

# Stanford

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## Edward Graves

Associate Professor of Radiation Oncology (Radiation Physics) and, by courtesy, of Radiology (Molecular Imaging Program at Stanford)

Radiation Oncology - Radiation Physics

NIH Biosketch available Online

Curriculum Vitae available Online

### CONTACT INFORMATION

- **Administrative Contact**

Micah Kelly - Administrative Associate 3

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**Tel** 6507364757

### Bio

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### ACADEMIC APPOINTMENTS

- Associate Professor, Radiation Oncology - Radiation Physics
- Associate Professor (By courtesy), Radiology - Rad/Molecular Imaging Program at Stanford
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute

### PROFESSIONAL EDUCATION

- B.S., UC Berkeley , Bioengineering (1996)
- Ph.D., UC Berkeley/UCSF , Bioengineering (2001)

### LINKS

- Graves Lab: <http://graveslab.stanford.edu>

### Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

My research group is focused on applications of emerging functional and molecular imaging techniques in radiation therapy of cancer. In order to integrate these novel imaging procedures with state-of-the-art radiation therapy, a number of issues must be addressed. First, what are the molecular targets that hold the most promise for targeting and monitoring response to radiation therapy, and how can they best be visualized *in vivo*? Second, what are the limitations of novel imaging techniques that may bear on their application in radiation oncology? Third, how can one display, analyze, and segment multiple three-dimensional datasets to generate target volumes for radiotherapy? And finally, how will the information contained in imaging results of different modalities be integrated into the selection of a treatment course for a patient and subsequently, where appropriate, the specification of an optimized radiation target? These questions comprise my research. Projects that address these topics include the implementation and evaluation of clinical PET/CT imaging for radiation treatment planning, development and validation of novel molecular imaging methods for preclinical and clinical imaging of tumor radiosensitivity and radiation response, development of software for multimodal image analysis, and study of tumor hypoxia and radioresistance in small animal models using a multimodality molecular imaging approach.

## CLINICAL TRIALS

- Imaging and Biomarkers of Hypoxia in Solid Tumors, Not Recruiting
- Metabolic Reprogramming Therapy for Treatment of Recurrent Head and Neck Cancers, Not Recruiting
- Molecular and Cellular Analysis of Breast Cancer, Not Recruiting
- Phase I Dose Escalation of Stereotactic Radiosurgical Boost for Locally Advanced Esophageal Cancer, Not Recruiting

## Teaching

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### COURSES

#### 2023-24

- Biological Principles and Medical Applications of Ionizing Radiation: BMP 253, RADO 253 (Spr)
- Program in Radiation Biology Seminar Series: RADO 244 (Aut, Win)

#### 2022-23

- Program in Radiation Biology Seminar Series: RADO 244 (Aut, Win)
- Radiation Biology and Protection: BMP 253, RADO 253 (Spr)

#### 2021-22

- Program in Radiation Biology Seminar Series: RADO 244 (Aut, Win)

#### 2020-21

- Program in Radiation Biology Seminar Series: RADO 244 (Aut, Win)

## STANFORD ADVISEES

### Orals Chair

Hayley Raquer

### Postdoctoral Faculty Sponsor

Jess Klockow, Jimmy Xu

### Postdoctoral Research Mentor

Jess Klockow

## GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Bioengineering (Phd Program)
- Cancer Biology (Phd Program)

## Publications

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### PUBLICATIONS

- **Radiotherapy in combination with CD47 blockade elicits a macrophage-mediated abscopal effect.** *Nature cancer*  
Nishiga, Y., Drainas, A. P., Baron, M., Bhattacharya, D., Barkal, A. A., Ahrari, Y., Mancusi, R., Ross, J. B., Takahashi, N., Thomas, A., Diehn, M., Weissman, I. L., Graves, et al  
2022
- **The role of granulocyte macrophage colony stimulating factor (GM-CSF) in radiation-induced tumor cell migration.** *Clinical & experimental metastasis*  
Vilalta, M., Brune, J., Rafat, M., Soto, L., Graves, E. E.  
2018

