

XJTLU-XJTU-UoL Joint Doctoral Supervision Project (Full-time)

Reference No.	SFXJTU2519
XJTLU School	XJTLU Wisdom Lake Academy of Pharmacy
PhD Programme	Biological Sciences
Supervisors	XJTLU supervisor: Dr Peicheng Xu XJTU supervisor: Professor Biwu Liu UoL supervisor: Professor Biqiong Chen XJTLU Co-supervisor: Dr Xi Zhang
Project Title	Electrochemical Biosensing of Protein Aggregates Using Multivalent DNA-Mediated Recognition
Application Deadline	Open until the position is filled

Requirements:

A UK first-class or upper second-class honours Bachelor's degree and a UK Master's degree with Merit (or their equivalent) are required for PhD admissions. Exceptional candidates holding only a Bachelor's degree may be considered on an individual basis.

Evidence of good spoken and written English is essential. The candidate should have an IELTS (or equivalent) score of 6.5 or above, if the first language is not English.

For more information about entry requirements and admission procedures of PhD programme at XJTLU, please visit:

[Entry Requirement - Xi'an Jiaotong-Liverpool University](#)

[How to Apply - Xi'an Jiaotong-Liverpool University](#)

Programme Structure and Fees:

Doctoral students in the joint programme are registered with both XJTLU and the UoL. Upon successful completion of the programme, the students will be awarded a PhD degree from University of Liverpool. During their doctoral studies at XJTLU, students are expected to conduct research at XJTU as visiting students. Additionally, students have the opportunity to apply for a three to six-month research visit to UoL.

The joint doctoral programme is offered on a full-time basis, with a typical duration of three to four years. The tuition fee is RMB 99,000 per year.

Project Description:

To cultivate research talents with global leadership, interdisciplinary innovation capabilities, and international research collaboration capabilities, Xi'an Jiaotong-Liverpool University (XJTLU) fully leverages its characteristics of international education and builds upon the long-

established strategic cooperation among XJTLU, Xi'an Jiaotong University (XJTU), and the University of Liverpool (UoL). This initiative integrates top-tier research resources to launch a Joint Doctoral Supervision Programme across the three institutions.

Protein aggregates are critical biomarkers in neurodegenerative diseases, yet heterogeneous assembly complicates state-specific detection. We propose an integrated electrochemical biosensing platform to resolve monomers, oligomers, and fibrils in complex samples. Programmable 3D DNA architectures will be assembled to position polyvalent probes with nanometer precision, enabling geometry-matched, cooperative recognition. Aqueous two-phase separation will be coupled to enrich aggregates while preserving native states, and enrichment kinetics and selectivity will be quantified. A hierarchically porous electrochemical interface will be engineered to increase effective surface area, mass transport, and signal density, while localized nucleic acid amplification will elevate responses without extensive preprocessing. Together, DNA 3D recognition, multivalent enrichment, and engineered transduction will deliver sensitive, selective, and rapid readouts at clinically relevant concentrations.

Joint Supervisory Team:

XJTLU supervisor: Dr Peicheng Xu

XJTU supervisor: Professor Biwu Liu

UoL supervisor: Professor Biqiong Chen

XJTLU Co-supervisor: Dr Xi Zhang

How to Apply:

Interested applicants are advised to email peicheng.xu@xjtlu.edu.cn or biwuliu@xjtu.edu.cn the following documents for initial review and assessment (Please include the project title in the subject line).

- CV
- Two formal reference letters
- Personal statement outlining your interest in the position
- Certificates of English language qualifications (IELTS or equivalent)
- Full academic transcripts in both Chinese and English (for international students, only the English version is required)
- Verified certificates of education qualifications in both Chinese and English (for international students, only the English version is required)
- PDF copy of Master Degree dissertation (or an equivalent writing sample) and examiners reports available