Combined treatment (CT) and presence of a peripheral tumor impair memory
Acknowledgements

Mentorship & Mouse Project Development

Jacob Raber, PhD
Michael Gough, PhD
Charles Thomas, MD

Mentorship & Human Project Development

Jacob Raber, PhD
Kerri Winters, PhD
Betty Yu
Charles Thomas, MD

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Kristina Young, MD, PhD
David Friedman
Eileen Torres
Sydney Weber
Blair Stewart
Tessa Marzulla
Damian Zuloaga PhD

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- Collins Medical Trust
- RSNA Medical Student Research Grant
- Tartar Research Fellowship
- OSLER TL1 Short Term Research Grant
- OHSU Student Senate Funding
- Moss-Stevens Radiation Medicine Fund
- Development account J. Raber
RESTIMULATION OF TUMOR-SPECIFIC T CELLS USING RADIOTHERAPY IN A MURINE T CELL ANERGY MODEL

Josh Walker, MD/PhD, OHSU Radiation Medicine
Limited Use of Adjuvant Therapy in US Patients with Resected Gallbladder Cancer despite a Strong Association with Survival: Analysis of the National Cancer Data Base

Timur Mitin, MD PhD
C. Kristian Enestvedt, MD
Ahmedin Jemal, MD
Helmneh Sineshaw, MD
Prediction Model for Estimating the Survival Benefit of Adjuvant Radiotherapy for Gallbladder Cancer

National Trends in the Management and Survival of Surgically Managed Gallbladder Adenocarcinoma Over 15 years: A Population-Based Analysis

Nomogram for Predicting the Benefit of Adjuvant Chemoradiotherapy for Resected Gallbladder Cancer
Multi-modality therapy for locally-advanced esophageal cancer

- Surgery has been the cornerstone of definitive therapy.
- Multiple studies have tested the value of the addition of chemoradiation to improve LC and OS.
- Multimodality therapy has rapidly become the standard of care.
- Multiple RCT and meta-analyses showing better OS.

Lepper, JCO, 2008.
Funding sources and acknowledgements

- ASCO Young Investigator Award
- Radiological Society of North America (RSNA) Seed Grant
- Daira Melendez
- Carol Halsey
- Patrick McLaren
- Sharlene D’Souza
- Brintha Enestvedt
- Radiation Medicine nurses
Differential radiation dose-specific microRNA regulation in colorectal cancer

Shushan Rana, MD
PGY-4 Radiation Medicine Resident
Anand Lab
microRNAs and radiation

Wright et al. Front Oncol 2014

Anand Lab 2014
Research Team

Cell, Developmental & Cancer Biology

Sudarshan Anand
Cristina Espinosa
Namita Chatterjee
RaeAnna Wilson
Rebecca Ruhl
Clay Hudson
Shushan Rana

Anand Lab

Radiation Medicine

Charles Thomas
Enhanced delivery of antisense oligonucleotides into cancer cells using sublethal dose of radiation to silence MGMT

NAME: Prakash Ambady, M.D.

DEPARTMENT: Neurology,
Blood brain barrier & Neuro-Oncology program, OHSU

TITLE: Assistant Professor

DEGREE, INSTITUTION AND YEAR: MBBS, Pondicherry University, 2003

SPECIALTY TRAINING: Neurology; Drexel University College of Medicine, 2012
Neuro-Oncology; Johns Hopkins University, 2013
National Institutes of Health, 2014

CURRENT AREAS OF EXPERTISE: Neuro-Oncology
Applications of Inorganic Nanoparticles in Radiation Medicine

October 1st, 2016

10th Annual Research Retreat Department of Radiation Medicine

Anna Brown, Post Doctoral Scholar
Ph.D. Portland State University 2013

PI: Conroy Sun, Assistant Professor

Oregon State University/Oregon Health and Science University
College of Pharmacy
Future Directions

- Biological clearance metal nanoparticles
- Radiation dose enhancement effects
- Radiation responsive materials
- Spectral Molecular Imaging (SMI) contrast agents

Fellowships applied for:
PhRMA (DSPE-PEG biocomatibility)
Burroughs Wellcome Fund (heavy metal nanoparticles)

Manuscripts: Anna Brown, Marc Kai, Allison DuRoss, Conroy Sun
Synthesis and biocompatibility of DSPE-PEG micellular platinum nanoparticles in preparation
Precision Oncology
A Road Map, In Brief...