- **Macrophages Promote Circulating Tumor Cell-Mediated Local Recurrence Following Radiation Therapy in Immunosuppressed Patients.** *Cancer research*  
Rafat, M. n., Aguilera, T. A., Vilalta, M. n., Bronsart, L. L., Soto, L. A., von Eyben, R. n., Golla, M. A., Ahrari, Y. n., Melemenidis, S. n., Afghahi, A. n., Jenkins, M. J., Kurian, A. W., Horst, et al  
2018
- **18F-EF5 PET-based Imageable Hypoxia Predicts Local Recurrence in Tumors Treated With Highly Conformal Radiation Therapy.** *International journal of radiation oncology, biology, physics*  
Qian, Y. n., Von Eyben, R. n., Liu, Y. n., Chin, F. T., Miao, Z. n., Apte, S. n., Carter, J. N., Binkley, M. S., Pollock, E. L., Harris, J. P., Prionas, N. D., Kissel, M. n., Simmons, et al  
2018
- **Reprogramming the immunological microenvironment through radiation and targeting Axl** *NATURE COMMUNICATIONS*  
Aguilera, T. A., Rafat, M., Castellini, L., Shehade, H., Kariolis, M. S., Hui, A. B., Stehr, H., von Eyben, R., Jiang, D., Ellies, L. G., Koong, A. C., Diehn, M., Rankin, et al  
2016; 7
- **18F-EF5 PET Is Predictive of Response to Fractionated Radiotherapy in Preclinical Tumor Models.** *PloS one*  
Ali, R., Apte, S., Vilalta, M., Subbarayan, M., Miao, Z., Chin, F. T., Graves, E. E.  
2015; 10 (10)
- **Recruitment of circulating breast cancer cells is stimulated by radiotherapy.** *Cell reports*  
Vilalta, M., Rafat, M., Giaccia, A. J., Graves, E. E.  
2014; 8 (2): 402-409
- **Hypoxia in Models of Lung Cancer: Implications for Targeted Therapeutics** *CLINICAL CANCER RESEARCH*  
Graves, E. E., Vilalta, M., Cecic, I. K., Erler, J. T., Tran, P. T., Felsher, D., Sayles, L., Sweet-Cordero, A., Le, Q., Giaccia, A. J.  
2010; 16 (19): 4843-4852
- **DEVELOPMENT OF A MICRO-COMPUTED TOMOGRAPHY-BASED IMAGE-GUIDED CONFORMAL RADIOTHERAPY SYSTEM FOR SMALL ANIMALS** *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY BIOLOGY PHYSICS*  
Zhou, H., Rodriguez, M., van den Haak, F., Nelson, G., Jogani, R., Xu, J., Zhu, X., Xian, Y., Tran, P. T., Felsher, D. W., Keall, P. J., Graves, E. E.  
2010; 78 (1): 297-305
- **RT\_Image: An open-source tool for investigating PET in radiation oncology** *TECHNOLOGY IN CANCER RESEARCH & TREATMENT*  
Graves, E. E., Quon, A., Loo, B. W.  
2007; 6 (2): 111-121
- **Multi-Institutional Audit of FLASH and Conventional Dosimetry with a 3D-Printed Anatomically Realistic Mouse Phantom.** *International journal of radiation oncology, biology, physics*  
Ashraf, M. R., Melemenidis, S., Liu, K., Grilj, V., Jansen, J., Velasquez, B., Connell, L., Schulz, J. B., Bailat, C., Libed, A., Manjappa, R., Dutt, S., Soto, et al  
2024
- **Exploring deep learning for estimating the isoeffective dose of FLASH irradiation from mouse intestinal histology images.** *International journal of radiation oncology, biology, physics*  
Fu, J., Yang, Z., Melemenidis, S., Viswanathan, V., Dutt, S., Manjappa, R., Lau, B., Soto, L. A., Ashraf, R., Skinner, L., Yu, S. J., Surucu, M., Casey, et al  
2024
- **Improving radiotherapy in immunosuppressive microenvironments by targeting complement receptor C5aR1.** *The Journal of clinical investigation*  
Beach, C., MacLean, D., Majorova, D., Melemenidis, S., Nambiar, D. K., Kim, R. K., Valbuena, G. N., Guglietta, S., Krieg, C., Darvish-Damavandi, M., Suwa, T., Easton, A., Hillson, et al  
2023
- **Rapid recruitment and IFN-I-mediated activation of monocytes dictate focal radiotherapy efficacy.** *Science immunology*  
Tadepalli, S., Clements, D. R., Saravanan, S., Arroyo Hornero, R., Lüdtke, A., Blackmore, B., Paulo, J. A., Gottfried-Blackmore, A., Seong, D., Park, S., Chan, L., Kopecky, B. J., Liu, et al  
2023; 8 (84): eadd7446
- **Clinical LINAC-based electron FLASH: Pathway for practical translation to FLASH clinical trials: LINAC electron FLASH.** *International journal of radiation oncology, biology, physics*  
No, H. J., Wu, Y. F., Dworkin, M. L., Manjappa, R., Skinner, L., Ashraf, M. R., Lau, B., Melemenidis, S., Viswanathan, V., Yu, A. S., Surucu, M., Schüler, E., Graves, et al

