	Clinical Supervision	Moffitt Cancer Center, FL (Academic Practice)
2010 – 2014	Breanne Terakedis, MD	University of Utah, Huntsman Cancer Hospital	Research /Clinical Supervision	Billings Clinic, MT (Private Practice)
2010 – 2014	Aaron Wagner, MD	University of Utah, Huntsman Cancer Hospital	Clinical Supervision	Cancer Care Northwest, ID (Private Practice)
2010 – 2014	Leechan Andy Chen, MD	University of Utah, Huntsman Cancer Hospital	Research/ Clinical Supervision	Texas Oncology, TX (Private Practice)
2011 – 2014	David Ly, MD, MPA	University of Utah, Huntsman Cancer Hospital	Research/ Clinical Supervision	21 st Century Oncology, AZ (Private Practice)
2012 – 2014	Hilary Bagshaw, MD	University of Utah, Huntsman Cancer Hospital	Clinical Supervision	PGY-5, Stanford University, CA
2012 – 2014	Lindsay Burt, MD	University of Utah, Huntsman Cancer Hospital	Clinical Supervision / Career Advisor	PGY-5, Univ. of Utah, UT (Accepted faculty position at Univ. of Utah)
2013 – 2014	Ned Williams, MD	University of Utah, Huntsman Cancer Hospital	Clinical Supervision	PGY-4, Univ. of Utah, UT

2013 – 2014	Jonathan Frandsen, MD	University of Utah, Huntsman Cancer Hospital	Clinical Supervision	PGY-4, Univ. of Utah, UT
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INFORMAL TEACHING

- 2010-2014 Moderated 9 radiation oncology resident case presentations and gave 11 didactic lectures to the radiation oncology residents.
- 2012 Neurosurgery Case Study and Teaching Conference, University of Utah
“Spinal Radiosurgery”
- 2014 – 2016 Medicine House Staff Educational Lecture, University of Vermont
“Introduction to Radiation Oncology” lecture given approximately 6 times to 8 attendees

FACULTY MENTORED - none

OTHER VISITING FACULTY SUPERVISED - none

INVITED/VISITING PROFESSOR PRESENTATIONS

- 2013 ECOG-ACRIN Fall 2013 Meeting, Melanoma Committee Hollywood, FL
“Optimizing Radiation and Systemic Therapy Interactions in Melanoma Treatment”
- 2013 ECOG-ACRIN Fall 2013 Meeting, Melanoma Core Committee Hollywood, FL
“Radiation Research Opportunities in Melanoma Treatment”

TEACHING AIDS

- I have co-authored chapters for use in resident/faculty education for the books (1) *Radiation Oncology: Imaging and Treatment*; (2) *Radiation Injury*; (3) *Modern Practices in Radiation Therapy*; (4) *Combining Targeted Biological Agents with Radiotherapy*; and (5) *Tumors of the Central Nervous System*.
- For the Society of Surgical Oncology, I authored and annually revise 3 questions for use as board preparation/Continuing Medical Education (CME) credit that are part of the Surgical Oncology Self-Assessment Program.

TEACHING AWARDS AND NOMINATIONS

- 2013 Association of Residents in Radiation Oncology (ARRO) Educator of the Year Award
- Awarded to faculty member as determined by the radiation oncology residents. This was the first time the award was given at the University of Utah since 2009.

SUMMARY OF TEACHING ACTIVITIES

Every medical student or resident whom I have mentored has had at least one publication before they complete their time working with me. To help achieve this success, I schedule routine meetings to ensure their progress. My goal is to foster autonomy in those I mentor, so they are confident in their own ability to create a manuscript from an initial hypothesis. While at the University of Utah, as the official faculty advisor for two medical students my support included writing letters of recommendation

and they both were accepted into highly competitive radiation oncology residency programs. At the University of Utah, I was the faculty member most frequently chosen to help in the preparation and moderation of case presentations given by the residents. The residents chose me as the Educator of the Year in 2014.

I have found numerous avenues to continue my teaching efforts at UVM. As we do not have a radiation oncology residency program, I have continued to work primarily with medical students. I am mentoring a first year student who was awarded a grant that will fund the completion of two retrospective research studies. The data generated will form the basis for a prospective study evaluating watchful waiting for low risk lung cancer, for which we will seek grant funding. I mentored another medical student in the writing of a prospective protocol, who also published a case report. I provide clinical education to radiation therapy undergraduate students, medical students and house staff in numerous disciplines.

