Induction of mitochondrial dysfunction and cancer cell death by dual active Mitochondria-targeting Pt (IV) compounds

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Warburg effect, a unique glycolytic metabolism in cancer cells, leads to the resistance to apoptosis. Dichloroacetic acid (DCA) is studied as an anticancer moiety that can prevent the Warburg effect by inhibiting pyruvate dehydrogenase kinase (PDK), promoting the glycosylation, and enhancing translocation of apoptosis mediators, such as apoptosis inducing factor (AIF). Besides, mitochondrial DNA (mtDNA) is highly susceptible to DNA damaging agents, which is due to the lack of inherent DNA repair system compared to nuclear DNA (nDNA). Therefore, the unique glucose metabolism and vulnerable mtDNA identify mitochondrion as a promising target to induce cancer cell death.

In this seminar, we will discuss how our novel Pt (IV) compounds work at mitochondrial level as well as cellular level and that what pathways are involved in the mechanism of action of our compounds.