



SURGERY GRAND ROUNDS

Research Presentation in partial fulfillment for the Master of Medical Science degree:

“Targeting Myeloid Derived Suppressor Cells to Improve Cancer Therapy”

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Medical School: University of Michigan Medical School, Ann Arbor, MI

General Surgery Residency: The Ohio State University College of Medicine, Columbus, OH

Research Advisor(s): William E. Carson III, MD

Photo (on file)

Research Publications:

- 1) **Sun SH**, Zheng, M., Ding, K., Wang, S., and Sun, Y.: A small molecule that disrupts Mdm2-p53 binding activates p53, induces apoptosis, and sensitizes lung cancer cells to chemotherapy. Cancer Biol & Therapy, 7:845-852, 2008.
- 2) Sun, J., Yu, E. Y., Yang, Y., Confer, L. A., **Sun SH**, Wan, K., Lue, N. F., and Lei, M. Stn1-Ten1 is an Rpa2-Rpa3-like complex at telomeres. Genes & Dev. 23:2900-2914, 2009.
- 3) Mansfield SA, Melvin, WJ, Carlyle B, Sun S, Huntington JT, Evans DC, Rushing, AP. Systemic Inflammatory Response and Fat Necrosis of Perineal Soft Tissues: A Rare Complication of Bladder-Drained Transplanted Pancreas Leak. Pancreat Disord Ther, 6:2, 2016
- 4) **Sun SH**, Peters SB and Howard JH. Sentinel Lymph Node Melanosis: A Report of Two Cases of Regressed Melanoma Metastases. SM J Dermatolog. 2017; 3(2): 1014.
- 5) Moris D, Chakedis J, **Sun SH**, Spolverato G, Tsilimigras DI, Ntanasis-Stathopoulos I, Spartalis E, Pawlik TM. Management, Outcomes, and Prognostic Factors of Ruptured Hepatocellular Carcinoma: A Systematic Review. J Surg Oncol. 2017; 1-13.
- 6) Chakedis J, Squires MH, Beal EW, Hughes T, Lewis H, Paredes A, Al-Mansour M, **Sun S**, Cloyd JM, Pawlik TM. Update on Current Problems in Colorectal Liver Metastasis. Curr Probl Surg. 2017. Nov; 54(11): 554-602.
- 7) Cerier EJ, Beal EW, Chakedis J, Chen Q, Paredes AZ, **Sun SH**, Cloyd JM, Pawlik TM. Impact of Poor Patient-Provider Relationships Among Patients with Hepatopancreatobiliary Diseases. J Surg Res. 2018 Aug;228:290-298
- 8) Paredes AZ, Idrees JJ, Beal EW, Chen Q, Cerier EJ, Okunrintemi V, Olsen G, **Sun SH**, Cloyd JM, Pawlik, TM. Influence of English Proficiency on Patient-Provider Communication and Shared Decision-Making. Surgery. 2018 Jun;163(6):1220-1225.
- 9) Hughes T, Merath K, **Sun SH**, Chen Q, Idrees JJ, Squires MH, Beal EW, Palmer E, Okunrintemi V, Pawlik TM. Association of Shared Decision-Making on Patient-Reported Health Outcomes and Healthcare Utilization. Am J Surg. 2018 Jul;216(1):7-12
- 10) Chakedis J, Spolverato G, Beal EW, Woelfel I, Bagante F, Merath K, **Sun SH**, Chafitz A, Galo J, Dillhoff M, Cloyd J, Pawlik TM. Pre-operative Sarcopenia Identifies Patients at Risk for Poor Survival After Resection of Biliary Tract Cancers. J Gastrointest Surg. 2018 Oct;22(10):1697-1708
- 11) Chakedis J, Beal EW, **Sun SH**, Galo J, Chafitz A, Davidson G, Reardon J, Dillhoff M, Pawlik TM, Abdel-Misih S, Bloomston M, Schmidt CR. Implementation and Early Outcomes for a Surgeon-Directed Hepatic Arterial Infusion Pump Program for Colorectal Metastases. J Surg Oncol. 2018 Dec;118(7):1065-1073

