

DATE: Day ____ Month ____ Year 2026

**SUMMARY of
FY2025 RESEARCH RESULTS REPORT
For International Collaborative Research with IPR, The University of Osaka**

Research Title		Structural study of Cell penetrating peptides
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	Present Title	Professor
Research Collaborator (Host PI)		Prof. Atsushi Nakagawa
Summary Drug delivery systems (DDS) utilizing cell-penetrating peptides (CPPs) are in high demand across the pharmaceutical and functional food sectors. Recent research has focused on stabilizing quaternary structures through enantiomeric interactions. Building upon the 2024 crystal structure studies of LK-3 peptide oligomers, this study aimed to characterize the structures of larger oligomeric complexes with more diverse sequences. Peptides were synthesized via standard Fmoc solid-phase methods with microwave assistance and purified using gel filtration to isolate specific stereostructures. Despite extensive screening across more than 300 conditions—including both custom and commercial kits—most candidates (e.g., 35mer, 23mer) yielded weak diffraction or no crystals, precluding detailed structural analysis at this stage. Nevertheless, bis-disulfide bridged peptides like LK-3 remain promising candidates for drug delivery due to their superior permeability. Further optimization of peptide sequences and lengths is ongoing to achieve high-resolution structural data.		

***Deadline: May 11, 2026**

***Please submit it to E-mail: tanpakuken-kyoten@office.osaka-u.ac.jp.**

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