RESEARCH AND SCHOLARLY ACTIVITIES

RESEARCH AWARDS AND GRANTS

Ongoing Research Support

American Cancer Society Institutional Research Grant (ACS IRG) 6/1/15 - 5/31/16

“Investigating Kif18A as a therapeutic target for colorectal cancer”

The goal of this project is to test an alternative strategy to target proteins (e.g. Kif18A) with roles during cell division that are not absolutely essential for the process. This novel approach is expected to induce minor cell division defects that limit cancer cell growth and increase their sensitivity to radiation, while limiting toxicity to normal cells.

Role: Co-PI (Co PI: Stumpff J)

Direct costs year 1: \$30,000 for 1 year, renewable x 1 year

Vermont Cancer Center/ Lake Champlain Cancer Research Organization 7/1/15 - 6/30/16
(VCC/ LCCRO) Program Award

“Investigating Kif18A as a therapeutic target for colorectal cancer”

(Co-funding for same project described above.)

Role: Co-PI (Co-PIs: Stumpff J, Howe A)

Direct costs year 1: \$50,000 for 1 year

Northern New England Clinical Oncology Society (NNECOS) Student Research Grant 3/1/2016-2/28/17

“Incidence and Outcomes for Very Low Risk Non-Small Cell Lung Adenocarcinoma”

Due to evidence of a low-risk population of early stage non-small cell lung cancer patients with indolent tumors, the goal of this project is to better characterize a population fit for active surveillance through clinical factors, radiomics, genomics, and liquid biopsies to guide the development of a multi-institutional active surveillance trial.

Role: PI & mentor for Hyunsoo No, Student Lead Investigator

Direct costs year 1: \$2,500 for 1 year

Pending

Genentech

“Radiation Use During Vemurafenib Treatment”

The goal of this this multi-institutional, prospective trial is to evaluate the safety of radiation delivered sequentially with the radiosensitizer vemurafenib to melanoma patients. Life threatening complications from the combination have been noted in the past.

Role: Radiation Oncology Chair (PI: Grossmann KF)

Submitted

Vermont Cancer Center/ Lake Champlain Cancer Research Organization
(VCC/ LCCRO) Program Award

“Needle Torque: a potential tool for the quantification of radiation fibrosis”

The goal of this project is to provide a safe, simple and inexpensive tool for the objective quantification of radiation fibrosis. There is currently no valid and reliable technique for quantifying fibrosis following radiation. The investigators have shown that a device containing the thin needle used for acupuncture can be used as a convenient and minimally invasive tool to measure tissue stiffness.

Role: PI

Gateway for Cancer Research

“A phase I trial of carboxyamidotriazole orotate (CTO) in combination with radiation therapy for patients with newly diagnosed brain metastases”

The proposed study is an open label phase I study combining carboxyamidotriazole orotate (CTO) with either whole brain radiation therapy (WBRT) or stereotactic radiosurgery (SRS) for patients with newly diagnosed brain metastases from solid tumors.

Role: Co-investigator (PI: Thomas AA)

National Institute of Health (NIH) T32 Institutional Training Grant

“Translational Cancer Research Training Grant”

The goal of this grant is to support the enhancement of research training opportunities for pre and postdoctoral fellows to be trained in cancer research.

Role: Junior Co-mentor (PI: Stein JL & Howe A)

COBRE for Translational Cancer Research, National Institute of General Medical Sciences (NIGMS)

“A Novel Strategy for Anti-Mitotic Therapy in Triple Negative Breast Cancer”

The goal of this project is to investigate Kif18A and associated kinesin-like molecular motor proteins as therapeutic targets by testing the effects of their depletion on key tumor-forming properties of triple negative breast cancer cells. This novel approach is expected to induce minor cell division defects that limit cancer cell growth and increase their sensitivity to radiation, while limiting toxicity to normal cells.

Role: Co-Investigator for Project 1 of 4 (Project lead: Stumpff J; Co-PIs: Lian JL & Greenblatt M)

Susan G. Komen Career Catalyst Research Grant - Basic/Translational & Clinical Research

“A novel strategy for anti-mitotic therapy in breast cancer”

The goal of this project is to investigate Kif18A and associated kinesin-like molecular motor proteins as therapeutic targets by testing the effects of their depletion on key tumor-forming properties of triple negative breast cancer cells. This novel approach is expected to induce minor cell division defects that limit cancer cell growth and increase their sensitivity to radiation, while limiting toxicity to normal cells.

