

I am an interventional radiologist at City of Hope Cancer Center, with a clinical focus on tumor embolization, radioembolization, and ablation, as well as complex venous interventions. My research focuses on developing new minimally invasive therapies for liver, pancreatic, and lung cancer.

Faculty and hospital positions

Associate professor, Interventional radiology, City of Hope National Medical Center (December 2021 – present).

Associate clinical professor, Interventional radiology, City of Hope National Medical Center (June 2021 – November 2021).

Assistant attending, Interventional radiology, Memorial Sloan Kettering Cancer Center (July 2014 – April 2021).

Assistant Professor of Radiology, Weill Cornell Medical College, Cornell University, New York, NY (October 2014 – April 2021).

Medical training

Board certified in Diagnostic Radiology (2013), Interventional Radiology and Diagnostic Radiology (2018). Authorized user (Y90). Active California medical license.

Fellow, Interventional radiology, Hospital of the University of Pennsylvania (July 2013 – June 2014).

Resident, Radiology, Stanford Hospital (July 2009 – June 2013).

Intern, General surgery, Stanford Hospital (June 2008 – June 2009).

Education

MD / PhD, Biochemistry, Stanford University, June 2008.

AB, Biochemistry, magna cum laude with highest honors, Harvard University, June 1999.

Research and product development

New minimally invasive therapies for liver, pancreatic, and lung cancer. My current research focuses on developing the next generation of minimally invasive cancer therapies, including new devices and materials for local drug delivery into tumors. Projects include: bronchial artery chemoembolization, pancreatic chemoembolization, and local immunotherapy / *in situ* cancer vaccination. (3402 citations, 64 papers, 76 abstracts, and 5 patent applications.)

Research web PACS. Developed a multi-institutional research web PACS with image analysis and image processing plug-ins, interactive multimedia radiology reports, and screen share. 400,000 users have viewed 63 million images on Claripacs. (collaboration with Bao Do and Michael Muelly).

<http://www.claripacs.com>.

CT metal artifact reduction. Developed a patented method (MDT) for reducing metal artifacts in CT scans, which improves image quality in 86% of scans, and improves diagnosis in 14% of scans. This method has been successfully used on thousands of patients in 160 hospitals, including MGH, MD Anderson, and Stanford. This project involved development of a scalable cloud application, integration with PACS, and technology licensing. <http://www.revisionrads.com>.

Leadership and professional activities

Associate Member, Developmental Cancer Therapeutics, City of Hope Comprehensive Cancer Center (2021 – present).

SIR grant review committee (2018 – 2023).

Member, David M Rubenstein Center for Pancreatic Cancer Research (2019 – 2021).

Reviewer for *JVIR* (2014 – 23), *Nature Communications* (2018), *CVIR* (2015), *Academic radiology* (2015), *WCIO* (2015), *Medical Physics* (2013), *Neuroradiology* (2013), and *AJNR* (2013).

Member, Fellow selection committee, MSKCC IR (2017 – 2018).

President, Harvard Science Review (1998 – 1999).

President, Harvard Hippocratic Society (1998 – 1999).

Selected awards

JVIR Editor's Award for Outstanding Laboratory Investigation (2022).

The Academy Imaging Shark Tank, best pitch (2020).

Certificate of Recognition for Excellence in Teaching, Department of Radiology, MSKCC (2015, 2016, 2019).

RSNA Roentgen Resident/Fellow Research Award (2013).

ARRS Residents in Radiology Executive Council Award (2013).

SIR Annual Scientific Meeting Resident-in-Training Scholarship (2010).

Medical Scientist Training Program, Stanford (1999 – 2008).

Barry M. Goldwater Scholar (1998).

John Harvard Scholar (1996, 1997).

United States Presidential Scholar (named by Bill Clinton, 1995).

Top ten finalist, Westinghouse (now Regeneron) Science Talent Search (1995).

2nd place award, International Science and Engineering Fair (1995).

U.S. Physics Olympiad Team Member (1995).

Research Science Institute, MIT (1994).

Grants

PI, Guerbet (investigator initiated). "Phase II trial of lung chemoembolization." (2023-2025).

PI, Society of Interventional Oncology, Transarterial lipiodol chemoembolization research grant. "Phase I study of transarterial chemoembolization of lung metastases." (2019 –2020).

PI, Brockman Medical Research Foundation. "Phase I study of transarterial chemoembolization of lung metastases." (2019 – 2021).

Program member, MSKCC Cancer Center Support grant (2018 – 2021).

Aim co-leader, Thompson family foundation, "Targeting pancreatic cancer." (2017 – 2022).

Co-PI, Department of Defense, Congressionally Directed Medical Research Programs, Development of a pig model of hepatocellular carcinoma (2016 – 2020).

64 papers, 76 abstracts, and 5 patent applications, cited 3402 times. H-index: 21.

★ indicates key publications.

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Papers

64. **Boas FE**, Maxwell AWP. (2023) “Beyond mean tumor dose: The importance of particle density in radioembolization.” *Journal of Vascular and Interventional Radiology*. In press.

63. Mansur A, Garg T, Camacho J, Habibollahi P, **Boas FE**, Khorshidi F, Buethe J, Nezami N. (2023) “Image-guided Percutaneous and Transarterial Therapies for Primary and Metastatic Lung Cancer.” *Technology in Cancer Research & Treatment*. In press.

62. Ghosn M, Elsakka AS, Petre EN, Cheleuitte-Nieves C, Tammela T, Monette S, Ziv E, Schachtschneider KM, Srimathveeravalli G, Yarmohammadi H, **Boas FE**, Solomon SB. (2023) “Induction and Preliminary Characterization of Neoplastic Pulmonary Nodules in a Transgenic Pig Model.” *Lung Cancer*. In press.

61. Pedersoli F, **Boas FE**, Park JJ. (2023) “Temporary Vascular Occlusion with Retrievable Microvascular Plugs to Protect Normal Liver During Yttrium-90 Radioembolization.” *Journal of Vascular and Interventional Radiology*. In press.

★ 60. Maxwell AWP, Mendoza HG, Sellitti MJ, Camacho JC, Deipolyi AR, Ziv E, Sofocleous CT, Yarmohammadi H, Maybody M, Humm JL, Schwartz J, Juluru K, Dunphy MP, **Boas FE**. (2022) “Optimizing ⁹⁰Y particle density improves outcomes after radioembolization.” *Cardiovascular and Interventional Radiology*. 45: 958-69.

