

## Faculty Researcher Highlight— Dr. Venu Pillarisetty



**When Dr. Venu Pillarisetty joined the UW Department of Surgery as a new Surgical Oncologist in 2009, he was among a small group of “true believers” in the potential of immunotherapy for cancer. His goal was to learn more about the body’s immune response to pancreatic cancer in order to figure out ways to strengthen this response to provide therapeutic benefit to patients. Although there has been a well-publicized revolution in cancer immunotherapy over the past decade, few patients with pancreatic cancer or other advanced gastrointestinal malignancies are able to benefit from these advances.**

A major focus of Dr. Pillarisetty’s strategy to help create effective immunotherapies for these diseases has centered on developing new model systems and establishing critical collaborations with other clinicians and scientists. Over four years ago, Dr. Pillarisetty, now Associate Professor in the Division of General Surgery, Dr. Raymond Yeung (Professor, Division of General Surgery), and Dr. Ian Nicholas “Nick” Crispe (Professor of Pathology) developed a plan to study live human tumor slices in culture to gain novel insights into the tumor microenvironment. This planning led to the purchase of a vibratome, which, to the lay person, looks a bit like a tiny deli slicer and can be used to make perfect slices of tissue while causing minimal damage to the cells. Drs. Xiuyun Jiang and

Heidi Kenerson, research scientists in the Pillarisetty and Yeung labs, respectively, then worked tirelessly to develop consistent protocols to grow tumor slices in culture for study. Similarly, members of Dr. Crispe’s lab developed techniques to grow normal and diseased liver slices in culture to be able to study the unique liver microenvironment.

Importantly, as the Pillarisetty lab focuses on the tumor immune microenvironment (TIME), the slice culture method preserves not only the cancer cells and scar tissue that make up cancer, but also the various types of immune cells that enter the cancer as part of the body’s defense mechanism. One of the exciting findings by the Pillarisetty lab was recently published in the journal *Clinical Cancer Research* ([DOI: 10.1158/1078-0432.CCR-19-0081](https://doi.org/10.1158/1078-0432.CCR-19-0081)) and describes how the immune cells that enter pancreatic cancers have an untapped ability to kill cancer cells. In fact, simply combining two classes of immunotherapy drugs led to dramatic activation of immune cells against the cancer within the slice culture system. Dr. Y. David Seo, a General Surgery resident who recently completed a two-year fellowship in the Pillarisetty lab and was the manuscript’s first author, worked with other lab members and numerous collaborators to provide a compelling rationale for testing this drug combination in the clinic.

In addition to research scientist Xiuyun Jiang, there are currently three surgical residents working in the lab. Dr. Kevin Sullivan is presently finishing his lab fellowship and is preparing a manuscript detailing the ability of interleukin-10 blockade to modulate macrophage and T cell interactions to enhance anti-tumor activity in colorectal cancer liver metastases. Drs. Sara Daniel and Kevin Labadie are both completing their first of two years in the lab and are pursuing areas of inquiry that build on the lab’s prior findings, while also working to develop new projects. In collaboration with Dr. Teresa Kim (Assistant Professor, Division of General Surgery) and Dr. David Zhen (Assistant Professor of Medicine), Dr. Pillarisetty founded the UW TIME Lab, to create an ideal environment for cross-disciplinary collaboration in studying the tumor immune microenvironment.

Dr. Pillarisetty is also active in the realm of clinical research in the areas of pancreatic surgery and enhanced recovery after surgery (ERAS). He and Dr. Daniel recently published a study detailing

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Left to right: Drs. Teresa Kim, Y. David Seo, Kevin Sullivan, Venu Pillarisetty, Kevin Labadie and Sara Daniel

UW Medical Center’s successful implementation of an ERAS pathway that led to five-day length of stay for the majority of patients undergoing the Whipple procedure, which is among the largest of abdominal operations. Dr. Pillarisetty is also currently running an investigator-initiated clinical trial testing the effect of lanreotide, a somatostatin analogue, on pancreatic leaks following pancreas resections. This novel phase 2 clinical trial is being performed with the assistance of Reba Blissel, a research coordinator with the Institute of Translational Health Science (ITHS), and Dr. Arezou Abbasi, a visiting scholar who will soon be appointed as a senior fellow in the Department of Surgery.

Overall, Dr. Pillarisetty is grateful for the opportunity that he has had in the Department to pursue a multi-faceted career that includes being the Medical Director of Continuous Performance Improvement at the Seattle Cancer Care Alliance (SCCA), beyond his research work. The innovative work that he’s doing in the clinic and laboratory have the potential to revolutionize both the art and science of cancer care in the coming decade.