Role: Collaborator (PI: Stumpff J)

SCHOLARSHIP

Peer Reviewed Publications

Note: Directly mentored students/residents for projects I led are italicized.

Original Research

1. Kelly J, Damron T, Grant W, **Anker C**, Holdridge S, Shaw S, Horton J, Cherrick I, Spadaro J. Cross-sectional study of bone mineral density in adult survivors of solid pediatric cancers. *Journal of Pediatric Hematology Oncology*. 2005 May; 27(5):248-53. PMID 15891558. (Impact Factor: 0.956)
2. **Anker CJ**, Holdridge SP, Baird B, Cohen H, Damron TA. Ultraporous beta-tricalcium phosphate is well incorporated in small cavitory defects. *Clinical Orthopaedics and Related Research*. 2005 May; (434):251-7. PMID 15864061. (Impact Factor: 2.765)
3. Shah H, **Anker CJ**, Bogart J, Graziano S, Shah CM. Brain: the common site of relapse in patients with Pancoast or superior sulcus tumors. *Journal of Thoracic Oncology*. 2006 Nov; 1(9):1020-2. PMID 17409988. (Impact Factor: 5.282)
4. **Anker CJ**, Cachoeira CV, Boucher KM, Rankin J, Gaffney DK. Does the entire uterus need to be treated in cancer of the cervix? Role of adaptive brachytherapy. *International Journal of Radiation Oncology* Biology*Physics*. 2010 Mar; 76(3):704-12. PMID: 19473779. (Impact Factor: 4.258)
5. **Anker CJ**, Wang B, Tobler M, Chapek J, Hitchcock YJ, Shrieve DC, Salter BJ. Evaluation of fluence-smoothing feature for three IMRT planning systems. *Journal of Applied Clinical Medical Physics*. 2010 Apr; 11(2):33-61. PMID: 20592692. (Impact Factor: 1.172)
 - In the first-ever published manuscript evaluating how radiation fluence smoothing functions affect radiation plan quality, I directed the analysis of hundreds of radiation therapy plans to determine the smoothing parameters that result in the optimal balance between radiation plan conformality and treatment efficiency. This project established my proficiency in performing and evaluating radiation physics research.
6. **Anker CJ**, Hymas RV, Hazard LJ, Boucher K, Jensen RL, Shrieve DC. Stereotactic radiosurgery eligibility and selection bias in the treatment of glioblastoma multiforme. *Journal of Neuro-Oncology*. 2010 Jun; 98(2):253-63. PMID: 20383558. (Impact Factor: 3.07)
7. Wang B, Rassiah-Szegedi P, Zhao H, Huang YJ, Sarkar V, Szegedi M, Kokeny KE, **Anker CJ**, Shrieve DC, Salter B. Initial experience and clinical comparison of two image guidance methods for SBRT treatment: 4DCT versus respiratory-triggered imaging. *Journal of Applied Clinical Medical Physics*. 2011 Jan; 12(3):257-67. PMID: 21844853. (Impact Factor: 1.172)
8. Tunceroglu A, Park JH, Balasubramanian S, Poppe M, **Anker CJ**, Poplin EA, Moss RA, Yue N, Carpizo D, Gannon C, Haffty BG, and Jabbour SK. Dose-Painted Intensity Modulated Radiation Therapy Improves Local Control for Locally Advanced Pancreas Cancer. *ISRN Oncology*. 2012 Oct; Vol. 2012, Article ID 572342:1-7. PMID: 23119186. (Impact Factor: N/A)
9. Hazard L, Jones K, Shaban A, **Anker C**, Scaife C, Weis J, Mulvihill S. Prospective Phase I Study of Capecitabine and Oxaliplatin Concurrent with Radiation Therapy for the Treatment of Locally Advanced Pancreatic Adenocarcinoma, and Retrospective Comparison to Concurrent 5-Fluorouracil/Radiation and Gemcitabine/Radiation. *Journal of Gastrointestinal Cancer*. 2012 Jun; 43(2):258-66. PMID: 21243531. (Impact Factor: 0.38)