59. Ridouani F, Ghosn M, Doustaly R, Gonzalez-Aguirre AJ, Ziv E, Solomon SB, **Boas FE**, Yarmohammadi H. (2022) “Accuracy of CBCT-based virtual injection software in detecting

- arterial vascular tree during hepatic arterial embolization.” *European Journal of Radiology*. 150: 110273.
58. Ghosn M, Cheema W, Zhu A, Livschitz J, Maybody M, **Boas FE**, Santos E, Kim DH, Beattie JA, Offin M, Rusch VW, Zauderer MG, Adusumilli PS, Solomon SB. (2022) “Image-Guided Interventional Radiological Delivery of Chimeric Antigen Receptor (CAR) T Cells for Pleural Malignancies in a Phase I/II Clinical Trial.” *Lung Cancer*. 165: 1-9.
57. Ghosn M, Kingham P, Ridouani F, Santos E, Yarmohammadi H, **Boas FE**, Covey AM, Brody LA, Jarnagin WR, D'Angelica MI, Kemeny NE, Solomon SB, Camacho JC. (2022) “Percutaneous liver venous deprivation: outcomes in heavily pretreated metastatic colorectal cancer patients.” *HPB*. 24(3): 404-12.
- ★ 56. **Boas FE**, Kemeny NE, Sofocleous CT, Yeh R, Thompson VR, Hsu M, Moskowitz CS, Ziv E, Yarmohammadi H, Bendet A, Solomon SB. (2021) “Bronchial or Pulmonary Artery Chemoembolization for Unresectable and Unablatale Lung Metastases: A Phase I Clinical Trial.” *Radiology*. 301(2): 474-84.
55. Kurilova I, Bendet A, Petre EN, **Boas FE**, Kaye E, Gonen M, Covey A, Brody LA, Brown KT, Kemeny NE, Yarmohammadi H, Ziv E, D'Angelica MI, Kingham TP, Cercek A, Solomon SB, Beets-Tan RGH, Sofocleous CT. (2021) “Factors Associated With Local Tumor Control and Complications After Thermal Ablation of Colorectal Cancer Liver Metastases: A 15-year Retrospective Cohort Study.” *Clinical Colorectal Cancer* 20(2): e82-95.
54. Lacayo EA, Velayati S, Elsakka A, Brody L, Erinjeri JP, Ziv E, **Boas FE**, Sofocleous CT, Silk M, Makker V, Tew WP, Yarmohammadi H. (2021) “Safety and efficacy of arterially directed liver therapies in treatment of hepatic metastatic ovarian cancer: A retrospective single-institution study.” *Journal of Vascular and Interventional Radiology*. 32(6): 853-60.
53. Ridouani F, Soliman MM, England R, Hsu M, Moskowitz CS, Doustaly R, Sofocleous C, **Boas FE**, Yarmohammadi H, Deipolyi A. (2021) “Relationship of radiation dose to efficacy of radioembolization of liver metastasis from breast cancer.” *European Journal of Radiology*. 136: 109539.
52. Kurilova I, Bendet A, Fung EK, Petre EN, Humm JL, **Boas FE**, Crane CH, Kemeny N, Kingham TP, Cercek A, D'Angelica MI, Beets-Tan RGH, Sofocleous CT. (2021) “Radiation segmentectomy of hepatic metastases with Y-90 glass microspheres.” *Abdominal Radiology*. 46(7): 3428-36.
- ★ 51. Nurili F, Monette S, Michel AO, Bendet A, Basturk O, Askan G, Cheleuitte-Nieves C, Yarmohammadi H, Maxwell AWP, Ziv E, Schachtschneider KM, Gaba RC, Schook LB, Solomon SB, **Boas FE**. (2021) “Transarterial embolization of liver cancer in a transgenic pig model.” *Journal of Vascular and Interventional Radiology*. 32(4): 510-7.
- ★ 50. **Boas FE**, Nurili F, Bendet A, Cheleuitte-Nieves C, Basturk O, Askan G, Michel AO, Monette S, Ziv E, Sofocleous CT, Maxwell AWP, Schook LB, Solomon SB, Kelsen DP, Scherz A, Yarmohammadi

- H. (2020) "Induction and characterization of pancreatic cancer in a transgenic pig model." *PLOS ONE*. 15(9): e0239391.
49. Ziv E, Zhang Y, Kelly L, Nikolovski I, **Boas FE**, Erinjeri JP, Cai L, Petre EN, Brody L, Covey A, Getrajdman G, Harding JJ, Sofocleous C, Abou-Alfa GK, Solomon SB, Brown KT, Yarmohammadi H. (2020) "NRF2 dysregulation in hepatocellular carcinoma and ischemia: A cohort study and laboratory investigation." *Radiology*. 297(1): 225-34.
48. Drabkin MJ, Bajwa R, Perez-Johnston R, Bryce Y, **Boas FE**, Siegelbaum R, Durack JC, Kishore S. (2021) "Anticoagulation reduces ilioacaval and iliofemoral stent thrombosis in patients with cancer stented for nonthrombotic venous obstruction." *Journal of Vascular Surgery: Venous and Lymphatic Disorders*. 9(1): 88-94.
47. Gaba RC, Elkhadragey L, **Boas FE**, Chaki S, Chen HH, El-Kebir M, Garcia KD, Giurini EF, Guzman G, LoBianco FV, Neto MF, Newson JL, Qazi A, Regan M, Rund LA, Stewart M, Thomas FM, Whiteley HE, Wu J, Schook LB, Schachtschneider KM. (2020) "Development and comprehensive characterization of porcine hepatocellular carcinoma for translational liver cancer investigation." *Oncotarget*. 11: 2686-2701.
46. Deipolyi AR, England RW, Ridouani F, Riedl CC, Kunin HS, **Boas FE**, Yarmohammadi H, Sofocleous CT. (2020) "PET/CT imaging characteristics after radioembolization of hepatic metastasis from breast cancer." *Cardiovascular and Interventional Radiology*. 43(3): 488-94.
45. Sutton C, Zhang Y, Kim D, Yarmohammadi H, Ziv E, **Boas FE**, Sofocleous CT, Tap WD, D'Angelo SP, Erinjeri JP. (2020) "Analysis of the chemotherapy-free interval following image-guided ablation in sarcoma patients." *Sarcoma*. 2020: 3852420.
44. Borgheresi A, Covey A, Yarmohammadi H, **Boas FE**, Ziv E, Getrajdman G, Erinjeri J, Jarnagin W, Harding JJ, D'Angelica M, Gonen M, Brown KT. (2020) "Embolization with microspheres alone for hepatocellular carcinoma with portal vein tumor: Analysis of outcome and liver function at disease progression." *HPB*. 22(4): 588-94.
43. Velayati S, Erinjeri JP, Brody LA, Ziv E, **Boas FE**, Brown KT, Covey AM, Getrajdman GI, Solomon SB, Kingham PT, Tap WD, Jarnagin WR, Yarmohammadi H. (2019) "Safety and efficacy of hepatic artery embolization in treating solitary fibrous tumor metastatic to the liver." *Sarcoma*. Article ID 3060658.
- ★ 42. **Boas FE**, Brown KT, Ziv E, Yarmohammadi H, Sofocleous CT, Erinjeri JP, Harding JJ, Solomon SB. (2019) "Aspirin is associated with improved liver function after embolization of hepatocellular carcinoma." *AJR*. 213: 689-95.
- ★ 41. Zener R, Yoon H, Ziv E, Covey A, Brown KT, Sofocleous CT, Thornton RH, **Boas FE**. (2019) "Outcomes after transarterial embolization of neuroendocrine tumor liver metastases using spherical particles of different sizes." *Cardiovascular and Interventional Radiology*. 42: 569-76.

