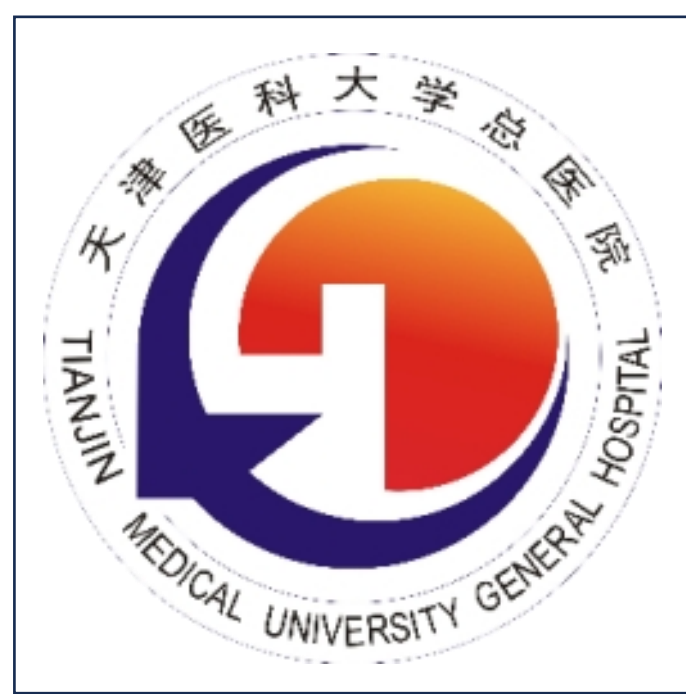
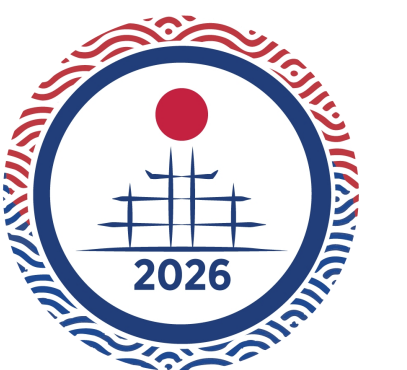




P2.041: The Platelet-PEV-YBX1 Axis Regulates TP53-mediated Ferroptosis and Malignant Progression in Lung Adenocarcinoma

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INTRODUCTION

- LUAD is the most common subtype of NSCLC and remains a major clinical challenge.
- The roles of platelets and platelet-derived extracellular vesicles (PEVs) in LUAD progression remain unclear.
- This study investigates platelet-PEV crosstalk and its potential therapeutic significance in LUAD.

METHODS

- Clinical samples: Platelet activation and coagulation profiles were compared across different stages of NSCLC.
- PEV analysis: Platelets and PEVs were isolated, characterized, and subjected to proteomic profiling.
- Functional assays: LUAD cells were evaluated for proliferation, migration, invasion, EMT, and ferroptosis.
- Mechanistic validation: The role of YBX1 was investigated using knockdown experiments, p53-related pathway analysis, and xenograft models.

DISCUSSION AND CONCLUSION

Actionable Take Away Message

- PEV-associated YBX1 promotes LUAD progression by enhancing tumor cell survival and ferroptosis resistance. Targeting the PEV-YBX1-ferroptosis axis may provide a novel therapeutic strategy for LUAD.

Future Direction for Research

- Further studies should validate PEV-associated YBX1 as a biomarker and therapeutic target in LUAD.