10. Andtbacka RH, Donaldson MR, Bowles TL, Bowen GM, Grossmann K, Khong H, Grossman D, **Anker C**, Florell SR, Bowen A, Duffy KL, Leachman SA, Noyes RD. Sentinel Lymph Node Biopsy for Melanoma in Pregnant Women. *Annals of Surgical Oncology*. 2013 Feb; 20(2):689-96. PMID 23054111. (*Impact Factor: 3.93*)
11. Francis SR, **Anker CJ**, Wang B, Williams G, Adler DG, Hilden K, Shrieve DC, Salter BJ. Self-expanding stent effects on radiation dosimetry in esophageal cancer. *Journal of Applied Clinical Medical Physics*. 2013 July; 14(4):121-135. PMID: 23835387. (*Impact Factor: 1.172*)
 - When developing radiation treatment plans for esophageal cancer patients, it seemed more challenging to keep heart and lung doses within a safe level when an esophageal stent was in place due to expansion of the cancer target volume. I mentored a medical student to help answer the question of how stents affect radiation dosimetry, which required developing complex methods through collaborations with radiation physicists.
12. **Anker CJ**, O'Donnell K, Boucher K, Gaffney DK. Effect of brachytherapy technique and patient characteristics on cervical cancer implant dosimetry. *Medical Dosimetry*. 2013 Winter; 38(4):430-5. PMID 23973016. (*Impact Factor: 0.760*)
13. Terakedis BE, **Anker CJ**, Bowen GM, Andtbacka RHI, Sause WT, Grossmann KF, Bowles TL, Leachman SA, Noyes RD, Hitchcock YH, Shrieve DC. Patterns of failure and predictors of outcome in cutaneous malignant melanoma of the scalp. *Journal of the American Academy of Dermatology*. 2014 Mar. 70(3):435-42. PMID 24373782. (*Impact Factor: 4.449*)
 - Through collaborations with Intermountain Health Care (private hospital network in Utah) and the University of Utah to combine patients within a single database, I mentored a resident to perform the largest patterns-of-failure analysis of scalp melanoma patients ever described, which was published in a premier dermatology journal.
14. Ghia AJ, Tward JD, **Anker C**, Boucher KM, Jensen RL, Shrieve DC. Radiosurgery for melanoma brain metastases: the impact of hemorrhage on local control. *Journal of Radiosurgery and Stereotactic Body Radiation Therapy*. 2014; 3(1): 43-50. PMID: N/A. (*Impact Factor: N/A*)
15. Terakedis BE, Hunt JP, Buchmann LO, Avizonis VN, **Anker CJ**, Hitchcock YJ. The Prognostic Significance of Facial Nerve Involvement in Carcinomas of the Parotid Gland. *American Journal of Clinical Oncology*. 2014 Dec [Epub ahead of print] PMID: 25503431. (*Impact Factor: 2.611*)
16. Chen LA, **Anker CJ**, Hunt JP, Buchmann LO, Grossmann KF, Boucher K, Fang LM, Shrieve DC, Hitchcock YJ. Clinical Outcomes Associated with Evolving Treatment Modalities and Radiation Techniques for Base-of-Tongue Carcinoma: Thirty Years of Institutional Experience. *Cancer Medicine*. 2015 May;4(5):651-60. PMID: 25620682. (*Impact Factor: 2.5*)
17. Ly D, Bagshaw H, **Anker CJ**, Tward JD, Grossmann KF, Jensen RL, Shrieve DC. Local Control after Stereotactic Radiosurgery (SRS) for Brain Metastases in Melanoma Patients with and without BRAF Mutation and Treatment. *Journal of Neurosurgery*. 2015 Aug;123(2):395-401. PMID: 25768829. (*Impact Factor: 3.74*)
18. **Anker CJ**, Hymas RV, Ahluwalia R, Kokeny KE, Avizonis V, Boucher KM, Neumayer LA, Agarwal JP. The Effect of Radiation on Complication Rates and Patient Satisfaction in Breast Reconstruction using Temporary Tissue Expanders and Permanent Implants. *The Breast Journal*.

