

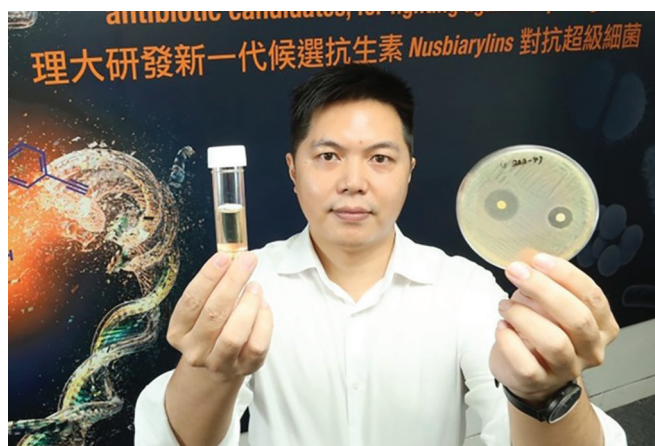
Introduction of a new generation of antibiotics to human experiments within two years

– Interview with **Dr Ma Cong**

Assistant Professor, Department of Applied Biology and Chemical Technology

Drug resistance has been declared as one of the biggest threats to global health by the World Health Organization, with MRSA becoming one of the most serious concerns.

Dr Ma Cong, Assistant Professor of Department of Applied Biology and Chemical Technology and a research team member of the State Key Laboratory of Chemical Biology and Drug Discovery, has developed a new class of antimicrobial drug candidates called Nusbiarylins. Dr Ma's research focuses on inhibiting the interaction between two proteins, NusB and NusE, which are crucial for the synthesis of bacterial ribosomal RNA. Small molecules designed to disrupt this interaction were able to hinder the bacterial cell proliferation process.



Studies showed that Nusbiarylins were safe for injections as it did not affect blood cells, and it was also effective taken orally as it was easily absorbed by the intestine. In addition, Nusbiarylins demonstrated effectiveness in inhibiting bacterial growth similar to the commonly used antibiotics vancomycin, the “last resort” antibiotic drug. The experiments also showed that the compounds exhibit no evidence of antimicrobial resistance and have a relatively low toxicity to human cells.

Currently, this new class of antimicrobial agents is underway in animal studies, allowing the team to collect data for pre-clinical development under the GLP standard. It is expected to move on to clinical trials in 2022/23.

Seen as the revolutionary solution to battle against multi-drug resistant bacteria, as well as a synthetic compound that can be easily produced in laboratories, tremendous potentials could be foreseen for Nusbiarylins in the global commercial medical sector.

Active assistance was provided by the PolyU's IP and Knowledge Transfer Offices in putting research findings into the commercial practice, including giving advice on international drug licensing and protection, searching and negotiating with potential business partners. The team is now managing two licenses and connecting with multiple potential investors. Dr Ma is working towards testing the drug candidate in humans in two years time.

有望兩年內將新一代抗生素推向人體實驗

— **馬聰博士**專訪
應用生物及化學科技學系助理教授

世界衛生組織已宣布抗藥性是對全球健康的最大威脅之一，而「抗藥性金黃葡萄球菌」已成為其中一個最嚴重的問題。

應用生物及化學科技學系助理教授、化學生物學及藥物研發國家重點實驗室研究團隊成員**馬聰博士**研發了一種新一代的抗生素候選藥物Nusbiarylins。這種小分子化合物能抑制NusB和NusE蛋白質（這兩種蛋白質的結合可促進細菌核糖體RNA的合成）之間的相互作用，從而抑制細菌細胞的生長。

研究顯示，Nusbiarylins不影響血細胞，可以製成注射劑

使用，因為很容易被腸道細胞吸收，口服也應具成效。此外，Nusbiarylins與常用抗生素相比，如被標記為抗生素藥物的「最後方案」的萬古黴素，能有效抑制細菌生長，使用中無耐藥性的產生，並對人體細胞毒性相對較低。

目前，這款新一代抗生素候選藥物正處於動物實驗階段，以便研究團隊為符合《實驗室品質管理規範》的臨床前實驗而收集更多數據，預期將於2022/23年進行臨床試驗。

Nusbiarylins是對抗多重抗藥性細菌感染的革命性解決方案，又是一種可以在實驗室中輕易製作出來的人工化合物，此新一代抗生素被視為在全球商業醫療領域具有巨大潛力。

在理大的協助下，包括就國際藥品專利和保護提供建議，尋找和與潛在商業夥伴進行談判，以及透過理大的知識保護與轉移辦公室將研究成果商品化，該團隊現已擁有兩項專利並正與多個潛在投資者商談合作。馬博士希望在兩年內將該藥物推向人體實驗。