REFERENCES & ACKNOWLEDGEMENTS

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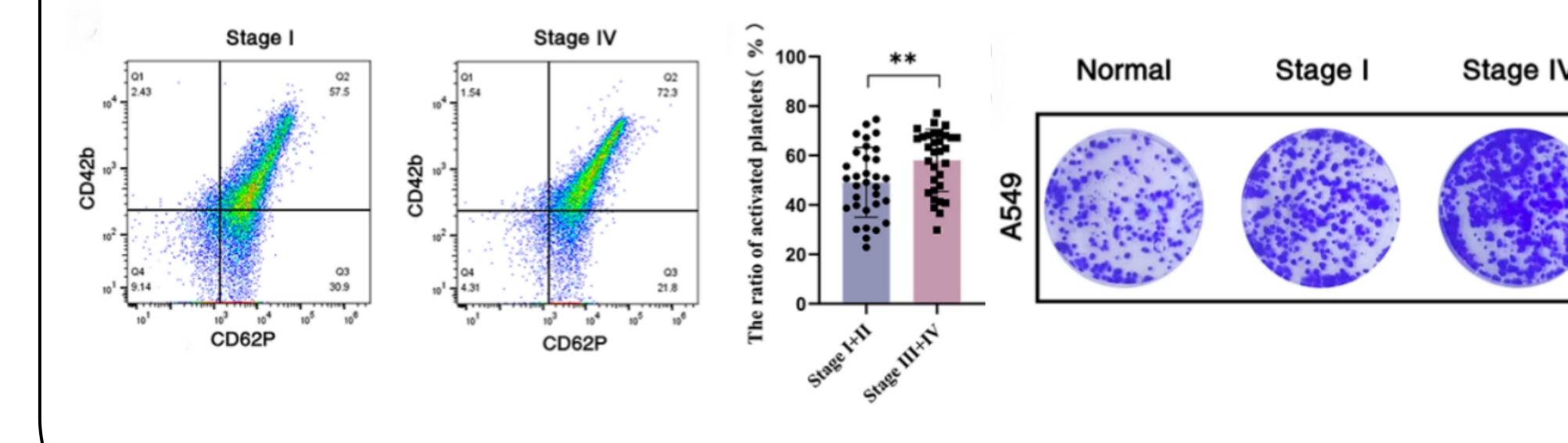
AI USE DISCLOSURE

ChatGPT was used for language editing. All scientific content, data interpretation, and conclusions were independently reviewed and approved by the authors.

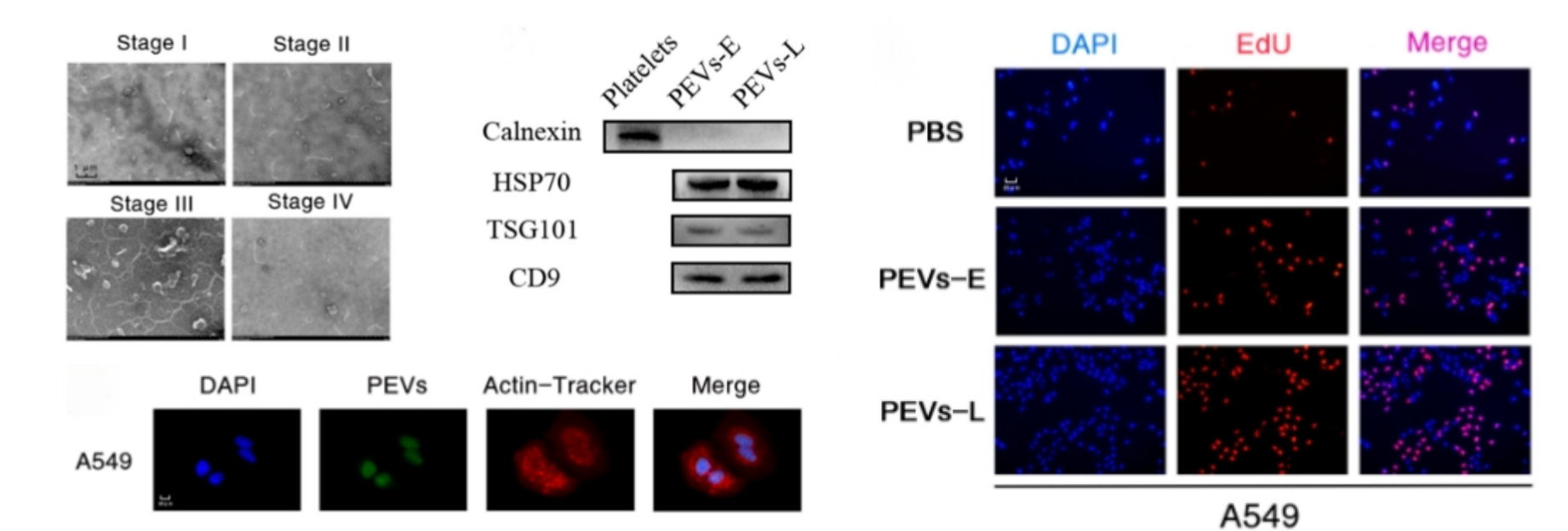
RESULTS

Clinical analyses linked NSCLC progression to coagulation dysfunction and platelet activation. PEVs from advanced-stage patients could be internalized by LUAD cells to promote proliferation, migration, invasion and EMT. PEV-loaded YBX1 suppressed LUAD ferroptosis by inhibiting TP53 signaling. Knockdown of YBX1 reversed this ferroptosis-inhibitory effect and slowed tumor growth in xenograft mice.

