Temozolomide (TMZ) is a chemotherapeutic agent for treatment of Grade IV Astrocytoma, otherwise known as Glioblastoma multiforme (GBM). TMZ treatment causes DNA damage and results in tumor cell apoptosis. TMZ also induces autophagy and causes tumor cell resistance and thus fails to improve the survival rate among patients. Statins are competitive inhibitors of the rate determining enzyme of the mevalonate (MEV) cascade and best known for their cholesterol (CH) lowering effect. Recently, it was reported that long-term consumption of statins, prior to and in parallel with other cancer therapeutic approaches, increased the survival rate of patients with various forms of cancers. In this talk, I present our latest investigation about the mechanisms of the potentiation of TMZ-induced apoptosis by MEV cascade inhibitor (cholesterol biosynthesis pathway) (simvastatin) (Simva) in human GBM cell lines and in primary human GBM cells in both cell monolayers and in three-dimensional (3D) cell culture systems.

**OBJECTIVES**

1. The attendee will learn the concept of Cholesterol biosynthesis pathway and its possible effect in glioblastoma new therapy strategies.
2. The participant will learn concept of autophagy pathway.
3. The participant will understand how autophagy is involved in regulation of apoptosis.
4. The participant will learn the principal of glioblastoma 3D culture model.