2023

- **Technical Note: Non-Invasive monitoring of normal tissue radiation damage using spectral quantitative ultrasound spectroscopy.** *Medical physics*  
Rafat, M., Kaffas, A. E., Swarnakar, A., Shostak, A., Graves, E. E.  
2022
- **Design and validation of a dosimetric comparison scheme tailored for ultra-high dose-rate electron beams to support multicenter FLASH preclinical studies.** *Radiotherapy and oncology : journal of the European Society for Therapeutic Radiology and Oncology*  
Gonçalves Jorge, P., Melemenidis, S., Grilj, V., Buchillier, T., Manjappa, R., Viswanathan, V., Gondré, M., Vozenin, M. C., Germond, J. F., Bochud, F., Moeckli, R., Limoli, C., Skinner, et al  
2022
- **Real-time optical oximetry during FLASH radiotherapy using a phosphorescent nanoprobe.** *Radiotherapy and oncology : journal of the European Society for Therapeutic Radiology and Oncology*  
Ha, B., Liang, K., Liu, C., Melemenidis, S., Manjappa, R., Viswanathan, V., Das, N., Ashraf, R., Lau, B., Soto, L., Graves, E. E., Rao, J., Loo, et al  
2022
- **Radiotherapy alters expression of molecular targets in prostate cancer in a fractionation- and time-dependent manner.** *Scientific reports*  
Eke, I., Aryankalayil, M. J., Bylicky, M. A., Makinde, A. Y., Liotta, L., Calvert, V., Petricoin, E. F., Graves, E. E., Coleman, C. N.  
2022; 12 (1): 3500
- **TRACKING INNATE IMMUNE ACTIVATION IN A MOUSE MODEL OF PARKINSON'S DISEASE USING TREM1 AND TSPO PET TRACERS.** *Journal of nuclear medicine : official publication, Society of Nuclear Medicine*  
Lucot, K. L., Stevens, M. Y., Bonham, T. A., Azevedo, E. C., Chaney, A. M., Webber, E. D., Jain, P., Klockow, J. L., Jackson, I. M., Carlson, M. L., Graves, E. E., Montine, T. J., James, et al  
2022
- **C3aR Signaling Inhibits NK-cell Infiltration into the Tumor Microenvironment in Mouse Models.** *Cancer immunology research*  
Nandagopal, S., Li, C. G., Xu, Y., Sodji, Q. H., Graves, E. E., Giaccia, A. J.  
2021
- **Long-term expression changes of immune-related genes in prostate cancer after radiotherapy.** *Cancer immunology, immunotherapy : CII*  
Eke, I., Aryankalayil, M. J., Bylicky, M. A., Sandfort, V., Vanpouille-Box, C., Nandagopal, S., Graves, E. E., Giaccia, A. J., Coleman, C. N.  
2021
- **The lncRNAs LINC00261 and LINC00665 are upregulated in long-term prostate cancer adaptation after radiotherapy.** *Molecular therapy. Nucleic acids*  
Eke, I., Bylicky, M. A., Sandfort, V., Chopra, S., Martello, S., Graves, E. E., Coleman, C. N., Aryankalayil, M. J.  
2021; 24: 175–87
- **Pharmacological Regulation of Tumor Hypoxia in Model Murine Tumors and Spontaneous Canine Tumors.** *Cancers*  
Benej, M., Wu, J., Kreamer, M., Corrales-Guerrero, S., Papandreou, I., Williams, T. M., Li, Z., Graves, E. E., Selmic, L. E., Denko, N. C.  
2021; 13 (7)
- **Pharmacological Regulation of Tumor Hypoxia in Model Murine Tumors and Spontaneous Canine Tumors** *CANCERS*  
Benej, M., Wu, J., Kreamer, M., Corrales-Guerrero, S., Papandreou, I., Williams, T. M., Li, Z., Graves, E. E., Selmic, L. E., Denko, N. C.  
2021; 13 (7)
- **Y box binding protein 1 inhibition as a targeted therapy for ovarian cancer.** *Cell chemical biology*  
Tailor, D., Resendez, A., Garcia-Marques, F. J., Pandrala, M., Going, C. C., Bermudez, A., Kumar, V., Rafat, M., Nambiar, D. K., Honkala, A., Le, Q., Sledge, G. W., Graves, et al  
2021
- **Effects of Focal Ionizing Radiation of the Squid Stellate Ganglion on Synaptic and Axonal Transmission in the Giant-Fiber Pathway.** *Cureus*  
Gilly, W. F., Teal, P., Graves, E. E., Lo, J., Schneider, M. B., Zasio, R., Adler, J. R.  
2021; 13 (2): e13110
- **Effects of Focal Ionizing Radiation of the Squid Stellate Ganglion on Synaptic and Axonal Transmission in the Giant-Fiber Pathway** *CUREUS*  
Gilly, W. F., Teal, P., Graves, E. E., Lo, J., Schneider, M., Zasio, R., Adler, J. R.  
2021; 13 (2)
- **The HIF target MAFF promotes tumor invasion and metastasis through IL11 and STAT3 signaling.** *Nature communications*

