Dynamic networks are popular models of societies, biological systems and information systems. In this talk we look at the evolution of a network over time in the context of a dynamical system on the space of possible networks. We will focus on understanding the dynamic behavior of networks with distinguishable nodes, answering questions about ergodicity and the existence of stable behavior. We show one application where we look at the effect of the cell of origin on the progression of a particular type of glioma. (Received August 27, 2018)