2015 May-June; 21(3):233-40. PMID: 25772601. (*Impact Factor: 1.411*)

National Guidelines

1. Coit DG, Andtbacka R, **Anker CJ**, Bichakjian CK, Carson WE 3rd, Daud A, Dilawari RA, Dimaio D, Guild V, Halpern AC, Hodi FS Jr, Kelley MC, Khushalani NI, Kudchadkar RR, Lange JR, Lind A, Martini MC, Olszanski AJ, Pruitt SK, Ross MI, Swetter SM, Tanabe KK, Thompson JA, Trisal V, Urist MM; National Comprehensive Cancer Network. Melanoma. *Journal of the National Comprehensive Cancer Network*. 2012 Mar; 10(3):366-400. PMID 22393197. (*Impact Factor: 4.237*)
 - Initiated creation of and annually revised “Principles of Radiation Therapy” section for the NCCN guidelines in consultation with the University of Utah melanoma team and through collaboration with the entirety of the NCCN committee. Updated text portions of the NCCN guidelines pertaining to radiation to reflect the latest literature.
2. Coit DG, Andtbacka R, **Anker CJ**, Bichakjian CK, Carson WE 3rd, Daud A, Dimaio D, Fleming MD, Guild V, Halpern AC, Hodi FS Jr, Kelley MC, Khushalani NI, Kudchadkar RR, Lange JR, Lind A, Martini MC, Olszanski AJ, Pruitt SK, Ross MI, Swetter SM, Tanabe KK, Thompson JA, Trisal V, Urist MM, McMillian N, Ho M. Melanoma, version 2.2013: featured updates to the NCCN guidelines. *Journal of the National Comprehensive Cancer Network: Melanoma*. *Journal of the National Comprehensive Cancer Network*. 2013 Apr; 11(4):395-407. PMID 23584343. (*Impact Factor: 4.237*)
3. Coit DG, Thompson JA, Andtbacka R, **Anker CJ**, Bichakjian CK, Carson WE 3rd, Daniels GA, Daud A, Dimaio D, Fleming MD, Gonzalez R, Guild V, Halpern AC, Hodi FS Jr, Kelley MC, Khushalani NI, Kudchadkar RR, Lange JR, Martini MC, Olszanski AJ, Ross MI, Salama A, Swetter SM, Tanabe KK, Trisal V, Urist MM, McMillian NR, Ho M. Melanoma, version 4.2014. *Journal of the National Comprehensive Cancer Network*. 2014 May; 12(5):621-9. PMID: 24812131. (*Impact Factor: 4.237*)

Case Reports

1. **Anker CJ**, Ribas A, Grossmann AH, Chen X, Narra KK, Akerley W, Andtbacka RHI, Noyes RD, Shrieve DC, Grossmann KF. Severe liver and skin toxicity following radiation and vemurafenib in metastatic melanoma. *Journal of Clinical Oncology*. 2013 June; 31(17):e283-7. PMID 23650406. (*Impact Factor: 18.428*)
2. **Anker CJ**, Dechet C, Isaac JC, Akerley W, Shrieve DC. Small-cell carcinoma of the prostate. *Journal of Clinical Oncology*. 2008 Mar; 26(7):1168-71. PMID: 18309954. (*Impact Factor: 18.428*)
3. Khan F, **Anker CJ**, Garrison G, Kinsey CM. Endobronchial ultrasound guided-transbronchial needle injection (EBUS-TBNI) for local control of recurrent non-small cell lung cancer. *Annals of the American Thoracic Society*. 2015 Jan; 12(1):101-4. PMID: 25513850. (*Impact Factor: N/A*)
4. Bingham N, Wallace HJ, Monterroso J, Verschraegen C, Waters BL, **Anker CJ**. Urothelial Superior Vena Cava Syndrome with Limited Response to Radiation Therapy. *Case Reports in Oncological Medicine*. Volume 2015, Article ID 513685: 1-4. PMID: 26634162. (*Impact Factor: N/A*)

In Press Review Article

1. **Anker CJ**, Grossmann KF, Atkins MB, Suneja G, Tarhini AA, Kirkwood JM. Avoiding Severe Toxicity from Combined BRAF Inhibitor and Radiation Treatment: Consensus Guidelines from the Eastern Cooperative Oncology Group (ECOG). *International Journal of Radiation Oncology* Biology*Physics*. In Press 2016. (*Impact Factor: 4.258*)
 - Meticulously reviewed cases of toxicity associated with the combination of radiation and BRAF inhibitors documented in 34 publications to develop consensus guidelines endorsed by ECOG. This publication in the premier journal for radiation oncology will help future patients avoid severe and potentially fatal toxicities that may arise from the combination.