40. Maybody M, Muallem N, Brown KT, Moskowitz CS, Hsu M, Zenobi CL, Jihad M, Getrajdman GI, Sofocleous CT, Erinjeri JP, Covey AM, Brody LA, Yarmohammadi H, Deipolyi AR, Bryce Y, Alago W, Siegelbaum RH, Durack JC, Gonzalez-Aguirre AJ, Ziv E, **Boas FE**, Solomon SB. (2019) "Autologous blood patch injection versus hydrogel plug in CT-guided lung biopsy: A prospective randomized trial." *Radiology*. 290: 547-54.
39. Kurilova I, Beets-Tan RGH, Flynn J, Gönen M, Ulaner G, Petre EN, **Boas FE**, Ziv E, Yarmohammadi H, Klompenhouwer EG, Cercek A, Kemeny NA, Sofocleous CT. (2019) "Factors Affecting Oncologic Outcomes of ⁹⁰Y Radioembolization of Heavily Pre-Treated Patients With Colon Cancer Liver Metastases." *Clinical Colorectal Cancer*. 18(1): 8-18.
38. Kurilova I, Beets-Tan RGH, Ulaner GA, **Boas FE**, Petre EN, Yarmohammadi H, Ziv E, Deipolyi AR, Brody LA, Gonen M, Sofocleous CT. (2018) "⁹⁰Y Resin Microspheres Radioembolization for Colon Cancer Liver Metastases Using Full-Strength Contrast Material." *Cardiovascular and Interventional Radiology*. 41(9): 1419-27.
37. Ziv E, Rice SL, Filtes J, Yarmohammadi H, **Boas FE**, Erinjeri JP, Petre EN, Brody LA, Brown KT, Covey AM, Getrajdman GI, Maybody M, Raj N, Sofocleous CT, Solomon SB, Reidy-Lagunes D. (2018) "DAXX Mutation Status of Embolization-Treated Neuroendocrine Tumors Predicts Shorter Time to Hepatic Progression." *Journal of Vascular and Interventional Radiology*. 29(11): 1519-26.
36. Deipolyi AR, Riedl C, Bromberg J, Chandarlapaty S, Klebanoff C, Sofocleous CT, Yarmohammadi H, Brody L, **Boas FE**, Ziv E. (2018) "Association of PI3K pathway mutations with early positron-emission tomography/CT imaging response after radioembolization for breast cancer liver metastases: Results of a single-center retrospective pilot study." *Journal of Vascular and Interventional Radiology*. 29(9): 1226-35.
35. Currie BM, Getrajdman GI, Covey AM, Alago W, Erinjeri JP, Maybody M, **Boas FE**. (2018) "Push versus pull gastrostomy in cancer patients: A single center retrospective analysis of complications and technical success rates." *Diagnostic and Interventional Imaging*. 99(9): 547-53.
- ★ 34. Borgheresi A, Gonzalez-Aguirre A, Brown KT, Getrajdman GI, Erinjeri JP, Covey A, Yarmohammadi H, Ziv E, Sofocleous CT, **Boas FE**. (2018) "Does enhancement or perfusion on pre-procedure CT predict outcomes after embolization of hepatocellular carcinoma?" *Academic Radiology*. 25(12): 1588-94.
33. Mandel JE, Morel-Ovalle L, **Boas FE**, Ziv E, Yarmohammadi H, Deipolyi A, Mohabir HR, Erinjeri JP. (2018) "Optimizing travel time to outpatient interventional radiology procedures in a multi-site hospital system using a Google Maps application." *Journal of Digital Imaging*. 31: 591-5.
32. Gonzalez-Aguirre A, Covey AM, Brown KT, Brody LA, **Boas FE**, Sofocleous CT, Maybody M, Getrajdman GI, Erinjeri JP. (2018) "Comparison of biliary brush biopsy and fine needle biopsy in the diagnosis of biliary strictures." *Minim Invasive Ther Allied Technol*. 27(5): 278-83.