Moon, E. J., Mello, S. S., Li, C. G., Chi, J., Thakkar, K., Kirkland, J. G., Lagory, E. L., Lee, I. J., Diep, A. N., Miao, Y., Rafat, M., Vilalta, M., Castellini, et al 2021; 12 (1): 4308

- **FLASH irradiation enhances the therapeutic index of abdominal radiotherapy in mice**

Natarajan, S., Levy, K., Wang, J., Chow, S., Eggold, J., Loo, P., Manjappa, R., Lartey, F. M., Schuler, E., Skinner, L., Rafat, M., Ko, R., Kim, et al AMER ASSOC CANCER RESEARCH.2020

- **Reprogramming of serine metabolism during breast cancer progression**

Li, A., Ducker, G. S., Li, Y., Seoane, J. A., Xiao, Y., Melemenidis, S., Zhou, Y., Liu, L., Vanharanta, S., Graves, E. E., Rankin, E. B., Curtis, C., Massague, et al AMER ASSOC CANCER RESEARCH.2020

- **Visualizing innate immune activation in a mouse model of Parkinson's disease using a highly specific TREM1-PET tracer.**

Lucot, K., Stevens, M., Jain, P., Bonham, T., Webber, E., Klockow, J., Azevedo, E., Chaney, A., Graves, E., Montine, T., James, M. SOC NUCLEAR MEDICINE INC.2020

- **An activatable NIR fluorescent rosol for selectively imaging nitroreductase activity** *SENSORS AND ACTUATORS B-CHEMICAL*

Klockow, J. L., Hettie, K. S., LaGory, E. L., Moon, E., Giaccia, A. J., Graves, E. E., Chin, F. T. 2020; 306

- **An Activatable NIR Fluorescent Rosol for Selectively Imaging Nitroreductase Activity.** *Sensors and actuators. B, Chemical*

Klockow, J. L., Hettie, K. S., LaGory, E. L., Moon, E. J., Giaccia, A. J., Graves, E. E., Chin, F. T. 2020; 306

- **Induced tumor heterogeneity reveals factors informing radiation and immunotherapy combinations.** *Clinical cancer research : an official journal of the American Association for Cancer Research*

Aguilera, T. A., Elghonaimy, E., Shehade, H., Rafat, M., Castellini, L., Jiang, D., Kariolis, M., Koong, A., Le, Q., Ellies, L. G., Rankin, E. B., Graves, E. E., Giaccia, et al 2020