NON-PEER REVIEWED PUBLICATIONS AND OTHER CREATIVE ACTIVITIES

Review Articles

1. **Anker CJ**, Shrieve DC. Basic Principles of Radiobiology Applied to Radiotherapy of Benign Skull Base Tumors. *Otolaryngologic Clinics of North America*. 2009 Aug; 42(4):601-21. PMID: 19751867. (*Impact Factor: 1.49*)

Books and Chapters

1. **Anker CJ**, Gaffney DK. Targeted Therapies in Cervical Cancer: In: Small W, ed. *Combining Targeted Biological Agents with Radiotherapy*. New York: Demos Medical Publishing, 2008:185-200.
2. **Anker CJ**, Gaffney DK. Ovary. In: Shrieve DC, Loeffler JS, eds. *Radiation Injury*. Philadelphia: Lippincott Williams & Wilkins, 2011:365-84.
3. Tward JD, **Anker CJ**, Gaffney DK, Bowen GM. Radiation Therapy and Skin Cancer. In: Natanasabapathi G, ed. *Modern Practices in Radiation Therapy*. Rijeka: InTech, 2012:207-46.
4. **Chen LA**, **Anker CJ**. Gastrointestinal System: Anus. In: Gaffney DK, ed. *Radiation Oncology: Imaging and Treatment, 1st ed.* Salt Lake City: Amirsys Publishing, Inc., 2012:5-78 – 5-103.
5. **Chen LA**, **Anker CJ**. Gastrointestinal System: Colon & Rectum. In: Gaffney DK, ed. *Radiation Oncology: Imaging and Treatment, 1st ed.* Salt Lake City: Amirsys Publishing, Inc., 2012:5-48 – 5-77.
6. **Anker CJ**, Shabaan A. Gastrointestinal System: Esophagus. In: Gaffney DK, ed. *Radiation Oncology: Imaging and Treatment, 1st ed.* Salt Lake City: Amirsys Publishing, Inc., 2012:5-2 – 5-29.
7. **Anker CJ**, Fogarty G. Melanoma. In: Gaffney DK, ed. *Radiation Oncology: Imaging and Treatment, 1st ed.* Salt Lake City: Amirsys Publishing, Inc., 2012:8-62 – 8-91.
8. **Ly D**, **Anker CJ**, Schmidt MH. Novalis Spinal Radiosurgery. In: Hayat MA, ed. *Tumors of the Central Nervous System, Volume 11*. New York: Springer, 2014: 223-236.

Other Scholarly Publications - none**Commentary/Editorial**

1. **Anker CJ, Wo JY.** Personalized Medicine in Radiation Oncology--A Work in Progress. *International Journal of Radiation Oncology* Biology*Physics*. 2015 Jul;92(4):843-5. (*Impact Factor: 4.258*)
 - Invited to write commentary on article published in IJROBP, describing present and future possibilities of personalized medicine within radiation oncology.

Abstracts - none**Patents Issues for Pending - none****Other Creative Activities - none****Quality Improvement and Patient Safety Activities - none**SUMMARY OF SCHOLARLY ACTIVITIES

The main focus of my research pertains to personalized and precision medicine. Experience in protocol design in part comes from my work as a co-investigator developing a project to prospectively evaluate radiation and vemurafenib, a radiosensitizer that targets tumors harboring a certain mutation, for melanoma patients. This multi-institutional trial will be activated shortly pending final budget approval from Genentech. I will serve as the lead radiation quality assurance representative for the trial, which will involve reviewing all radiation plans. In another project, through collaborations with basic scientists here at UVM, we hypothesize silencing the KIF18A gene may radiosensitize cancer cell lines that have a fragile mitotic spindle. We have been awarded two sources of grant funding to support this project for colorectal cancer and grants to pursue similar experiments for breast cancer have been submitted. Our eventual goal is to develop a drug against the KIF18A target, and bring this potential radiosensitizer to prospective clinical trials. Additional grant funding supports my mentorship of a student led project to better characterize an early stage lung cancer population fit for active surveillance, and we plan to determine clinical, radiomic, and genomic factors that could guide development of a multi-institutional active surveillance trial. I have co-authored numerous publications on an array of topics, many of which focus on radiation physics and how to optimize the therapeutic ratio through improvements in radiotherapy technique.