- ★ 31. Sofocleous CT, **Boas FE**. (2018) "Radiation segmentectomy for hepatocellular carcinoma: Ready for prime time?" *Radiology*. 287(3): 1059-60.
30. Gonzalez-Aguirre AJ, Maybody M, Ziv E, **Boas FE**, Erinjeri JP, Sofocleous CT, Solomon SB, Getrajdman G. (2018) "Evaluation of the Effect of Operator Experience on Outcome of Hepatic Artery Embolization of Hepatocellular Carcinoma in a Tertiary Cancer Center." *Academic Radiology*. 25(7): 856-60.
29. **Boas FE**, Bodei L, Sofocleous CT. (2017) "Radioembolization of colorectal liver metastases: Indications, technique, and outcomes." *J Nucl Med*. 58: 104S-111S.
28. **Boas FE**, Ziv E, Yarmohammadi H, Brown KT, Erinjeri JP, Sofocleous CT, Harding JJ, Solomon SB. (2017) "Reply to: 'Adjuvant medications that improve survival after locoregional therapy.'" *Journal of Vascular and Interventional Radiology*. 28(9): 1335-6.
- ★ 27. **Boas FE**, Ziv E, Yarmohammadi H, Brown KT, Erinjeri JP, Sofocleous CT, Harding JJ, Solomon SB. (2017) "Adjuvant medications that improve survival after locoregional therapy." *Journal of Vascular and Interventional Radiology*. 28: 971-7.
- ★ 26. **Boas FE**, Srimathveeravalli G, Kaye EA, Durack JC, Erinjeri JP, Ziv E, Maybody M, Yarmohammadi H, Solomon SB. (2017) "Development of a searchable database of cryoablation simulations for use in treatment planning." *Cardiovascular and Interventional Radiology*. 40(5): 761-8.
25. Ziv E, Yarmohammadi H, **Boas FE**, Petre EN, Brown KT, Solomon SB, Solit D, Reidy D, Erinjeri JP. (2017) "Gene Signature Associated with Upregulation of the Wnt/ β -Catenin Signaling Pathway Predicts Tumor Response to Transarterial Embolization." *Journal of Vascular and Interventional Radiology*. 28(3): 349-55.
24. Ziv E, Bergen M, Yarmohammadi H, **Boas FE**, Petre EN, Sofocleous CT, Yaeger R, Solit DB, Solomon SB, Erinjeri JP. (2017) "PI3K pathway mutations are associated with longer time to local progression after radioembolization of colorectal liver metastases." *Oncotarget*. 8(14): 23529.
23. Rotman JA, Getrajdman GI, Maybody M, Erinjeri JP, Yarmohammadi H, Sofocleous CT, Solomon SB, **Boas FE**. (2017) "Effect of abdominopelvic abscess drain size on drainage time and probability of occlusion." *The American Journal of Surgery*. 213(4): 718-22.
22. Maybody M, Tang PQ, Moskowitz CS, Hsu M, Yarmohammadi H, **Boas FE**. (2017) "Pneumodissection for skin protection in image-guided cryoablation of superficial musculoskeletal tumors." *European Radiology*. 27(3): 1202-10.
21. Yarmohammadi H, Wilkins LR, Erinjeri JP, Novak RD, Exner AA, Wu H, Petre EN, **Boas FE**, Ziv E, Haaga JR. (2017) "Efficiency of combined blocking of aerobic and glycolytic metabolism

- pathways in treatment of N1-S1 hepatocellular carcinoma in a rat model." *Journal of Cancer Research and Therapeutics*. 13: 533-7.
20. Ziv E, Erinjeri JP, Yarmohammadi H, **Boas FE**, Petre EB, Gao S, Shady W, Sofocleous CT, Jones DR, Rudin CM, Solomon SB. (2016) "Lung adenocarcinoma: Predictive value of KRAS mutation status in assessing local recurrence in patients undergoing image-guided ablation." *Radiology*. 282(1): 251-8.
- ★ 19. **Boas FE**, Brody LA, Erinjeri JP, Yarmohammadi H, Shady W, Kishore S, Sofocleous CT. (2016) "Quantitative enhancement measurements on preprocedure triphasic CT can predict response to radioembolization of colorectal liver metastases." *AJR*. 207: 671-5.
18. Yarmohammadi H, Brody LA, Erinjeri JP, Covey AM, **Boas FE**, Ziv E, Maybody M, Gonzalez-Aguirre AJ, Brown KT, Sheinfeld J, Getrajdman GI. (2016) "Therapeutic application of percutaneous peritoneovenous (Denver) shunt in treating chylous ascites in cancer patients." *Journal of Vascular and Interventional Radiology*. 27(5): 665-73.
17. Shady W, Kishore S, Gavane S, Do RK, Osborne JR, Ulaner GA, Gonen M, Ziv E, **Boas FE**, Sofocleous CT. (2016) "Metabolic tumor volume and total lesion glycolysis on FDG-PET/CT can predict overall survival after ⁹⁰Y radioembolization of colorectal liver metastases: A comparison with SUVmax, SUVpeak, and RECIST 1.0." *European Journal of Radiology*. 85(6): 1224-31.
16. **Boas FE**, Kadivar F, Kelly PD, Drebin JA, Vollmer CM, Shlansky-Goldberg RD. (2015) "Targeted transgastric drainage of isolated pancreatic duct segments to cure persistent pancreaticocutaneous fistulas from pancreatitis." *Journal of Vascular and Interventional Radiology*. 26(2): 247-51.
- ★ 15. **Boas FE**, Do B, Louie JD, Kothary N, Hwang GL, Kuo WT, Hovsepian DM, Kantrowitz M, Sze DY. (2015) "Optimal imaging surveillance schedules after liver-directed therapy for hepatocellular carcinoma." *Journal of Vascular and Interventional Radiology*. 26(1): 69-73.
- ★ 14. **Boas FE**, Kamaya A, Do B, Desser TS, Beaulieu CF, Vasanaawala SS, Hwang GL, Sze DY. (2015) "Classification of hypervascular liver lesions based on hepatic artery and portal vein blood supply coefficients calculated from triphasic CT scans." *Journal of Digital Imaging*. 28: 213-23.
13. Olcott EW, Shin LK, Sommer G, Chan I, Rosenberg J, Molvin FL, **Boas FE**, Fleischmann D. (2014) "Model-based Iterative Reconstruction Compared to Adaptive Statistical Iterative Reconstruction and Filtered Back-projection in CT of the Kidneys and the Adjacent Retroperitoneum." *Academic radiology*. 21(6): 774-84.
- ★ 12. **Boas FE** and Fleischmann D (2012). "CT artifacts: Causes and reduction techniques." *Imaging in Medicine*. 4(2): 229-40.

