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## **Implication of risk prediction model and risk-adapted screening in colorectal cancer prevention**

### **Abstract**

Colorectal cancer is the third most commonly diagnosed malignancy in 2020. Screening has been demonstrated to be effective in improving survival and potentially preventing the occurrence of CRC. However, for countries with limited or unbalanced healthcare resource, identification of high-risk population and implementation of appropriate screening intervention would be more cost-effective than traditional one-size-fill-all strategy based on age and family history of colorectal cancer solely.

This project will use the data resources of the established nation-wide colorectal cancer screening program, multicentered colorectal cancer screening randomized controlled trials conducted in China and in S. Korea, with the aim of: (1) constructing effective risk prediction model for colorectal cancer incorporating environmental risk factors and polygenic risk score, which could be used to accomplish absolute risk estimation for populations with different risk profiles; (2) developing an effective risk-adapted screening approach which incorporates risk assessment and established colorectal cancer screening tools (such as colonoscopy, fecal immunochemical test, etc.), for which the effectiveness and cost-effectiveness will be comparatively evaluated with traditional colorectal cancer strategies by the microsimulation model. The findings of this project will provide important reference in designing effective personalized colorectal cancer screening strategy in the future.