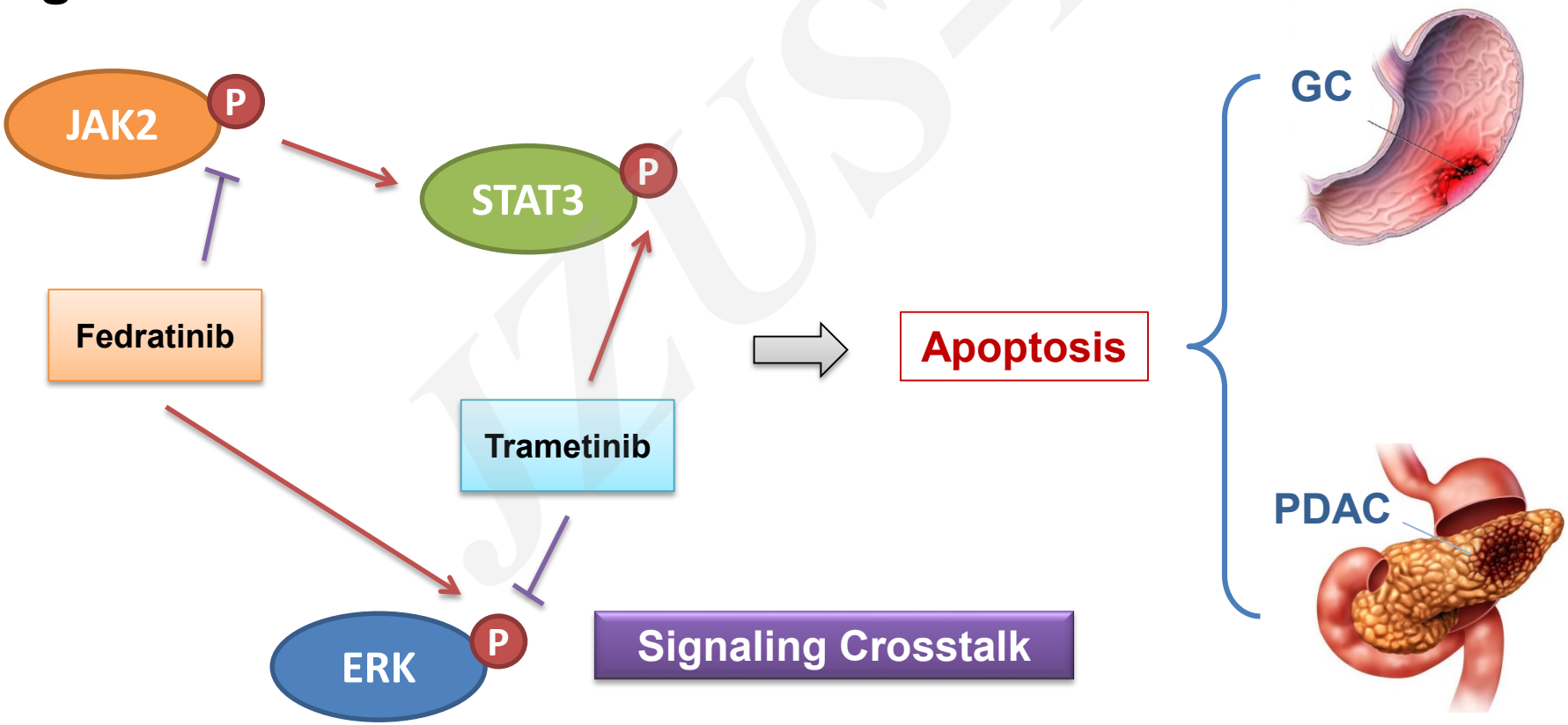
Cite this as: Xi WANG, Chunyan DAI, Yifei YIN, Lin WU, Weiyang JIN, Yufei FU, Zhe CHEN, Ke HAO, Bin LU. Blocking the JAK2/STAT3 and ERK pathways suppresses the proliferation of gastrointestinal cancers by inducing apoptosis[J]. *Journal of Zhejiang University Science B*, 2021, 22(6): 492-503. https://doi.org/10.1631/jzus.B2000842

Blocking the JAK2-STAT3 and ERK pathways suppresses the proliferation of gastrointestinal cancers by inducing apoptosis

Key words: Gastrointestinal cancers; JAK2-STAT3 pathway; ERK pathway; Crosstalk; Apoptosis