Annual Research Retreat (10/1/16)
Reid F. Thompson
(MD PhD @ Einstein, 2011; RadOnc residency @ Penn 2016)
Oregon Health & Science University / Portland VA Medical Center
Assistant Professor
Dept. of Radiation Medicine, Computational Biology
Pharmacogenomics → Personalized Medicine

Cancer patients with e.g. colon cancer

Therapy

Effect  No effect  Adverse effects

Blood, DNA, urine and tissue analysis

Biomarker diagnostics

Cancer patients with e.g. colon cancer

Effect
Opportunities @ the VA

Enormous, integrated clinical database
- >8 million veterans
- >150 hospitals, ~1000 clinics
- >20 years of EMR data
- Comprehensive health information
  - Labs, imaging, medications, procedures, diagnoses, observations/outcomes

Million Veterans Program (MVP)
- Massive biorepository
- Genome-scale genetic data
- Extensive phenotypic data
  - VistA
  - Questionnaires (e.g. lifestyle)
- Re-contact potential (follow-up)
Million Veterans Program (MVP)
- Massive biorepository
- Genome-scale genetic data
- Extensive phenotypic data
  - VistA
  - Questionnaires (e.g. lifestyle)
- Re-contact potential (follow-up)
Local Antigen in Non-Lymphoid Tissue Promotes Resident Memory CD8+ T cell Formation During Viral Infection

Jeff Nolz
Department of Molecular Microbiology and Immunology
Tissue-Resident Memory CD8+ T cells

- Have been identified in a number of non-lymphoid tissues such as the skin, gut, lung, and female reproductive tract
- Do Not re-enter the circulation following the resolution of infection
- Provide robust protection against re-infection
- Vaccines, Host Defense, Atopic Dermatitis, and Contact Hypersensitivity
Acknowledgements

Nelz Lab
Present Members
Jana Monster
Jossef Osborn

Past Members
Tahsin Khan
Gus Kilgour

KNIGHT CANCER INSTITUTE
Oregon Health & Science University

Medical Research Foundation
Detection of Novel Circulating Tumor Cell Populations in Cancer Patients

Vidyta Perera
Bornstein Lab
Department of Radiation Medicine
Portland State University 2015 (MSc)
Microbiology, Molecular Biology
Future Directions

- Correlate Number of CTCs (CD45+ and CD45-) with treatment outcome

Longitudinal study
Ackowledgments

Wong Lab
• Melissa Wong
• Charlie Gast
• Laura Riegler
• Mark Schmidt
• Nick Smith
• John Swain
• Luai Zarour

Bornstein Lab
• Sophia Bornstein
• Joanna Filopoulos

Department of Radiation Medicine
• Dr. Charles R Thomas Jr
• Arthur Hung, MD
• Charlotte Kubicky MD PhD
• John Holland MD
• Jerry Jaboin MD PhD
Genetically Engineered Mouse Models for Studying Radiation Biology

Phuoc T. Tran

October 1, 2016
Tran Lab Research Program

Genetically Engineered Mouse Models (GEMMs)

- Metastasis
- Liver/Pancreatic Cancer
- Tumor Microenvironment
- Prostate Cancer
- Treatment Resistance
- Biomarkers

- Ongoing Cancer
Christie Binder
Radiation Medicine

STUDY CONCEPT: Urine miRNA Biomarkers for HCC

MD, PhD, Tufts University, PGY-3
Checkpoint Adaptation in Rhabdomyosarcoma

Narandra Bharathy
PhD, National University of Singapore, 2013
Specialty Training: Skeletal Muscle Biology
Current area of expertise: Pediatric Cancer Biology
Checkpoint Adaptation in Rhabdomyosarcoma

NarendraBharathy
PhD, National University of Singapore, 2013
Specialty Training: Skeletal Muscle Biology
Current area of expertise: Pediatric Cancer Biology
Pax3:Foxo1a facilitates G2/M checkpoint adaptation

Kikuchi et al, 2014
empowering phase II: avatar army

ENT 1, 2.5 or 5 mg/kg po QD
VCR .5, .75, or 1 mg/kg IP Q7D

<table>
<thead>
<tr>
<th>RMS Model</th>
<th>Alias</th>
<th>Histology</th>
<th>Harvest site</th>
<th>Disease stage</th>
<th>Diagnosis</th>
<th>Age</th>
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<td>POS-10107</td>
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<td>lung</td>
<td>III</td>
<td>first diagnosis</td>
<td>47</td>
<td>male</td>
</tr>
</tbody>
</table>
Prognostic implications of skeletal muscle mass depletion in head and neck cancer

Aaron Grossberg, MD, PhD
Resident Physician, PGY-4
Department of Radiation Oncology
MD Anderson Cancer Center
Adjunct Research Instructor
Department of Radiation Medicine
Oregon Health & Science University

KNIGHT RESEARCH APPL: None
KNIGHT SHARED RESOURCES: None
DEGREE, INSTITUTION AND YEAR: MD, PhD OHSU 2013
SPECIALTY TRAINING: Radiation Oncology
CURRENT AREAS OF EXPERTISE: Cachexia, Sarcopenia, Fatigue, Neuroinflammation
Prognostic implications of skeletal muscle mass depletion in head and neck cancer

