

DATE: Day 06 Month May Year 2024

**SUMMARY of**  
**FY2023 RESEARCH RESULTS REPORT**  
**For International Collaborative Research with IPR, Osaka University**

<b>Research Title</b>		Structural study of Cell penetrating peptides
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	<b>Present Title</b>	Professor
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<b>Summary</b>		
<p>Cell-penetrating peptides (CPPs) play a crucial role in delivering various molecules into cells by effectively penetrating cell membranes. They are essential tools for intracellular delivery with diverse applications. Research on CPPs has emerged to address the challenge of efficiently delivering drugs and biological molecules into cells, which is crucial for drug development and protein delivery.</p> <p>In this study, we focus on utilizing CPPs for drug delivery to treat diseases, such as cancer, and exploring new applications. Structural studies of CPPs aim to understand their potential applications by uncovering the relationship between specific structures and cell-penetrating abilities, thereby providing insights for optimizing CPPs to enhance their cell-penetrating capabilities.</p> <p>The X-ray diffraction experiments were conducted at Beamline BL44XU, and the crystal structures were determined at resolutions of 2.43 Å for LK-3, 1.68 Å for lk-3 and 1.92 Å for LK<math>\alpha</math>14.</p> <p>Additionally, investigating the stability of CPPs inside cells is crucial for achieving desired effects, and structural studies contribute to understanding their stability within cells. Moreover, the confirmation of a ball structure formed by three LK-3 peptides and the identification of functional cell-penetrating oligomers as minimal oligomers provide valuable insights into the atomic-level structure of peptide nanoparticles.</p> <p>These findings offer guidance for designing functional supramolecular protein assemblies, which is essential for successful designs of novel motifs capable of organizing oligomers into functional and structural peptide assemblies.</p>		

\*Deadline: May 10, 2024

\*Please submit it to E-mail: [tanpakuken-kyoten@office.osaka-u.ac.jp](mailto:tanpakuken-kyoten@office.osaka-u.ac.jp).

\*Please describe this summary within 1 sheet. Please DON'T add some sheets.

\*This summary will be published on the web.