- **Extracellular cGAMP is a cancer cell-produced immunotransmitter involved in radiation-induced anti-cancer immunity.** *Nature cancer*

Carozza, J. A., Böhnert, V., Nguyen, K. C., Skariah, G., Shaw, K. E., Brown, J. A., Rafat, M., von Eyben, R., Graves, E. E., Glenn, J. S., Smith, M., Li, L. 2020; 1 (2): 184-196

- **Abdominal FLASH irradiation reduces radiation-induced gastrointestinal toxicity for the treatment of ovarian cancer in mice.** *Scientific reports*

Levy, K. n., Natarajan, S. n., Wang, J. n., Chow, S. n., Eggold, J. T., Loo, P. E., Manjappa, R. n., Melemenidis, S. n., Lartey, F. M., Schuler, E. n., Skinner, L. n., Rafat, M. n., Ko, et al 2020; 10 (1): 21600

- **FLASH Irradiation Results in Reduced Severe Skin Toxicity Compared to Conventional-Dose-Rate Irradiation.** *Radiation research*

Soto, L. A., Casey, K. M., Wang, J. n., Blaney, A. n., Manjappa, R. n., Breitkreutz, D. n., Skinner, L. n., Dutt, S. n., Ko, R. B., Bush, K. n., Yu, A. S., Melemenidis, S. n., Strober, et al 2020

- **Evaluating the Reproducibility of Mouse Anatomy under Rotation in a Custom Immobilization Device for Conformal FLASH Radiotherapy.** *Radiation research*

Ko, R. B., Soto, L. A., von Eyben, R. n., Melemenidis, S. n., Rankin, E. B., Maxim, P. G., Graves, E. E., Loo, B. W. 2020

- **Intravital imaging reveals synergistic effect of CAR T-cells and radiation therapy in a preclinical immunocompetent glioblastoma model** *Oncoimmunology*

Murty, S., Haile, S. T., Beinat, C., Aalipour, A., Alam, I. S., Murty, T., Shaffer, T. M., Patel, C. B., Graves, E. E., Mackall, C. L., Gambhir, S. S. 2020; 9 (1)

- **Metabolic Profiling Reveals a Dependency of Human Metastatic Breast Cancer on Mitochondrial Serine and One-Carbon Unit Metabolism.** *Molecular cancer research : MCR*

Li, A. M., Ducker, G. S., Li, Y. n., Seoane, J. A., Xiao, Y. n., Melemenidis, S. n., Zhou, Y. n., Liu, L. n., Vanharanta, S. n., Graves, E. E., Rankin, E. B., Curtis, C. n., Massague, et al 2020

- **53BP1/RIF1 signaling promotes cell survival after multifractionated radiotherapy.** *Nucleic acids research*

Eke, I., Zong, D., Aryankalayil, M. J., Sandfort, V., Bylicky, M. A., Rath, B. H., Graves, E. E., Nussenzweig, A., Coleman, C. N. 2019