INVITED PRESENTATIONS**POSTER RESEARCH PRESENTATIONS**

1. **Anker CJ, Holdridge S, Cohen H, Baird B, Damron TA.** Ultraporous beta-tricalcium phosphate as a bone void filler has intermediate resorption properties. *International Society of Limb Salvage*, Rio de Janeiro, Brazil, Sep 2003.
2. **Anker CJ, Hazard LJ, Macdonald OK.** The prognostic implication of clinical and pathologic factors in primary anal carcinoma. *American Society for Radiation Oncology*, Los Angeles, California, Oct 2007.

3. **Anker CJ**, Tobler M, Wang B, Hitchcock YJ, Shrieve DC, Salter BJ. Optimization of IMRT fluence-map smoothing can result in improved IMRT plans. *American Association of Physicists in Medicine*, Houston, Texas, Jul 2008.
4. **Anker CJ**, Cachoeira CV, Boucher K, Rankin J, Gaffney DK. Adaptive high dose rate brachytherapy for carcinoma of the cervix. *American Society for Radiation Oncology*, Boston, Massachusetts, Sep 2008.
5. **Anker CJ**, Hymas RJ, Hazard LJ, Jensen RL, Shrieve DC. Effect of treatment volume on patterns of failure in glioblastoma multiforme. *American Society for Radiation Oncology*, Chicago, Illinois, Nov 2009.
6. **Anker CJ**, O'Donnell K, Boucher K, Gaffney DK. Does anesthesia during cervical cancer brachytherapy improve implant quality? *American Society for Radiation Oncology*, San Diego, California, Nov 2010.
7. Terakedis BE, **Anker CJ**, Bowen GM, Andtbacka RHI, Sause WT, Grossmann KF, Bowles TL, Leachman SA, Noyes RD, Hitchcock YH, Shrieve DC. Review of Patients with Cutaneous Melanoma of the Scalp Treated with Local Excision with or without Radiation Therapy. *American Society for Radiation Oncology*, Miami, Florida, Oct 2011.
8. Francis SR, **Anker CJ**, Wang B, Williams G, Adler DG, Hilden K, Shrieve DC, Salter BJ. Effect of stents on radiation dosimetry for esophageal cancer. *Gastrointestinal Cancers Symposium*, San Francisco, California, Jan 2012.
9. Hymas RV, **Anker CJ**, Ahluwalia R, Agarwal JP, Kokeny KE, Avizonis V, Boucher KM, Neumayer LA. Effect of Radiation post Tissue Expansion on Cosmesis and Complication Rates in Breast Reconstruction using Temporary Tissue Expanders and Permanent Implants. *American Radium Society*, Las Vegas, Nevada, May 2012.
10. Wang B, Sarkar V, **Anker CJ**, Streitmatter S, Rassiah-Szegedi P, Zhao H, Huang YJ, Szegedi M, Salter BJ. Ultrasound image guidance for abdominal tumors. *American Society for Radiation Oncology*, Boston, Massachusetts, Oct 2012.
11. Chen AL, **Anker CJ**, Hunt J, Bentz BG, Buchmann L, Grossmann K, Fang LC, Shrieve DC, Hitchcock Y. Clinical Outcomes Associated with Evolving Treatment Modalities and Radiation Techniques for Base-of-Tongue Carcinoma. *American Society for Radiation Oncology*, Atlanta, Georgia, Sep 2013.
12. Ly D, **Anker CJ**, Tward JD, Grossmann KF, Jensen RL, Shrieve DC. Local Control After Stereotactic Radiosurgery (SRS) for Brain Metastases (BM) in Melanoma Patients With and Without BRAF Mutation and Treatment. *American Society for Radiation Oncology*, Atlanta, Georgia, Sep 2013.
13. Francis SR, **Anker CJ**, Adler DG, Hilden K, Shrieve DC. The Effect of Stents on Acute Toxicity in Esophageal Cancer. *American Society for Radiation Oncology*, Atlanta, Georgia, Sep 2013.
14. Cohen AL, **Anker CJ**, Hall B, Shrieve DS, Salzman K, Jensen R, Colman H. Phase 1 study of repeat radiation, minocycline, and bevacizumab in patients with recurrent glioma (RAMBO).

American Society of Clinical Oncology, Chicago, Illinois, May 2014.

