Presentation:
Defying Death Defining Cancer

Speaker:
Wei-Xing Zong, PhD; Stony Brook University

Abstract:
Alternative cell death pathways in cancer cells in response to chemotherapy

A major strategy for treating cancer is to induce cell death. It is often stated as fact that anticancer drugs trigger cell death via apoptosis. However, cancer cells have often aquired genetic lesions that confer resistance to apoptosis. Despite the impired apoptosis, certain chemotherapeutic drugs such as DNA alkylating agents remain the most effective means of curing cancer patients by inducing cancer cell death. This suggests that alternative cell death pathways independent of apoptosis may be involved in cell death induced by chemotherapeutic treatment. A fundamental difference between cancer cells and normal cells is that cancer cells have abnormal metabolism to support their unusual growth and propogation. This may render cancer cells more susceptible to cellular metabolic stress imposed by tumor microenvironment or chemotherapeutic treatment. Thus, in the context of human cancer cells where apoptosis is often impaired, regulation of alternative cell death pathways such as necrosis and autophagy is of great interest for understanding cancer cell-specific susceptibility to chemotherapy, as well as the host immune response and development of resistance to anti-cancer drug treatment.