- **Radiosensitization of Head and Neck Squamous Cell Carcinoma (HNSCC) by a Podophyllotoxin.** *ACS medicinal chemistry letters*  
Resendez, A., Tailor, D., Graves, E., Malhotra, S. V.  
2019; 10 (9): 1314–21
- **2' 3'-cGAMP is an immunotransmitter produced by cancer cells and regulated by ENPP1**  
Carozza, J., Bohnert, V., Shaw, K., Khanh Nyugen, Skariah, G., Brown, J., Rafat, M., von Eyben, R., Graves, E., Glenn, J., Smith, M., Li, L.  
AMER CHEMICAL SOC.2019
- **A near-infrared phosphorescent nanoprobe enables quantitative, longitudinal imaging of tumor hypoxia dynamics during radiotherapy.** *Cancer research*  
Zheng, X., Cui, L., Chen, M., Soto, L. A., Graves, E. E., Rao, J.  
2019
- **Papaverine and its novel derivatives radiosensitize solid tumors by inhibiting mitochondrial metabolism**  
Benej, M., Hong, X., Vibhute, S., Scott, S., Wu, J., Graves, E., Quynh-Thu Le, Koong, A. C., Giaccia, A. J., Chen, C., Yu, B., Papandreou, I., Denko, N. C.  
AMER ASSOC CANCER RESEARCH.2019
- **The irradiated tissue microenvironment and its role in breast cancer recurrence: Enhanced macrophage infiltration promotes tumor cell recruitment**  
Hacker, B. C., Alves, S. M., Jiang, D., Koong, A. C., Giaccia, A. J., Graves, E. E., Rafat, M.  
AMER ASSOC CANCER RESEARCH.2019
- **FLT-PET-CT for the Detection of Disease Recurrence After Stereotactic Ablative Radiotherapy or Hyperfractionation for Thoracic Malignancy: A Prospective Pilot Study** *FRONTIERS IN ONCOLOGY*  
Hiniker, S. M., Sodji, Q., Quon, A., Gutkin, P. M., Arksey, N., Graves, E. E., Chin, F. T., Maxim, P. G., Diehn, M., Loo, B. W.  
2019; 9
- **FLT-PET-CT for the Detection of Disease Recurrence After Stereotactic Ablative Radiotherapy or Hyperfractionation for Thoracic Malignancy: A Prospective Pilot Study.** *Frontiers in oncology*  
Hiniker, S. M., Sodji, Q., Quon, A., Gutkin, P. M., Arksey, N., Graves, E. E., Chin, F. T., Maxim, P. G., Diehn, M., Loo, B. W.  
2019; 9: 467
- **[F-18]-SuPAR: A Radiofluorinated Probe for Noninvasive Imaging of DNA Damage-Dependent Poly(ADP-ribose) Polymerase Activity** *BIOCONJUGATE CHEMISTRY*  
Shuhendler, A. J., Cui, L., Chen, Z., Shen, B., Chen, M., James, M. L., Witney, T. H., Bazalova-Carter, M., Gambhir, S. S., Chin, F. T., Graves, E. E., Rao, J.  
2019; 30 (5): 1331–42
- **INTRADETRUSOR IPSC-DERIVED HUMAN PROGENITOR SMOOTH MUSCLE CELLS IN A ROWETT NUDE RAT MODEL OF RADIATION CYSTITIS**  
Dobberfuhl, A. D., Briggs, M. A., Wallace, S. L., Wen, Y., Zhou, Y., Graves, E. E., Diaz, E. C., Knox, S. J., Chen, B.  
LIPPINCOTT WILLIAMS & WILKINS.2019: E155
- **Increases in Serial Pretreatment F-18-FDG PET-CT Metrics Predict Survival in Early Stage Non-Small Cell Lung Cancer Treated With Stereotactic Ablative Radiation Therapy** *ADVANCES IN RADIATION ONCOLOGY*  
Prionas, N. D., von Eyben, R., Yi, E., Aggarwal, S., Shaffer, J., Bazan, J., Eastham, D., Maxim, P. G., Graves, E. E., Diehn, M., Gensheimer, M. F., Loo, B. W.  
2019; 4 (2): 429–37
- **Increases in Serial Pretreatment 18F-FDG PET-CT Metrics Predict Survival in Early Stage Non-Small Cell Lung Cancer Treated With Stereotactic Ablative Radiation Therapy.** *Advances in radiation oncology*  
Prionas, N. D., von Eyben, R., Yi, E., Aggarwal, S., Shaffer, J., Bazan, J., Eastham, D., Maxim, P. G., Graves, E. E., Diehn, M., Gensheimer, M. F., Loo, B. W.  
2019; 4 (2): 429–37
- **Targeted and Selective Treatment of Pluripotent Stem Cell-derived Teratomas Using External Beam Radiation in a Small-animal Model.** *Journal of visualized experiments : JoVE*  
Sallam, K., Rhee, J., Chour, T., D'addabbo, J., Lee, A. S., Graves, E., Nguyen, P. K.  
2019
- **Targeted and Selective Treatment of Pluripotent Stem Cell-derived Teratomas Using External Beam Radiation in a Small-animal Model** *JOVE-JOURNAL OF VISUALIZED EXPERIMENTS*  
Sallam, K., Rhee, J., Chour, T., D'addabbo, J., Lee, A. S., Graves, E., Nguyen, P. K.  
2019

