David Malmberg
Associate Development Engineer
Marine Sciences: Marine Sciences Development Center

David Malmberg began his career at UCSD 31 years ago sweeping the floors and cleaning the machines as a Lab Mechanician Helper at the SIO Machine Shop. As the years passed, David advanced positions and transitioned from Welder to Machinist to Electrician to Programmer. He went to school to become an Engineer and is currently the Machine Shop’s Mechanical & Electrical Development Engineer. With David’s “jack of all trades” background, he is a unique and strong asset not just to the Machine Shop but to the University.

Professor Jacopo Annese of Radiology states that David has made “important medical research possible at UCSD and contributed in an essential way to creating very high standards in the field of radiology and neurology.” In 2009, The Brain Observatory was chosen to preserve and examine the brain of the most famous medical patient in the history of neuroscience. This project was the first time a whole human brain was sectioned and frozen into hundreds of giant paper-thin histological slices. They were then mounted on oversized glass microscope slides and digitized using custom-engineered scanning microscopes. In order to accomplish this feat, David’s knowledge was utilized to oversee the design and production of the specialized instruments. Professor Annese goes on to explain that his researcher was “faced with very complex mechanical and operational challenges” and that without David’s “expertise” Professor Annese’s project would not have been as “successful and elegantly completed as it eventually was.” David constantly worked onsite at Professor Annese’s lab and was present as much as possible during the week long marathon brain cutting session that was streamed live on the web to over 400,000 viewers. Because of David’s invaluable contribution to this project, he was mentioned on the front page of the Science section of the New York Times.

Another example comes from Professor Sam Ward, also of Radiology. Professor Ward refers to David as his “go-to guy” for new device and instrumentation development. He describes him as exceptionally creative, hard-working, and technically sound, which has allowed (him) to develop new and innovative tools for studying musculoskeletal disease.” David worked with Professor Ward to design and fabricate a “general device to load human knee joints while MR images (are) obtained.” This device is currently being tested in humans and has been submitted to the Office of Technology Transfer for patent consideration. David was also instrumental in the design and fabrication of two other devices that are important components of the process of obtaining human muscle samples during surgery, which is required to further the study of skeletal muscle physiology for Professor Ward’s lab. They are the “Intraoperative Muscle Biopsy Clamp” and the “Intraoperative Laser Diffraction Device.” The Clamp has obtained a provisional patent through the Office of Technology Transfer and the Laser is used internationally by surgeons and scientists.

David has also designed countless other innovative instruments for the University, including the first “ruggedized” mass spectrometer for use aboard ship in atmospheric chemistry research, a “laser scaler” used by a diver conducting fish population studies and a “granular compaction column” experiment that quantifies the compaction of sediment, and how it’s influenced by the presence of water. David’s expertise as a designer and engineer has saved the University thousands of dollars by allowing researchers to have their instruments custom designed and built “in house” rather than hiring outside companies. He has provided the machinists at the SIO Machine Shop with work as well as new challenges with his innovative designs. Due to David’s varied background, he has also acted as a mentor and trainer to many of UCSD’s staff and students in a wide array of skill sets. Finally, David has exhibited his strong work ethic and support of the University programs and mission by constantly working on his own time; the most recent example is his coming in on a Saturday to give a tour of the Machine Shop to top Oceanography students as part of the National Ocean Sciences Bowl. He has even been known to work overnight to ensure the success and timely completion of a project.

As stated by Professor Annese, “Indeed it is very fortunate (and quite a luxury) that we are able to count on such expertise on campus. David’s consistently pleasant demeanor, patience and good disposition are a great bonus.”