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KNIGHT RESEARCH APPT: None
KNIGHT SHARED RESOURCES: None
DEGREE, INSTITUTION AND YEAR: MD, PhD OHSU 2013
SPECIALTY TRAINING: Radiation Oncology
CURRENT AREAS OF EXPERTISE: Cachexia, Sarcopenia, Fatigue, Neuroinflammation
Optical Coherence Tomography Angiography (OCTA) for eyes with intraocular tumors

Alison H. Skalet, MD PhD
Assistant Professor of Ophthalmology
Adjunct Assistant Professor of Radiation Medicine

University of Pennsylvania School of Medicine, MSTP, 2006

Ocular oncology and pathology
Optical Coherence Tomography
Collaborators

- COOL Lab
  - David Huang, Yan Li, Yali Jia, Liang Liu
  - [http://www.coollab.net](http://www.coollab.net)
- Radiation medicine: Charles Thomas, Arthur Hung
- Ophthalmology: David Wilson
CREDITS AND FUNDING

Collaborating investigators:
Charles R. Thomas, Jr, MD
Sara J. Walker, PhD

Funding:
Time and other resources for this project are funded by the OHSU Department of Radiation Medicine.

Resources:
1. NCI Website: http://www.cancer.gov/about-cancer/what-is-cancer/statistics
BACKGROUND: PSYCHOLOGICAL STATE/TRAIT AND SPIRITUAL WELL-BEING

- Change in psychological state (i.e., current anxiety, depression, etc.) is common among people with cancer.
  - E.g., depression during treatment associated with:
    - Lower health-related quality of life
    - Higher health resource utilization and healthcare costs
    - Higher functional impairment

- Personality trait factors also play role in health and QOL.
  - "Big five" personality traits: Neuroticism/Emotional Instability, Extraversion, Openness, Agreeableness, Conscientiousness
  - High Benzodiazepine use, but positive health outcomes with low and normal Benzodiazepine use associated with improved quality of life.

- Spiritual well-being
  - Significant associations with QOL and coping in life-threatening illness
  - Receiving spiritual support from one's medical team associated with improved QOL

References: Van et al., 2003; Ilbawi et al., 2010; Andrade et al., 2002; Harrington et al., 2010; Hardt et al., 2010; Kyselka et al., 2010; Beauchesne et al., 2013; Tew-Kew et al., 2014; Sassa et al., 2009; 2010; School et al., 2020; Zane et al., 2013
CO-INVESTIGATORS AND ACKNOWLEDGEMENTS

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- Charles Thomas, Jr., MD
  Professor & Chair, Department of Radiation Medicine
  OHSU Knight Cancer Institute
- Jeffrey Robinson, PhD
  Professor & Chair, Department of Communications
  Portland State University
- Biostatistician: Yiyi Chen, PhD
  Assistant Professor, Department of Public Health Admin.
  OHSU Knight Cancer Institute

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Jo Price  KJ Paik  Amy Leatherwood
Daphne Baracena  Carrie North  Feather Coates
Ramon Sison  Bonnie Luedloff  Sole Avila
FUTURE DIRECTIONS

- Abstracts to be submitted for poster/presentation:
  - ASCO Cancer Survivorship Symposium, January 2017

- Manuscripts in preparation:
  - Pre-treatment state/trait associations with illness-related stigma
  - Role of pre-treatment depression and anxiety on post-treatment QOL

- Collaborations with survivorship investigations
  - Effect of premorbid PTSD on post-treatment service utilization and QOL

- Long-term goals:
  - Investigate/understand/address the role of cognitive functioning in QOL, treatment satisfaction, adherence
  - Investigate/understand/address the spiritual needs
  - PCORI mechanism, foundation funding

MEANING-CENTERED GROUP PSYCHOTHERAPY FOR PATIENTS WITH ADVANCED CANCER

WILLIAM S. BREITBART
SHANNON POPITO

OXFORD
From Tumor Quantification & Assessment toward Minimization of Normal Tissue Injury
Figure 2. DCE-MRI Detects Focal Vascularity Changes During EBRT. Evaluation of DCE-MRI acquired $K_{\text{trans}}$ across the entire mandibular volume allows for identification of geographically distinct perturbations which can then be correlated to the dosimetric map for each individual patient. (A) Arrows in top and bottom rows identify the area of altered $K_{\text{trans}}$. Middle row demonstrates no appreciable change in $K_{\text{trans}}$ across the entire mandibular volume regardless of administered EBRT dose. (B) Arrows in top and bottom rows identify the area of altered $V_e$. Middle row demonstrates no appreciable change in $V_e$ across the entire mandibular volume regardless of administered EBRT dose. Panels A and B represent distinct patients.