15. **Anker CJ**, Sarkar V, Bagshaw HP, Dritto M, Salter BJ, Boucher K, Jensen RL, Shrieve DC. Additional treatment margin beyond edema provides no benefit in the radiation of glioblastoma multiforme. *American Society for Radiation Oncology*, San Francisco, California, Sep 2014.
16. **Anker CJ**, Bagshaw HP, Sarkar V, Dritto M, Boucher KM, Jensen RL, Shrieve DC. Impact of Subventricular Zone Dose and Relationship to Glioblastoma Multiforme Tumor Location on Outcomes. *American Society for Radiation Oncology*, San Antonio, Texas, Oct 2015.

ORAL RESEARCH PRESENTATIONS

National

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| 2001 | Luo D, Gemeinhart RA, Anker CJ , Saltzman WM. Silica particles for enhancement of gene delivery. <i>Society for Biomaterials Annual Meeting</i> | St. Paul, MN |
| 2004 | Kelly J, Grant W, Damron TA, Anker CJ , Holdridge S, Shaw S, Cherrick I, Spadaro J. Cross-sectional study of bone mineral density in adult survivors of solid pediatric cancers. <i>Annual Meeting of the American Academy of Orthopedic Surgeons</i> | San Francisco, CA |
| 2011 | Anker CJ , Hymas RV, Ahluwalia R, Agarwal JP, Kokeny KE, Avizonis V, Boucher KM, Neumayer LA. The effect of radiation on cosmesis and complication rates in breast reconstruction using temporary tissue expanders and permanent implants. <i>American Radium Society</i> | West Palm Beach, FL |
| 2014 | Huang YJ, Anker CJ , Sarker V, Rassiah-Szegedi P, Zhao H, Szegedi M, Huang L, Salter BJ. Skin Lesion Treatment Using High-Dose-Rate Brachytherapy with HAM Applicator: EQD2Gy Comparison with Electron Beam Radiotherapy. <i>American Brachytherapy Society</i> | San Diego, CA |
| 2014 | Suntharalingam M, Winter K, Ilson D, Dicker AP, Kachnic LA, Konski AA, Chakravarthy B, Anker CJ , Thakrar H, Horiba N, Kavadi V, Deutsch M, Raben A, Roof M, Videtic G, Pollack J, Safran H, Crane CH. The Initial Report of Local Control on RTOG 0436: A Phase III Trial Evaluating the Addition of Cetuximab to Paclitaxel, Cisplatin, and Radiation for Patients with Esophageal Cancer Treated without Surgery. <i>American Society for Radiation Oncology</i> | San Francisco, CA |

International

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| 2005 | Anker CJ , Shah CM, Bogart J, Graziano S, Shah H. The incidence of brain metastases and outcomes in patients with superior sulcus/Pancoast tumors. <i>American Radium Society</i> | Barcelona, Spain |
| 2009 | Anker CJ , Hymas RV, Jensen RL, Hazard LJ, Shrieve DC. Stereotactic radiosurgery eligibility and selection bias in the | Seoul, South Korea |

treatment of glioblastoma multiforme. *International Stereotactic Radiosurgery Society*

INVITED DIDACTIC PRESENTATIONS

Regional

2009	Cancer Support Group Volunteer at Utah Cancer Wellness House “Overview of Radiation Oncology”	Salt Lake City, UT
2010	Colon Cancer Alliance (CCA), University of Utah “Advances in Radiation Therapy Techniques for Colorectal Cancer”	Salt Lake City, UT
2011	Gastrointestinal Grand Rounds, University of Utah “Radiation Therapy Indications and Techniques for Rectal Cancer”	Salt Lake City, UT
2013	Hepatobiliary Patient Advocacy Meeting, University of Utah “Advances in Radiation Therapy Techniques for Liver Cancer”	Salt Lake City, UT
2014	American Academy of Professional Coders, Burlington, Vermont “Radiation Oncology: The Patient Experience & Behind the Scenes”	Burlington, VT
2014	Vermont Cancer Center Joint Programs Meeting: Molecular Mechanisms of Malignancy and Cancer control and Population Health Sciences “Collaborative Research Opportunities with Radiation Oncology”	Burlington, VT
2015	Community Clerkship, University of Vermont Cancer Center “Personalized Oncology Care: Chemotherapy, Radiation, and Radiosensitizers”	Burlington, VT