Chinese Academy of Sciences

Key Lab for Biomedical Effects of Nanomaterials and Nanosafety

中科院纳米生物效应与安全性重点实验室

Nanosafety Lab. CAS

学术报告通知

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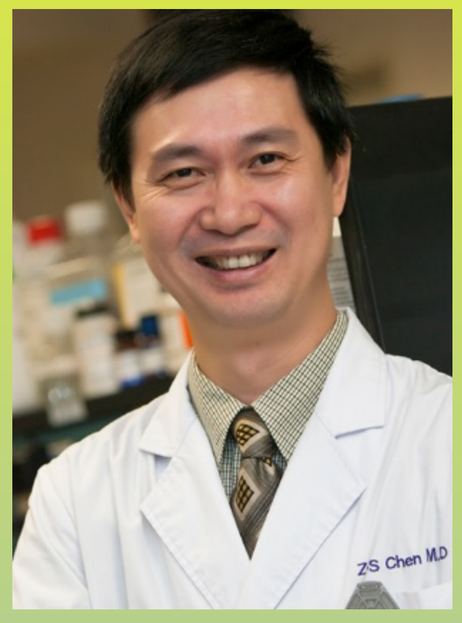

演讲者：陈哲生

*Drug Resistance Updates*主编，圣大生物技术研究院院长

题　目：Overcoming Multidrug Resistance by Nanodrugs

时　间：2023 年 7月 5 日 (星期三), 下午15：00

地　点：国家纳米科学中心，新科研楼第六会议室

主 持人：梁兴杰 研究员

报告摘要:

We have used varieties of nanomaterials, such as tea nanoparticles and lipid-saparin nanuparticles to overcome drug resistance in cancer. Recently, the synthesis and the evaluation of the efficacy of a cycloruthenated complex, RuZ, was reported, to overcome multi-drug resistance (MDR) in cancer cells. RuZ can self-assemble into nanoaggregates in the cell culture medium, resulting in a high intracellular concentration of RuZ in MDR cancer cells. The self-assembly significantly decreases oxygen consumption and inhibits glycolysis, which decreases cellular adenosine triphosphate (ATP) levels. The decrease in ATP levels and its low affinity for the ABCB1 and ABCG2 transporters (which mediate MDR) significantly increase the retention of RuZ by MDR cancer cells. Furthermore, RuZ increases cellular oxidative stress, inducing DNA damage, and, in combination with the aforementioned effects of RuZ, increases the apoptosis of cancer cells. Proteomic profiling analysis suggests that the RuZ primarily decreases the expression of proteins that mediate glycolysis and aerobic mitochondrial respiration and increases the expression of proteins involved in apoptosis. RuZ inhibits the proliferation of 35 cancer cell lines, of which 7 cell lines are resistant to clinical drugs. It is also active in doxorubicin-resistant MDA-MB-231/Adr mouse tumor xenografts. To the best of our knowledge, the results are the first to show that self-assembled cycloruthenated complexes are efficacious in inhibiting the growth of MDR cancer cells.

陈哲生教授简介：

陈教授，美国圣约翰大学药学系肿瘤药理室主任和博士生导师，圣约翰大学生物技术研究院院长。陈教授主要从事肿瘤耐药机制及其耐药逆转剂的研究，致力于克服肿瘤多药耐药的研究。已在 Chemical Society of Review, Advanced Materials，Nature Communications, Cancer Research, Clinical Cancer Research 等专业期刊发表SCI论文~460多篇. 他的文章被引用超过2.5万次，H-index：77. 他获美国发明专利2项、中国发明专利5项，撰写英文著作15部。现担任 *Drug Resistance Updates, Recent Patents on Anticancer Drug Discovery* 等杂志的主编，及其他27个杂志的编委和200多个杂志的审稿人。他于1997年获得香港第五届肿瘤国际大会青年科学家奖和日本安田医学生优秀奖， 2003年美国癌症学会（AACR）青年科学家奖，2011年获圣约翰大学优秀科研奖，2016获圣约翰大学突出成就奖等。自从2004年，他已14次获得圣约翰大学优秀教师奖。

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