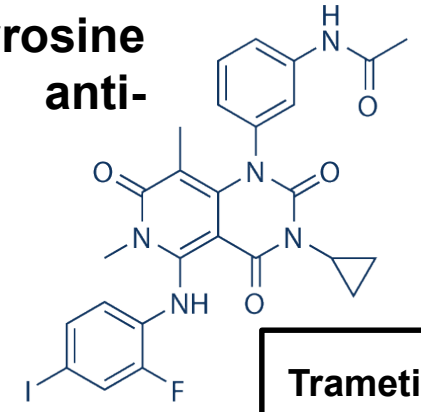
Research Summary

A novel crosstalk between JAK2/STAT3 and ERK signaling in gastric cancer (GC) and pancreatic ductal adenocarcinoma (PDAC) cells and provides a therapeutic strategy to overcome potential resistance in gastrointestinal cancer.



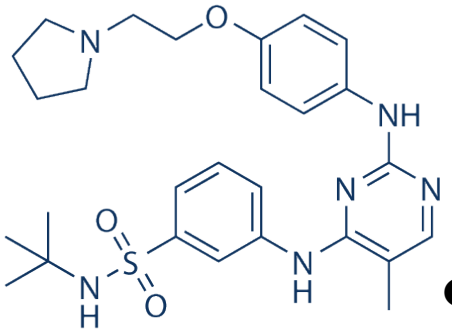
Innovation points

- **Abrogation of MEK/ERK signaling upregulates tyrosine phosphorylation of JAK2 and STAT3, blocking anti-proliferative effects in gastric and PDAC cancer cells**



Trametinib

- **Inhibition of JAK2/STAT3 signaling upregulates the tyrosine phosphorylation level of EGFR and ERK in GC and PDAC cells, respectively**

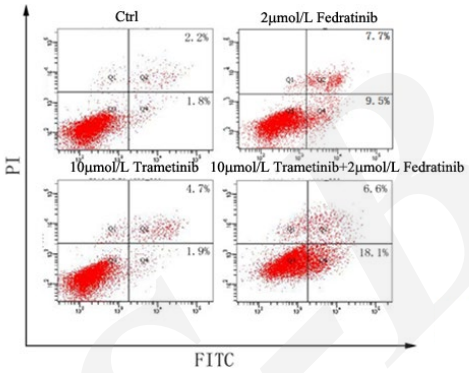


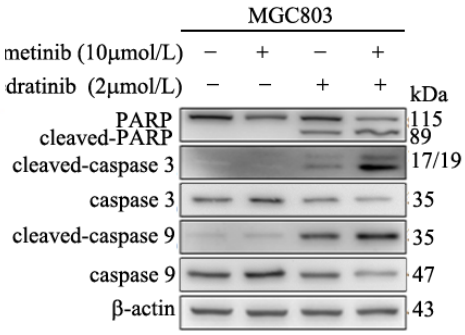
Fedratinib

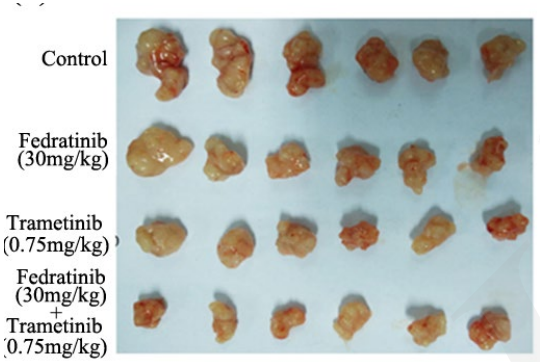
- **Proliferation of GC and PDAC cells is effectively retarded by inhibition of JAK2/STAT3 and ERK signaling**

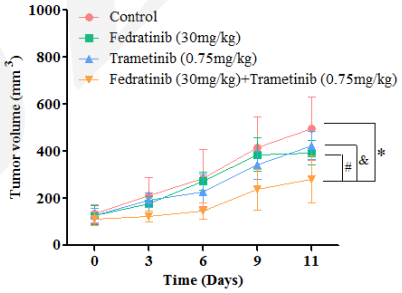
Innovation points

- **Interference with JAK2/STAT3 and ERK signaling triggers apoptosis in MGC803 gastric cancer cells**









- **Disturbance of JAK2/STAT3 and ERK signaling profoundly impairs tumor growth in mice by inducing apoptosis**