More than 20% of nearby main sequence stars are surrounded by debris disks, where planetesimals, larger bodies similar to asteroids and comets in our own Solar System, are ground down through collisions. The resulting dusty material is directly linked to any planets in the system, providing an important probe of the processes of planet formation and subsequent dynamical evolution. The Atacama Large Millimeter/submillimeter Array (ALMA) has revolutionized our ability to study planet formation, allowing us to see planets forming in disks and sculpting the surrounding material in high resolution. I will present highlights from ongoing work using ALMA and other facilities that explores how planetary systems form and evolve by (1) connecting debris disk structure to sculpting planets, (2) probing the properties of material in debris disks, and (3) understanding the impact of stellar flares on planetary habitability. Together these results provide an exciting foundation to investigate the evolution of planetary systems through multi-wavelength observations.

"How to Form a Habitable Planet"

Host: Dr. Guy Worthey