11. Abelson JA, Murphy JD, Wiegner EA, Abelson D, Sandman DN, **Boas FE**, Hristov D, Fleischmann D, Daly ME, Chang DT, Loo BW, Hara W, Le QT. (2012) "Evaluation of a metal artifact reduction technique in tonsillar cancer delineation." *Practical Radiation Oncology*. 2(1): 27-34.
- ★ 10. **Boas FE** and Fleischmann D. (2011) "Evaluation of two iterative techniques for reducing metal artifacts in computed tomography." *Radiology*. 259(3): 894-902.
9. Fleischmann D and **Boas FE**. (2011) "Computed tomography: Old ideas and new technology." *European Radiology*. 21(3): 510-17.
- ★ 8. **Boas FE**, Harbury PB. (2008) "Design of protein-ligand binding based on the molecular-mechanics energy model." *Journal of Molecular Biology*. 380(2): 415-24.
7. **Boas FE** and Harbury PB. (2007) "Potential energy functions for protein design." *Current Opinion in Structural Biology*. 17(2): 199-204.
6. Bass JL, Bhatia A, **Boas FE**, Sansary J, Rauch D. (2006) "Validation of a body mass index nomogram for children as an obesity screening tool in young children." *Clinical Pediatrics*. 45(8): 718-24.
5. Arava Y, **Boas FE**, Brown PO, Herschlag D. (2005) "Dissecting eukaryotic translation and its control by ribosome density mapping." *Nucleic Acids Research*. 33(8):2421-32.
4. **Boas FE**. (2000) "Linkage to Gaucher mutations in the Ashkenazi population: Effect of drift on decay of linkage disequilibrium and evidence for heterozygote selection." *Blood Cells, Molecules, and Diseases*. 26(4): 348-59.
3. Demina A, **Boas E**, and Beutler E. (1998) "Structure and linkage relationships of the region containing the human L-type pyruvate kinase (*PKLR*) and glucocerebrosidase (*GBA*) genes." *Hematopathol Mol Hematol*. 11(2): 63-71.
- ★ 2. **Boas FE**, Forman L, Beutler E. (1998) "Phosphatidylserine exposure and red cell viability in red cell aging and in hemolytic anemia." *Proc Natl Acad Sci USA*. 95(6): 3077-3081.
1. Ahn CS, **Boas E**, and Rahn B. (1997) "The geometry and the game theory of chases." *The UMAP Journal*. 18(3): 225-242.

Abstracts

Presenter is listed in italics.

76. Villalona-Calero MA, Forman SJ, Palmer J, Synold TW, Tian L, Lu T, Egelston CA, Massarelli E, Salgia R, Kim T, Meisen WH, Zhang J, Waddington T, **Boas FE**, Budde LE, Butt O, Vezen RN, Caligiuri MA, Yu J. (2023) "A Phase 1 trial of umbilical cord blood derived tumor-reactive PD-

- L1+ natural killer cells engineered to express soluble IL-15 (TRACK-NKTM) in patients with non-small cell lung cancer (NSCLC) refractory to PD-1/PD-L1 inhibitors.” Poster presentation at ASCO. *Journal of Clinical Oncology* 41(16): TPS2665.
75. Lee J, **Boas FE**, Cappelletti M, Lu D, Raman S, Lee E, Chiang J. (2023) “Characterizing the Anti-Tumor Immune Response to IRE vs Thermal Ablation Therapy in an Immunocompetent Oncopig Model of Hepatocellular Carcinoma.” Presentation at SIR. *JVIR* 34(3): S73-4.
74. *Aulitzky A*, Vanden Berg RW, Yip W, Scherz A, **Boas FE**, Monette S, Kim K, Coleman JA. (2022) “Development of a porcine model of bladder cancer utilizing the Oncopig.” Poster presentation at the Society of Urologic Oncology annual meeting, 2022-11-30.
- ★ 73. *Youssef EW*, Ghosn M, El Hawari M, Fine GC, Maybody M, Yarmohammadi H, Brown KT, **Boas FE**. (2022) “Portal vein stent placement for malignant portal vein occlusion.” Oral presentation at SIR, 2022-06-14. *JVIR* 33(6): S98-S99.
- ★ 72. Maxwell AWP, Mendoza HG, Sellitti MJ, Camacho JC, Deipolyi AR, Ziv E, Sofocleous CT, Yarmohammadi H, Maybody M, Humm JL, Schwartz J, Juluru K, Dunphy MP, **Boas FE**. (2022) “Optimizing ⁹⁰Y particle density improves outcomes after radioembolization.” Oral presentation at SIR, 2022-06-12. *JVIR* 33(6): S13.
71. Maxwell AWP, Mendoza HG, Sellitti MJ, Camacho JC, Deipolyi AR, Ziv E, Sofocleous CT, Yarmohammadi H, Maybody M, Humm JL, Schwartz J, Juluru K, Dunphy MP, **Boas FE**. (2021) “Effects of particle density on outcomes after lobar radioembolization.” Poster presentation at RSNA, 2021-11-28.
70. **Boas FE**, Elsakka AS, Maxwell AWP, Ridouani F, Nagar K, Wei AC, Cheleuitte-Nieves C, Ziv E, Scherz A, Kelsen DP, Solomon SB, Yarmohammadi H. (2021) “Downstaging locally advanced pancreatic cancer to resectability: Perivascular ablation using an intra-arterial balloon laser catheter in pigs.” Poster presentation at RSNA, 2021-12-01.
69. Ng V, **Boas FE**, Cohen G, Moore A, Kemeny N, Weiser M, Paty P, Crane CH. (2021) “CT-Guided Interstitial Low Dose-RATE Brachytherapy for Recurrent Colorectal Cancer.” *International Journal of Radiation Oncology*Biophysics* 111(3): e65.
- ★ 68. **Boas FE**, Kemeny NE, Sofocleous CT, Yeh R, Thompson VR, Hsu M, Moskowitz CS, Ziv E, Yarmohammadi H, Bendet A, Solomon SB. (2021) “Phase I Study of Transarterial Chemoembolization of Lung Metastases.” Poster presentation at ASCO, 2021-06-04. *Journal of Clinical Oncology* 39(15): 3602.
- ★ 67. *Yarmohammadi H*, Elsakka AS, Nurili F, Maxwell AWP, Ridouani F, Ziv E, O’Reilly EM, Cheleuitte-Nieves C, Schook LB, Solomon SB, **Boas FE**. (2021) “Treatment of pancreatic cancer by intra-arterial injection of an emulsion of Lipiodol and bumetanide (an anti-glycolytic drug) in a transgenic mutated pig model (Oncopig).” Oral presentation at SIR, 2021-03-26. *JVIR* 32(5): S38.