- 12) Merath K, Chen Q, Bagante F, **Sun SH**, Akgul O, Idrees JJ, Dillhoff M, Schmidt C, Cloyd J, Pawlik TM. Variation in the Cost-of-Rescue Among Medicare Patients with Complications Following Hepatopancreatic Surgery. *HPB (Oxford)*. 2018 Sep 25
- 13) Chen Q, Beal EW, Okunrintemi, V, Cerier EJ, Paredes AZ, **Sun SH**, Olsen G, Pawlik TM. The Association Between Patient Satisfaction and Patient Reported Health Outcomes. *Journal of Patient Experience*. 2018 Aug 27
- 14) Klompenhouwer, A, Dwarkasing RS, Doukas, M, Pellegrino S, Vilgrain V, Paradis V, Soubrane O, Beane JD, Geller DA, Nalesnik MA, Tripke V, Lang, H, Schmelze M, Pratschke J, Schoening W, **Sun SH**, Beal EW, Pawlik TM, Deman R, Ijzermans J. Hepatic angiomyolipoma: an international multicenter analysis on diagnosis, management and outcome. *HPB*. 2019
- 15) Sundi D, Duggan MC, Savardekar H, Kwon H, **Sun SH**, Benner B, DiVincenzo M, Lee CT, Svatek RS, Carson WE III. Association of myeloid derived suppressor cells with resistance to checkpoint blockade immunotherapy in urothelial carcinoma. *J Clin Onc*. 2020 Feb;38(6):559-559
- 16) Sundi D, Duggan MC, Savardekar H, **Sun SH**, Kwon H, Brown J, Zhao J, Mace T, and Carson WE III. PD47-03 Preclinical cellular and genomic biomarkers of resistance to immune checkpoint blockade in urothelial carcinoma. *Journal of Urology*. 2020 Apr;203(4):926-926
- 17) Benner B, Quiroga, D, Good, L, **Sun SH**, Savardekar H, Duggan MC, Stiff A, Lapurga G, Scarberry L, Kulesza L, Shaffer J, Konda B, Verschraegen C, Kendra K, Shah M, Rupert RD, Monk JP III, Shah H, Noonan A, Bixel KL, Hays J, Behbehani G, Blaser B, Pietrzak M, Carson WE III, Wesolowski R. A pilot study of Bruton's tyrosine kinase inhibitor ibrutinib alone and in combination with PD-1 inhibitor nivolumab in patients with metastatic solid tumors. *J Clin Onc*. 2020 May;38(15):3111-3111
- 18) **Sun SH**, Benner B, Savardekar H, Good L, Abood D, Nagle E, Duggan MC, Stiff A, DiVincenzo M, Suarez-Kelly LP, Campbell A, Wesolowski R, Howard JH, Shah H, Kendra K, Carson WE III. Effect of immune checkpoint blockade on myeloid-derived suppressor cell populations in patients with melanoma. *Manuscript in preparation for Cancer Immunology Research following AACR presentation*
- 19) **Sun SH**, Sundi D, Abood D, Benner B, DiVincenzo M, Duggan MC, Chouierey F, Mace T, Trikha P, Yu L, Zhao J, Carson WE III. Targeting Myeloid Derived Suppressor Cells Enhances Therapeutic Response of Anti-PD-L1 Immune Checkpoint Blockade. *Manuscript in preparation for Annals of Surgical Oncology*
- 20) Suarez-Kelly LP, **Sun SH**, Ren C, Rampersaud IV, Albertson D, Duggan MC, Noel TC, Courtney N, Buteyn NJ, Moritz C, Yu L, Yildiz VO, Butchar JP, Tridandapani S, Rampersaud AA, Carson WE III. Antibody Conjugation of Fluorescent Nanodiamonds for Targeted Innate Immune Cell Activation. *Manuscript submitted for American Chemical Society Applied Nanotechnology*

Research Presentations:

- 1) **Steven Sun**. "Identification of Celiac Trunk Branches and Implications of Foregut Arterial Blood Supply"
Presented at the University of Michigan Summer Research Symposium. 2012
Accepted to the American Association of Clinical Anatomists Conference. 2012
- 2) Jules Lin, William B. Weir, Tyler Grenda, Peng Zhang, John Donkersloot, Binu Enchakalody, Brian Derstine, Joshua Underhill, **Steven H. Sun**, Rishindra M. Reddy, *Andrew C. Chang, Stewart C. Wang. "Analytic Morphomics Predict Outcomes Following Lung Volume Reduction Surgery"
Presented at the American Association of Thoracic Surgeons Annual Meeting. 2016
Poster Winner of General Thoracic Moderated Poster Competition at American Association of Thoracic Surgeons Annual Meeting. 2016
- 3) **Steven Sun**, Debasish Sundi, David Abood, Brooke Benner, Mallory DiVincenzo, Megan Duggan, Fouad Chouierey, Thomas A. Mace, Prashant Trikha, Lianbo Yu, Jing Zhao, William E Carson III
"Targeting Myeloid Derived Suppressor Cells with Ibrutinib Enhances Therapeutic Response to Anti-PD-L1 Immune Checkpoint Blockade"
Presented at Ohio State University College of Medicine Trainee Research Day, April 16, 2020.
- 4) **Steven Sun**, Brooke Benner, Himanshu Savardekar, Mallory DiVincenzo, David Abood, Andrew Stiff, Megan Duggan, Erin Nagle, J Harrison Howard, Manisha H Shah, Kari L Kendra, William E Carson III. "Effect of Immune Checkpoint Blockade on Myeloid Derived Suppressor Cell Populations in Patients with Melanoma"

Presented at American Association of Cancer Research Annual Meeting. April 28, 2020.
Permanent Abstract Number: 4481

- 5) **Steven Sun**, Debasish Sundi, David Abood, Brooke Benner, Mallory DiVincenzo, Megan Duggan, Fouad Chouieri, Thomas A. Mace, Prashant Trikha, Lianbo Yu, Jing Zhao, William E Carson III
“Targeting Myeloid Derived Suppressor Cells with Ibrutinib Enhances Therapeutic Response to Anti-PD-L1 Immune Checkpoint Blockade”
Presented at Society of Surgical Oncology Annual Meeting. August 17, 2020.
Abstract ID: 3285029

- 6) **Steven Sun**, Gabriella Lapurga, Brooke Benner, Himanshu Savardekar, Mallory DiVincenzo, David Abood, Andrew Stiff, Megan Duggan, Erin Nagle, J Harrison Howard, Manisha Shah, Kari L Kendra, William E Carson III.
“Differences in Myeloid Derived Suppressor Cell Populations in Patients with Ulcerated versus Non-ulcerated Melanoma Receiving Immune Checkpoint Blockade”
Accepted at Society of Surgical Oncology Annual Meeting. March 19, 2021.

Research Awards:

- 1) T32 ARTIST Grant awardee for 2019 and 2020.