Despite major efforts aimed at the mathematical modelling and mitigation of infectious diseases, the fundamental mechanisms of contact and transmission remain poorly understood even for the most common infectious diseases. However, the nature of the contacts between infected and non-infected members of a population are critical in shaping the larger-scale outcome of an epidemic. I will discuss recent works in which a combined theoretical and experimental approach is aiming at shedding light on the nature of contact and mechanisms of transmission of infectious pathogens.