- **Ambulatory and ex-vivo effect of intradetrusor ipsc-derived human progenitor smooth muscle cells in a rat model of radiation induced bladder dysfunction**  
Dobberfuhl, A. D., Briggs, M. A., Wallace, S. L., Wen, Y., Zhou, Y., Graves, E. E., Diaz, E. C., Chen, B.  
WILEY.2019: S27–S28
- **Integrating Small Animal Irradiators with Functional Imaging for Advanced Preclinical Radiotherapy Research.** *Cancers*  
Ghita, M., Brown, K. H., Kelada, O. J., Graves, E. E., Butterworth, K. T.  
2019; 11 (2)
- **Reduced cognitive deficits after FLASH irradiation of whole mouse brain are associated with less hippocampal dendritic spine loss and neuroinflammation.** *Radiotherapy and oncology : journal of the European Society for Therapeutic Radiology and Oncology*  
Simmons, D. A., Lartey, F. M., Schüller, E. n., Rafat, M. n., King, G. n., Kim, A. n., Ko, R. n., Semaan, S. n., Gonzalez, S. n., Jenkins, M. n., Pradhan, P. n., Shih, Z. n., Wang, et al  
2019
- **Irradiation or temozolomide chemotherapy enhances anti-CD47 treatment of glioblastoma.** *Innate immunity*  
Gholamin, S. n., Youssef, O. A., Rafat, M. n., Esparza, R. n., Kahn, S. n., Shahin, M. n., Giaccia, A. J., Graves, E. E., Weissman, I. n., Mitra, S. n., Cheshier, S. H.  
2019: 1753425919876690
- **Theranostic nanoparticles enhance the response of glioblastomas to radiation** *Nanotheranostics*  
Wu, W., Klockow, J. L., Mohanty, S., Ku, K. S., Daldrup-Link, H. E.  
2019; 3(4) (299-310)
- **Preclinical Evaluation of Dose-Volume Effects and Lung Toxicity Occurring in- and out-of-field.** *International journal of radiation oncology, biology, physics*  
Ghita, M., Dunne, V. L., McMahon, S. J., Osman, S. O., Small, D. M., Weldon, S., Taggart, C. C., McGarry, C. K., Hounsell, A. R., Graves, E. E., Prise, K. M., Hanna, G. G., Butterworth, et al  
2018
- **Papaverine and its derivatives radiosensitize solid tumors by inhibiting mitochondrial metabolism** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Benej, M., Hong, X., Vibhute, S., Scott, S., Wu, J., Graves, E., Le, Q., Koong, A. C., Giaccia, A. J., Yu, B., Chen, S., Papandreou, I., Denko, et al  
2018; 115 (42): 10756–61
- **A gold nanoparticle system for enhancement of radiotherapy and simultaneous monitoring of reactive-oxygen-species formation.** *Nanotechnology*  
Choi, J., Jung, K., Graves, E. E., Pratz, G.  
2018
- **18F-EF5 Pet-Based Imageable Hypoxia Predicts for Local Control in Tumors Treated With Conformal Radiotherapy**  
Qian, Y., Liu, Y., Von Eyben, R., Carter, J. N., Pollom, E. L., Harris, J. P., Prionas, N. D., Binkley, M. S., Simmons, A., Diehn, M., Chin, F. T., Shultz, D. B., Brown, et al  
ELSEVIER SCIENCE INC.2018: E17–E18
- **The tumour microenvironment links complement system dysregulation and hypoxic signalling.** *The British journal of radiology*  
Olcina, M. M., Kim, R. K., Melemenidis, S., Graves, E. E., Giaccia, A. J.  
2018: 20180069
- **Present developments in reaching an international consensus for a model-based approach to particle beam therapy** *JOURNAL OF RADIATION RESEARCH*  
Prayongrat, A., Umegaki, K., van der Schaaf, A., Koong, A. C., Lin, S. H., Whitaker, T., McNutt, T., Matsufuji, N., Graves, E., Mizuta, M., Ogawa, K., Date, H., Moriwaki, et al  
2018; 59: I72–I76
- **THE NATURAL HISTORY OF RADIATION CYSTITIS IN A RAT MODEL OF ACUTE AND CHRONIC LOWER URINARY TRACT DYSFUNCTION**  
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