Nearly all human cells have antenna-like structures called primary cilia that serve to convert extracellular cues into intracellular signals. Cells respond to such signals by altering proliferation, metabolic, or differentiation programs. Defects in ciliogenesis or proper protein localization result in human diseases, ranging from retinal degeneration to embryonic lethality due to developmental defects in multiple organ systems. The Wandinger-Ness lab is studying the delivery to and function of protein complexes in cilia using biochemical and imaging approaches. Lab-on-a-chip strategies for monitoring signaling are planned. We identify a specific targeting signal in a subset of ciliary proteins that is decoded by a multimeric GTPase assembly to allow proper localization.