Research Statement, Donald Orokos

My research investigates the mechanisms responsible for cell surface transport in *Reticulomyxa*, a freshwater protozoan. In my research I have found that surface transport of latex beads move bidirectionally and exclusively along the underlying microtubule cytoskeleton in living cells. Furthermore, after lysis of the pseudopodial membrane, both organelle and surface transport can be reactivated with the addition of ATP. In addition, mechanochemical analyses and laser ablation studies suggested that, in *Reticulomyxa*, the majority of organelles and surface-attached beads are transported by sliding microtubules decorated with cytoplasmic dynein. *Reticulomyxa* has been an excellent experimental system to study the mechanisms of cellular transport in situ. Recently, I successfully reactivated axoplasmic transport in neurons.