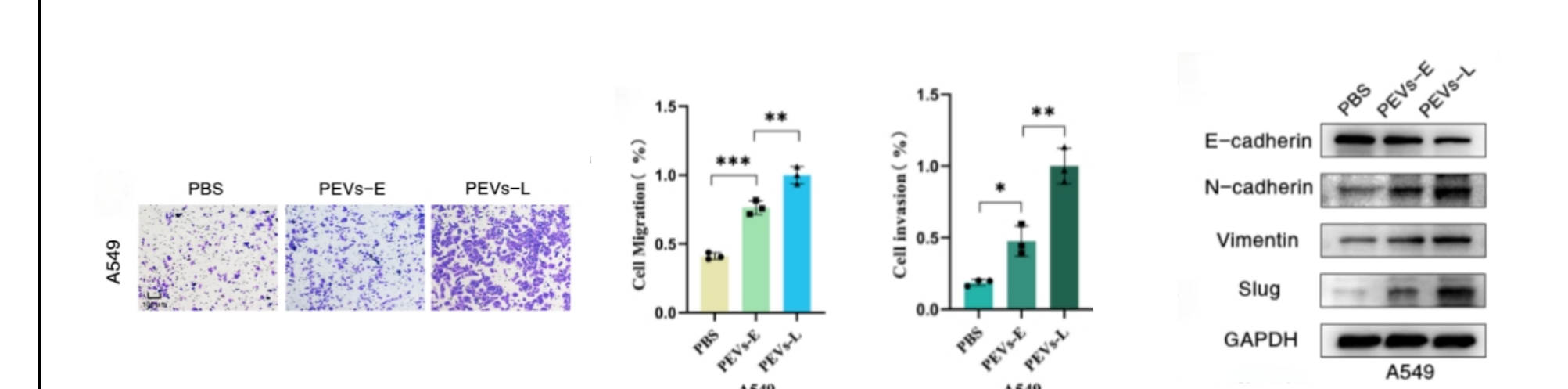
Platelet activation increases with disease stage and promotes LUAD proliferation



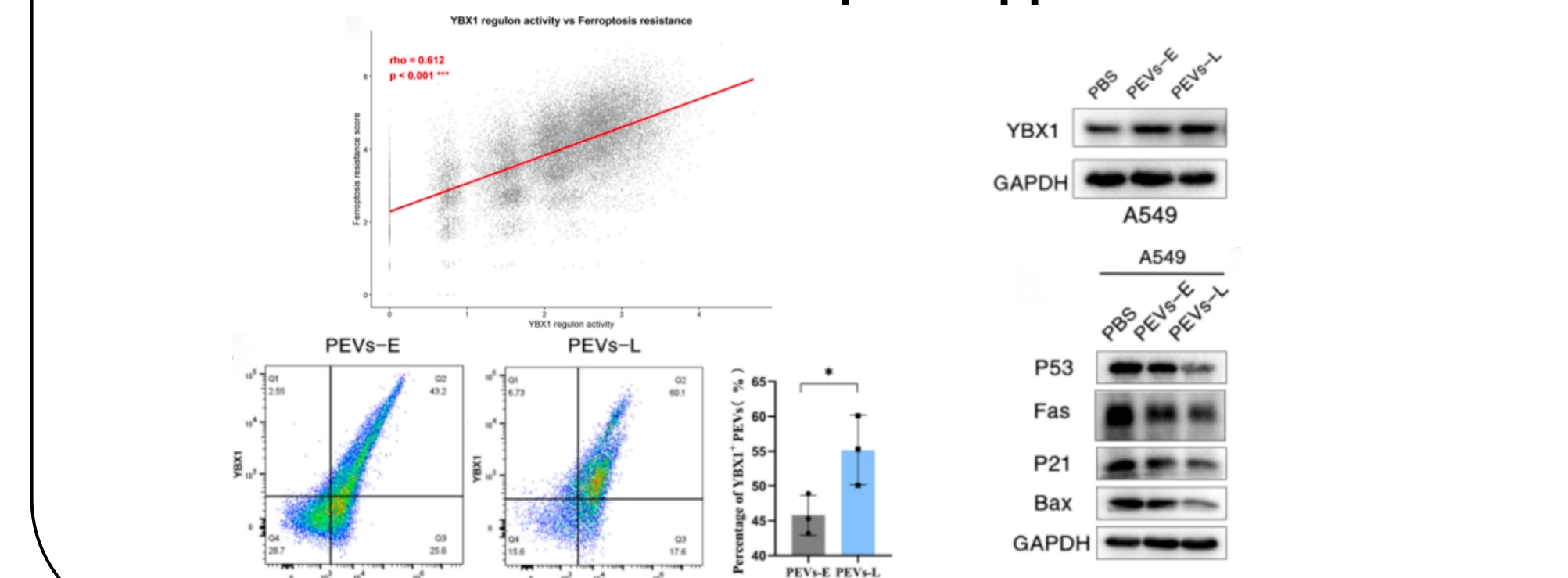
PEVs are internalized by LUAD cells and promote proliferation