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64. *Ghosn M, Kingham P, Doustaly R, Santos E, Ridouani F, Yarmohammadi H, Boas FE, Covey A, Brody L, Jarnagin W, D'Angelica M, Camacho JC.* (2021) "Liquid versus non-liquid (particles) embolic agents in portal vein embolization prior to major liver resection: comparison of volumetric and clinical outcomes." Poster presentation at SIR. *JVIR* 32(5): S97-8.
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- ★ 55. *Boas F, Nurili F, Erinjeri J, Schook L, Solomon S, Yarmohammadi H. (2019) "Local immunotherapy: Intra-arterial liver tumor vaccination in a pig model of metastatic pancreatic cancer." Oral presentation at SIR, Austin, TX, 2019-03-25. JVIR 30(3S): S98-9.*
54. *Zhang Y, Deipolyi A, Yarmohammadi H, Ziv E, Sofocleous C, Boas F. (2019) "Outcomes after radioembolization involving the phrenic artery." Oral presentation at SIR, Austin, TX, 2019-03-27. JVIR 30(3S): S192.*
- ★ 53. *Nurili F, Yarmohammadi H, Bendet A, Schook L, Srimathveeravalli G, Solomon S, Boas F. (2019) "Improved intra-arterial tumor targeting using an omniphobic oil in a pig model." Poster presentation at SIR, Austin, TX, 2019-03-26. JVIR 30(3S): S204.*
52. *Yarmohammadi H, Nurili F, Fujimori M, Monette S, Kelsen D, Coleman J, O'Reilly E, Schook L, Solomon S, Scherz A, Srimathveeravalli G, Boas F. (2019) "Nonthermal ablation of pancreatic cancer in a pig model, using vascular-targeted photodynamic therapy (VTP)." Poster presentation at SIR, Austin, TX, 2019-03-26. JVIR 30(3S): S266.*
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50. *Sutton C, Zhang Y, Yarmohammadi H, Ziv E, Boas F, Kishore S, Camacho J, Erinjeri J. (2019) "Analysis of the Chemotherapy Free Interval Following Image Guided Ablation in Sarcoma Patients." Oral presentation at SIR, Austin, TX, 2019-03-26. JVIR 30(3S): S126-7.*
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45. *Zener R, Yoon H, Ziv E, Covey A, Brown KT, Sofocleous CT, Thornton RH, Boas FE. (2018) "Outcomes after transarterial embolization versus radioembolization of neuroendocrine tumor liver metastases." Oral presentation at SIR, Los Angeles, 2018-03-21. J VIR 29(4): S138.*
44. *Ziv E, Boas F, Yarmohammadi H, Solomon S, Erinjeri J. (2018) "Genetic heterogeneity across tumor specimens in patients with neuroendocrine liver metastases." Oral presentation at SIR, Los Angeles, 2018-03-21. J VIR. 29(4): S139-40.*
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38. *Ziv E, Boas F, Yarmohammadi H, Solomon S, Petre E, Erinjeri J. (2018) "DAXX mutation is an independent predictor of hepatic progression free survival after trans-arterial embolization of neuroendocrine liver metastases." Poster presentation at SIR, Los Angeles.*

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34. **Borgheresi A**, **Boas FE**, Brown KT, Covey AM, Erinjeri JP, Getrajdman GI, Gonen M, Solomon SB, Yarmohammadi H, Ziv E. (2017) "Outcome Following Hepatic Artery Embolization for HCC in Presence of Portal Vein Tumor." Oral presentation at SIR, Washington, DC, 2017-03-07. *JVIR* 28(2): S123.
33. **Perez-Johnston R**, **Boas FE**, Durack JC, Muallem N, Siegelbaum RH. (2017) "Endovascular stenting for symptomatic pelvic venous thrombosis or occlusion in cancer patients." Oral presentation at SIR, Washington, DC, 2017-03-07. *JVIR* 28(2): S112.
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30. **Borgheresi A**, Gonzalez-Aguirre A, Brown KT, Getrajdman GI, Erinjeri JP, Covey A, Yarmohammadi H, Ziv E, Sofocleous C, **Boas FE**. (2017) "Does enhancement or perfusion predict outcomes after embolization of hepatocellular carcinoma." Oral presentation at SIR, Washington, DC, 2017-03-05. *JVIR* 28(2): S13.
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28. **Filtes J**, **Boas FE**, Brody L, Covey AM, Erinjeri JP, Getrajdman GI, Kim TH, Petre E, Sofocleous CT, Solomon SB, Yarmohammadi H, Ziv E. (2017) "DAXX mutation is associated with poor response and shorter hepatic progression after hepatic artery embolization of neuroendocrine liver metastases." Oral presentation at SIR, Washington, DC, 2017-03-05. *JVIR* 28(2): S20.

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26. *Kim T, Petre E, Maybody M, Durack J, Brody L, Erinjeri J, Boas F, Yarmohammadi H, Solomon S, Ziv E. (2017) "Histologic subtype based on core needle biopsy can predict lung adenocarcinoma progression after surgery." Poster presentation at SIR, Washington, DC. JVIR 28(2): S204-5.*
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24. *Currie BM, Getrajdman GI, Covey AM, Alago W, Erinjeri JP, Maybody M, Boas FE. (2016) "Push versus Pull Gastrostomy: A Single Center Retrospective Analysis of Complications and Technical Success Rates." Oral presentation at RSNA, Chicago, 2016-11-30.*
23. *Fine GC, Boas FE, Durack JC, Covey A, Getrajdman GI, Erinjeri JP, Brody LA, Maybody M, Muallem N, Brown KT. (2016) "Outcomes after portal vein stenting in cancer patients." Poster presentation at WCIO, Boston, 2016-06-10.*
22. *Yarmohammadi H, Boas FE, Brody L, Durack JC, Erinjeri JP, Flood L, Getrajdman GI, Gonzalez-Aguirre A, Maybody M, Mohabir HR, Solomon SB, Thornton RH, Ziv E. (2016) "Comparison of Radiation dose, Procedure Time and Diagnostic Yield of Conventional CT-guided lung biopsy with CT fluoroscopy-guided lung biopsy." Oral presentation at SIR, Vancouver, 2016-04-06.*
21. *Bergen MA, Boas FE, Do KG, Erinjeri JP, Petre E, Sofocleous CT, Solomon SB, Yarmohammadi H, Ziv E. (2016) "PIK3CA mutation status associated with improved tumor response to Yttrium-90 radioembolization (Y90) of chemorefractory liver-dominant colorectal cancer (CRC) metastases." Oral presentation at SIR, Vancouver, 2016-04-06.*
20. *Temiyakarn L, Boas FE, Durack JC, Erinjeri JP, Maybody M, Temiyakarn L, Yarmohammadi H, Ziv E. (2016) "The time cost of graduate medical education: Do fellows actually increase procedure time?" Oral presentation at SIR, Vancouver, 2016-04-04.*
19. *Boas FE, Srimathveeravalli G, Kaye E, Durack JC, Erinjeri JP, Ziv E, Maybody M, Yarmohammadi H, Solomon SB. (2016) "Development of a searchable database of cryoablation simulations, for use in treatment planning." Oral presentation at SIR, Vancouver, 2016-04-03. JVIR 27(3): S31.*
18. *Morel-Ovalle LM, Boas FE, Durack JC, Erinjeri JP, Kotarska MA, Mohabir HR, Yarmohammadi H, Ziv E. (2016) "Predicting optimal outpatient IR procedure locations using a Google Maps application." Oral presentation at SIR, Vancouver, 2016-04-03.*

