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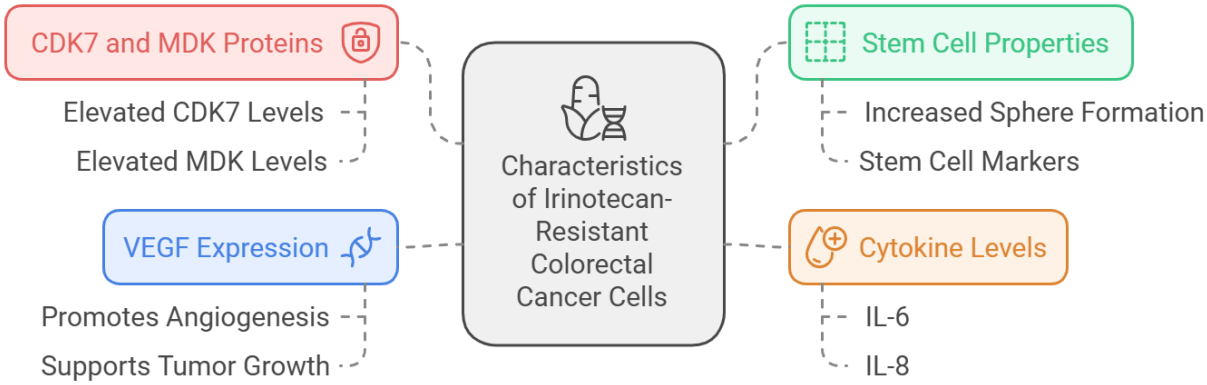
- 探討癌細胞轉移及抗藥性產生的機制
- 建立預測化放療反應的基因檢測平台

腫瘤的異質性是臨床治療面臨的主要挑戰之一，因此，發展個人化治療已成為未來癌症治療的主要方向。本實驗室的研究成果集中於兩大領域：(1) 探討癌細胞轉移及抗藥性產生的機制；(2) 建立預測化放療反應的基因檢測平台。我們藉由分析組織中的基因突變與表現，開發出能協助患者選擇個人化治療策略的工具，從而提供更精準的治療方案。在 2024 年，本實驗室發現 CDK7 與其下游分子 Midkine (MDK) 在大腸直腸癌細胞中對 Irinotecan 基礎療法的抗藥性具有關鍵作用。透過抑制 CDK7 及 MDK 的表現，顯著提升了 Irinotecan 治療的療效。這一發現無疑提供了一種創新的方法來克服抗藥性問題，為轉移性大腸直腸癌患者，特別是對常規治療效果不佳的患者，帶來了新的希望。本研究不僅加深了我們對大腸直腸癌抗藥性機制的理解，也為個人化治療策略的發展提供了新的視野，進一步推動了腫瘤治療的精準化進程。



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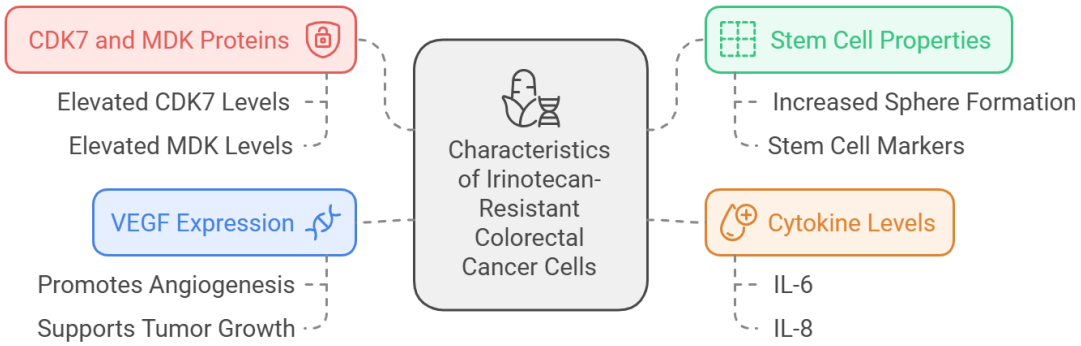
The heterogeneity of tumors is one of the main challenges in clinical treatment. Consequently, developing personalized therapies has become a primary direction for future cancer treatment. Our laboratory's research focuses on two key areas: (1) investigating the mechanisms of cancer cell metastasis and drug resistance and (2) establishing a genetic testing platform to predict responses to chemo- and radiotherapy. We have developed tools to help patients select personalized treatment strategies by analyzing gene mutations and expressions in tissue samples, enabling more precise therapeutic approaches. In 2024, our laboratory identified that CDK7 and its downstream molecule Midkine (MDK) play critical roles in irinotecan-based therapy resistance in colorectal cancer cells. Inhibiting the expression of CDK7 and MDK significantly enhanced the efficacy of irinotecan treatment. This discovery offers an innovative approach to overcoming drug resistance and provides new hope for patients with metastatic colorectal cancer, particularly those who do not respond well to standard therapies. This study not only deepens our understanding of the mechanisms underlying drug resistance in colorectal cancer but also opens new avenues for developing personalized treatment strategies, advancing the precision medicine paradigm in oncology.



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