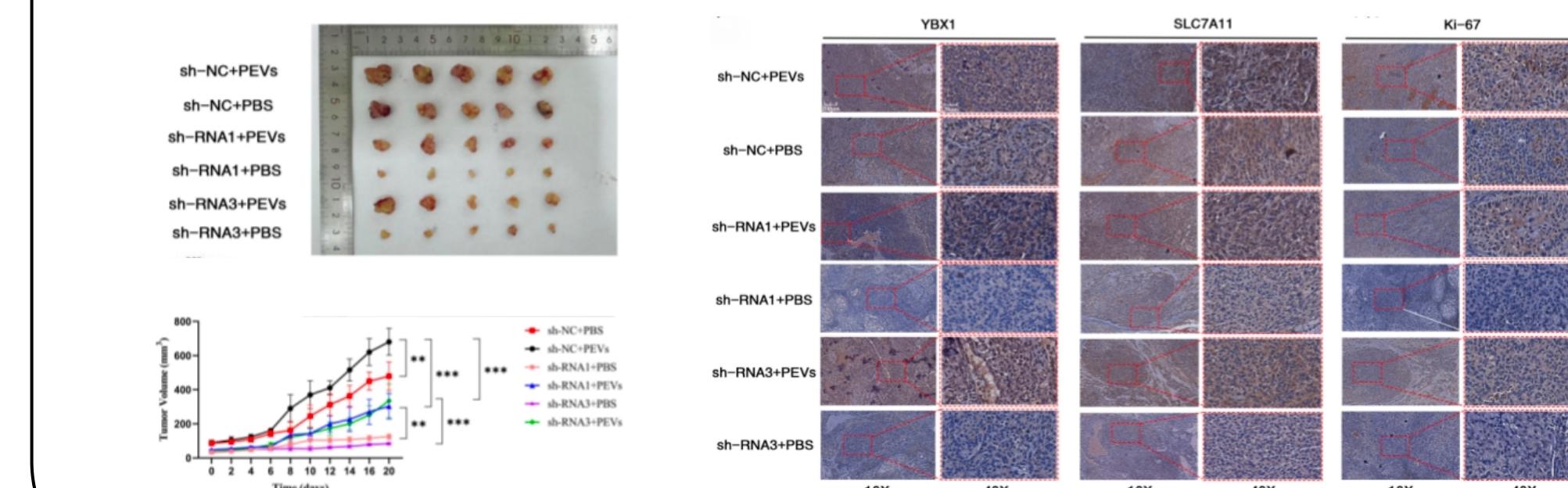
Late-stage PEVs enhance LUAD migration, invasion and EMT



