

申报类别：上海医学科技奖青年奖

项目名称（中文）：主动脉夹层发病机制和诊疗新技术研究与推广

项目名称（英文）：Research on the Pathogenesis and Promotion of New Diagnostic and Therapeutic Techniques of Aortic Dissection

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项目简介：

主动脉夹层是循环系统一种致死率极高的疾病。现阶段腔内修复术由于其微创的特点，已成为B型夹层（主要累及降主动脉）首选手术方案，但是仍存在适应症范围较窄、远期效果欠佳等诸多不足。目前主动脉夹层缺乏特异性高、能快速诊断的标志物，较多患者由于未能快速确诊因而错失手术机会。主动脉夹层的另外一个重要问题是发病机制不明，缺乏有效预警与预防措施。这三个系列性关键问题严重影响了主动脉夹层的整体干预效果。本项目长期致力于主动脉夹层的手术治疗、基础与转化研究。针对上述核心问题的研究已取得阶段性成果：研发的针刺原位开窗系统、Fabulous 支架系统已实现产业化；“假腔栓塞器”已完成样机制作；诊断试剂盒和一站式诊断仪正进行临床试验。主动脉夹层的血液诊断标志物、分子机制和遗传谱系示踪研究为早期诊断和研发有效预防药物提供重要支撑，提升了我国主动脉夹层诊治水平，产生显著社会效益。

10 篇代表性论文：

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- 3) Shu, X. *et al.* Midterm Outcomes of an Adjustable Puncture Device for In Situ Fenestration During Thoracic Endovascular Aortic Repair. *Eur J Vasc Endovasc* **63**, 43–51 (2022).
- 4) Zhu, T. *et al.* Early outcomes of the conformable stent graft for acute complicated and uncomplicated type B aortic dissection. *Journal of Vascular Surgery* **66**, 1644–1652 (2017).
- 5) Wang, R. *et al.* Clinical Results and Aortic Remodeling After Endovascular Treatment for Complicated Type B Aortic Dissection With the “Fabulous” Stent System. *Front. Cardiovasc. Med.* **9**, 817675 (2022).

- 6) Zhou, M. *et al.* Spot Stenting Combined With False Lumen Endovascular Occlusive Repair for Post-dissection Abdominal Aortic Aneurysm. *J Endovasc Ther* **29**, 705–710 (2022).
- 7) Hou, K. *et al.* Dynamic Volumetric Computed Tomography Angiography Is a Preferred Method for Unclassified Endoleaks by Conventional Computed Tomography Angiography After Endovascular Aortic Repair. *JAHA* **8**, e012011 (2019).
- 8) Zhou, X. *et al.* Identification of Lysophosphatidylcholines and Sphingolipids as Potential Biomarkers for Acute Aortic Dissection via Serum Metabolomics. *Eur J Vasc Endovasc* **57**, 434–441 (2019).
- 9) Liu, P. *et al.* Altered DNA methylation pattern reveals epigenetic regulation of Hox genes in thoracic aortic dissection and serves as a biomarker in disease diagnosis. *Clin Epigenet* **13**, 124 (2021).
- 10) Yang, J. *et al.* Highly Sensitive Photoelectrochemical Biosensor for MicroRNA-21 Based on a Dumbbell-Shaped Heterostructure AuNRs@end-TiO₂ Combined with Carbon Dots as Photosensitizers and Duplex-Specific Nuclease-Assisted Signal Amplification. *Anal Chem* **94**, 13575–13581 (2022).