17. **Boas FE**, Brody LA, Erinjeri JP, Yarmohammadi H, Shady W, Kishore S, Sofocleous CT. (2015). "Quantitative Enhancement Measurements on Pre-procedure Triphasic CT Can Predict Response to Radioembolization of Colorectal Liver Metastases." Oral presentation at RSNA, Chicago, 2015-12-01.
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15. Sotirchos VS, Shady W, Violari EG, Pietanza MC, Pandit-Taskar N, Do RK, Gonen M, Carrasquillo JA, Brody L, Alago W, Siegelbaum RH, Yarmohammadi H, **Boas FE**, Sofocleous C. (2015). "Single-Center Experience of Selective Internal Radiation Therapy as a Salvage Treatment for Small Cell Lung Cancer Hepatic Metastases." Poster presentation at WCIO, New York. *JVIR* 26(5):e77.
14. *Goel A*, Yarmohammadi H, **Boas FE**, Erinjeri JP. (2015). "Modeling hematologic effects of chemotherapy commonly used in patients undergoing interventional radiology procedures: what is the safe window?" Poster presentation at SIR, Atlanta. *JVIR* 26(2): S187.
13. *Shady W*, Sotirchos VS, Pandit-Taskar N, Carrasquillo JA, Do K, Brody LA, Alago W, Siegelbaum RH, Yarmohammadi H, **Boas FE**, Kishore S, Gonen M, Kemeny NE, Sofocleous CT. (2015) "Enhancement patterns of colorectal liver metastases on pre-SIRT mapping CT arteriography correlates with FDG-PET SUVmax metabolic response." Poster presentation at SIR, Atlanta. *JVIR* 26(2): S189-S190.
12. **Boas FE**, Kelly P, and Shlansky-Goldberg R. (2014) "Targeted transgastric drainage of persistent pancreaticocutaneous fistulas." Oral presentation at SIR, San Diego, 2014-03-23. *JVIR* 25(3): S41.
11. *Do BH*, **Boas FE**, Muelly M, Massaband PM, Biswal S. (2013) "Simplifying the understanding of shoulder labral tears using a multimedia reporting enabled PACS." Presented at RSNA, Chicago, 2013.
10. **Boas F**, Kamaya A, Do B, Beaulieu C, Dessler T, Vasanawala S, Hwang G, Sze D. (2013) "Hepatic artery and portal vein blood volumes in hypervascular liver lesions: Estimation from triphasic CT scans." Oral presentation at ARRS, Washington, DC, 2013-04-15.
9. *Blake T*, Dao C, **Boas FE**, Fearon W, Miller D, Fleischmann D. (2012) "CT-based instantaneous calculation of viewing angles for device deployment in patients undergoing transcatheter aortic valve replacement (TAVR)." Presented at RSNA, Chicago, 2012-11-27.
8. **Boas FE**, Bammer R, Fleischmann D. (2012) "Optimized CT metal artifact reduction using the Metal Deletion Technique (MDT)." Oral presentation at RSNA, Chicago, 2012-11-26.

7. *Fleischmann D, Dao C, Blake T, Boas FE, Liang D, Yeung, A, Fearon W, Fischbein M, Miller DC. (2012) "Computed tomography based prediction of angiographic deployment angles may reduce procedure time and contrast medium volume for transcatheter aortic valve replacement." Poster presentation at ACC, Chicago, 2012-03-24. J Am Coll Cardiol. 59(13s1):E1199-E1199.*
6. *Fleischmann D, Boas FE, Tye GA, Sheahan D, Molvin LZ. (2011) "Effect of low radiation dose on image noise and subjective image quality for analytic vs iterative image reconstruction in abdominal CT." Oral presentation at RSNA, Chicago, 2011-12-01.*
- ★ 5. *Boas FE, Desser TS, and Kamaya A. (2011) "Does separating the resistive index into pre- and postglomerular resistance and vascular compliance improve upon the diagnostic accuracy of renal transplant doppler sonography?" Oral presentation at ARRS, Chicago, 2011-05-03. AJR 196(5): A31-35.*
4. *Golden C, Mazin SR, Boas FE, Tye G, Ghanouni P, Gold G, Sofilos M, Pelc NJ. (2011) "A comparison of four algorithms for metal artifact reduction in CT imaging." Poster presentation at SPIE. Proc. SPIE. 7961: 79612Y.*
3. *Boas FE and Fleischmann D. (2010) "Evaluation of the metal deletion technique (MDT): A new method for reducing metal streak artifacts in computed tomography scans." Oral presentation at RSNA, Chicago, 2010-11-29.*
2. *Boas FE, Forman L, and Beutler E. (1997) "Phosphatidylserine exposure and red cell viability in red cell ageing, storage, and in hemolytic anemia." Blood. 90(10) (Supplement 1, Part 1): 272a.*
1. *Boas FE, Forman L, and Beutler E. (1997) "Phosphatidylserine exposure in red cell aging." The Scripps Research Institute Scientific Report 1996-97. pp. 258-60.*