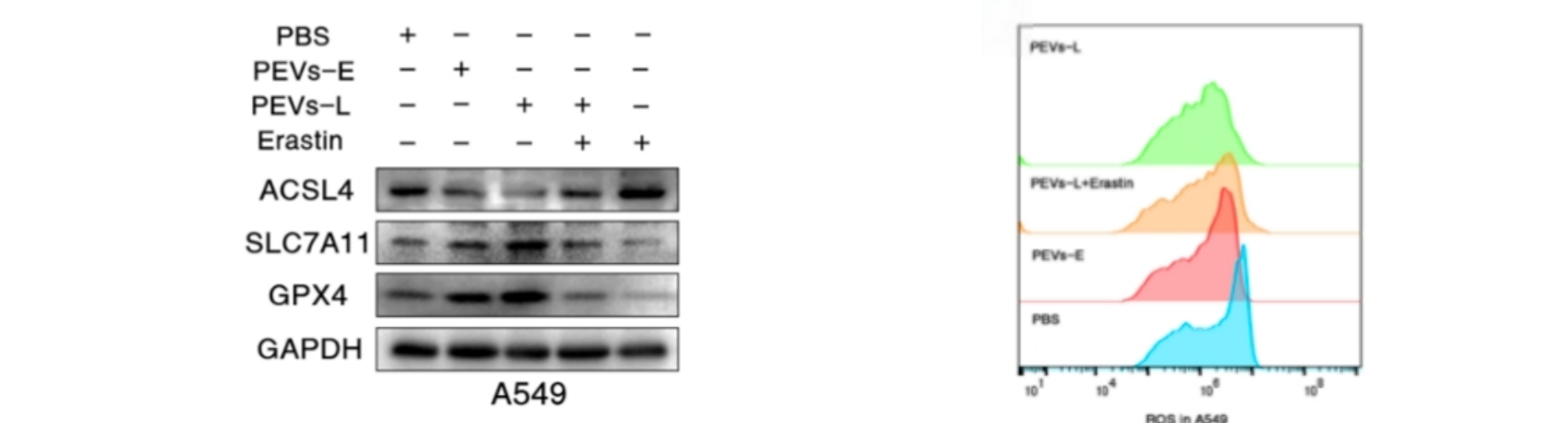
YBX1-enriched PEVs are associated with ferroptosis resistance and p53 suppression



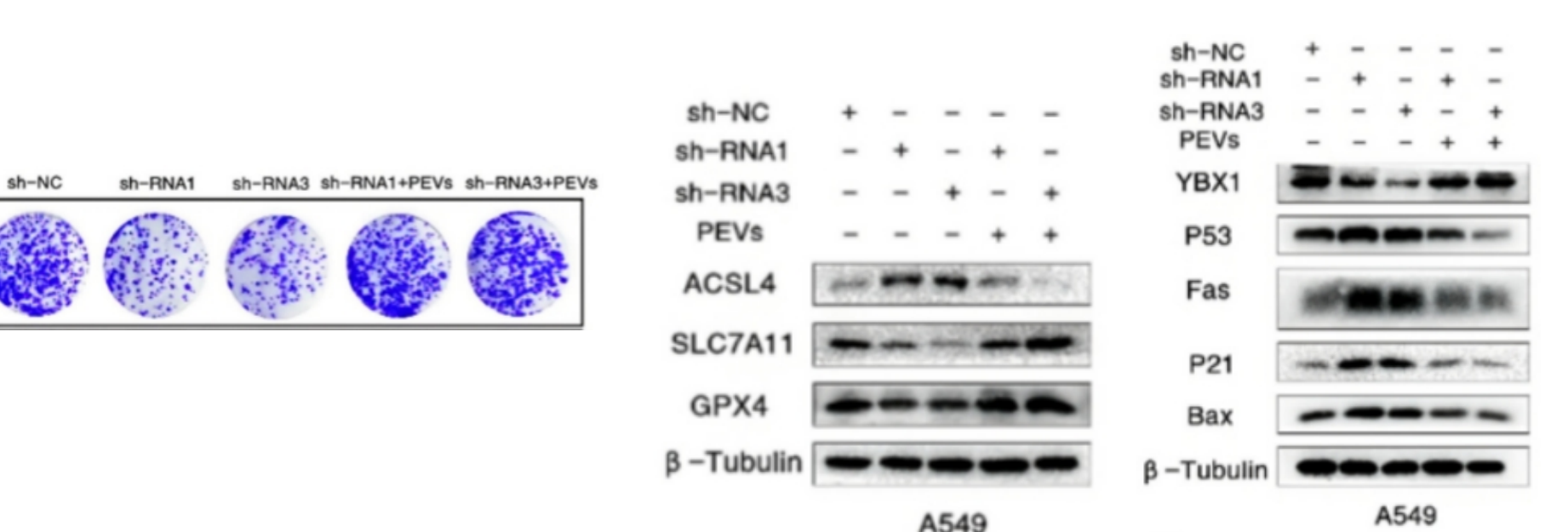
YBX1 knockdown suppresses PEV-induced tumor growth in vivo



PEVs suppress ferroptosis in LUAD cells



YBX1 knockdown reverses PEV-induced ferroptosis resistance



Proposed mechanism of PEV-YBX1-mediated ferroptosis resistance

