**Showcasing research from Professor Pengfei Song's laboratory, School of Advanced Technology, Xi'an Jiaotong – Liverpool University, Suzhou, China.**

An integrated paper-based microfluidic platform for screening of early-stage Alzheimer's disease by detecting Aβ42

The Rotary-valve Assisted Paper-based Immunoassay Device (RAPID) enables early, automated screening of Alzheimer's disease (AD) by detecting amyloid-beta 42 (Aβ42) in artificial plasma. Its integrated on-chip rotary micro-valve, controlled via a micro-servomotor or smartphone, sequentially delivers pre-stored ELISA reagents, achieving rapid (~30 minutes), sensitive (LOD: 9.6 pg mL$^{-1}$), and precise (COD: 0.994) quantification. Validated against conventional ELISA using 24 artificial samples, RAPID's portability and wireless data transmission address practical problems in AD screening. By automating complex workflows and enabling decentralized testing, it offers a scalable, low-cost solution for early detection, vital for timely intervention in AD progression and reducing global healthcare burdens linked to delayed diagnosis.

## As featured in:



See Pengfei Song, Eng Gee Lim *et al.*,
*Lab Chip*, 2025, **25**, 512.