Invited lectures

13. *Boas FE. (2022) "Transarterial chemoembolization of lung metastases." SIR meeting, Boston, 2022-06-12.*
12. *Boas FE. (2022) "Interventional oncology bioengineering lab: New local therapies for liver, lung, and pancreatic cancer." Swine in Biomedical Research Conference, University of Wisconsin–Madison, 2022-06-12.*
11. *Boas FE. (2022) "Transarterial chemoembolization of lung metastases." SIO meeting, San Francisco, 2022-03-26.*
10. *Boas FE. (2022) "Y90 treatment strategies for liver metastases." SIO meeting, San Francisco, 2022-03-24.*

9. **Boas FE.** (2021) "Intraarterial Chemotherapy: Should It Be Used More Commonly and When?" SIR annual meeting, 2021-03-23.
8. **Boas FE.** (2021) "New intraarterial therapies for extrahepatic disease." Asia Pacific Society of Cardiovascular and Interventional Radiology, 2021-02-28.
7. **Boas FE.** (2020) "Intra-tumoral immunotherapy for liver metastases." The Academy Imaging Shark Tank, RSNA, 2020-11-30.
6. **Boas FE.** (2020) "New intra-arterial therapies for pancreatic and lung cancer." SIR annual meeting, 2020-03-29.
5. **Boas FE.** (2018) "Outcomes of embolotherapy for HCC." SIO master class, Chicago, IL, 2018-11-10.
4. **Boas FE.** (2017) "Precision medicine and image guided interventions" in "Oncologic imaging in the age of precision medicine." Speaker and moderator at European Congress of Radiology, Vienna, 2017-03-01.
3. *Soulen MC, Rilling WS, Shamimi-Noori S, Boas FE.* (2016) "Basic embolization I (patient selection and triage)." Case-based workshop speaker at SIR, Vancouver, 2016-04-04.
2. **Boas FE.** (2012) "CT metal artifact reduction and other image post-processing applications." Stanford Radiology grand rounds, Stanford, CA, 2012-04-03.
1. **Boas FE.** (2011) "Iterative techniques for metal artifact reduction." Oral presentation at the International Society for Computed Tomography meeting, San Francisco, 2011-06-13.

Book chapters and other publications

8. **Boas FE.** (2022) "Embolization for lung tumors." In Fong Y, Covey A, Ahmed M, Kessler J, Iannitti D, and Dupuy D (Eds.), *Interventional Oncology: Multidisciplinary Approach to Image-Guided Cancer Therapy*, 2nd ed. Springer Nature. In press.
7. **Boas FE** and Solomon SB. (2022) "Postoperative complications requiring intervention: Diagnosis and management." In WR Jarnagin (Ed.), *Blumgart's Surgery of the Liver, Biliary Tract and Pancreas*, 7th ed. New York, NY: Elsevier.
6. **Boas FE** and Sofocleous CT. (2020) "Embolotherapy for the management of liver malignancies other than hepatocellular carcinoma." In Mauro MA, Murphy KP, Thomson KR, Venbrux AC, and Morgan RA (Eds.), *Image-Guided Interventions*, 3rd ed., Expert Radiology Series.

5. Soulen MC, Rilling WS, Shamimi-Noori S, **Boas FE**. (2016) “Basic embolization I (patient selection and triage).” In *FAQs in Interventional Radiology, Volume 3*. Fairfax, VA: Society of Interventional Radiology.
4. Solomon SB, Griffin JF, Weiss MJ, **Boas FE**. (2016) “Postoperative complications requiring intervention: Diagnosis and management” In WR Jarnagin (Ed.), *Blumgart’s Surgery of the Liver, Biliary Tract, and Pancreas, 6th ed.* New York, NY: Elsevier.
3. **Boas FE**, Shlansky-Goldberg RD. (2015) “Role of interventional radiology in managing bile duct injuries.” In Dixon E, Vollmer CM, May GR (Eds.), *Management of Benign Biliary Stenosis and Injury: A Comprehensive Guide*. New York, NY: Springer.
- ★ 2. **Boas FE**. (2008) *Physics-Based Design of Protein-Ligand Binding*. PhD dissertation, Department of Biochemistry, Stanford University. Advisor: Pehr Harbury.
- ★ 1. **Boas FE**. (1999) “Polyvalent inhibitors of *Pseudomonas aeruginosa* adhesion.” Senior honors thesis, Harvard University. Advisor: George Whitesides.

Patent applications

5. **Boas FE**. (2023) “Systems and methods related to dosimetry for radioembolization, chemoembolization, and drug eluting embolization procedures.” US Prov. Appl. Assignee: COH.
4. **Boas FE**, Erinjeri J. (2019) “Intra-arterial injection of vaccine adjuvants into tumors for treatment of metastatic cancer.” US Prov. Appl. No. 62/817,116 (abandoned). Assignee: MSKCC.
3. **Boas FE**. (2018) “Improved intra-arterial tumor targeting using an omniphobic oil.” US Prov. Appl. No. 62/754,139 (abandoned). Assignee: MSKCC.
- ★ 2. **Boas FE**. (2012) “Iterative reduction of artifacts in computed tomography images using forward projection and an edge-preserving blur filter.” U.S. Patent 8233586. Assignee: F. Edward Boas.
1. **Boas FE**. (2008) “Methods and apparatus for reducing artifacts in computed tomography images.” U.S. Patent Application 2008/0273651 (abandoned).

Software

- ★ 2. ClariPACS (2012-2022). Modern web-based PACS, including interactive multimedia radiology reports, screen share, and image post-processing. Co-written with Bao Do and Michael Muelly. <http://www.claripacs.com>.

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- ★ 1. Metal deletion technique (2010-2013). Patented CT metal artifact reduction software, used in more than 140 hospitals, including MGH, MD Anderson, and Stanford.
<http://www.revisionrads.com>

Disclosures

Received research grants from Guerbet, Society of Interventional Oncology, Department of Defense, Thompson family foundation, Brockman Medical Research Foundation, and City of Hope. Attended research consensus panel with Society of Interventional Oncology. Received research support (investigator-initiated) from GE Healthcare. Received research supplies (investigator-initiated) from Boston Scientific. Materials transfer agreement with Sus Clinicals. Animal services agreement with Lundquist institute. Shareholder in, and employed by City of Hope Medical Group. Co-founder of Claripacs, LLC. Investor in Labdoor, Qventus, CloudMedx, Notable Labs, Xgenomes, and Solugen.