

## Report of KU-UNIVIE Joint Grant Program

### Section 1

<b>Project title:</b>		<b>Expanding the capabilities and therapeutic opportunities in antimicrobial peptide research</b>
<b>Project coordinator (KU)</b> Name Position Faculty, department		Shiroh Futaki Professor Institute for Chemical Research (ICR) and Graduate School of Pharmaceutical Sciences, Kyoto University (KU)
<b>Project coordinator (UNIVIE)</b> Name Position Faculty, department		Markus Muttenthaler Associate Professor Institute of Biological Chemistry (IBC), University of Vienna (UNIVIE)
<b>Period of project</b>		From: 2023/07 To: 2024/03
<b>Project location</b>		KU: <input checked="" type="checkbox"/> UNIVIE: <input checked="" type="checkbox"/> Other:
<b>Approx. number of participants</b>	<b>For events</b> <sup>*1</sup> (e.g. workshops, seminars, symposia)	[KU] Faculty members:    Students:    Others: [UNIVIE] Faculty members:    Students:    Others: Other institutions:  *Please attach a participant list if possible. (the list will NOT be publicized)
	<b>For other exchange activities</b> (such as researcher visits and online meetings) <sup>*2</sup>	[KU] Faculty members: 15    Students: 30    Others: 5 (including those who had discussions with Muttenthaler and attended his seminar/lecture on Feb. 15 and 29, 2024) [UNIVIE] Faculty members: 20    Students: 40    Others: 20 (including those who had personal meetings with Futaki and participated at the Austrian Peptide Symposium, where Futaki gave his lecture and Kawaguchi his poster presentation.) Other institutions:
<b>If applicable: URL at which project outcomes can be viewed (e.g. workshop notifications/programs/reports, evidence of academic papers published or otherwise made available, etc.)</b>		Futaki was invited to 12 <sup>th</sup> Austrian Peptide Symposium when he visited UNIVIE: <a href="https://www.eurpepsoc.com/a-report-on-the-12th-austrian-peptide-symposium/">https://www.eurpepsoc.com/a-report-on-the-12th-austrian-peptide-symposium/</a>
<b>If available: Photographs with captions</b>		Please see pictures and captions below in Section 2.

\*1 Please enter the number of participants for each event.

\*2 Please count each individual participant once only, even if they participate multiple times.

## Section 2

### Summary of the project (approx. 200 words)

This project successfully initiated a new collaboration between the University of Vienna (UNIVIE, Muttenthaler Lab) and Kyoto University (KU, Futaki Lab) and established a new framework to support knowledge and skill transfer and student exchange. Importantly, it brought together complementary expertise to tackle global challenges: the Futaki group has extensive experience investigating the molecular mechanism of antimicrobial peptides (AMPs) and the Muttenthaler group is well-versed in medicinal chemistry and peptide drug discovery, with recent breakthroughs in describing the presence and disease association of bacterial gastrointestinal biofilms in patients suffering from chronic gut disorders. Prof. Shiroh Futaki and A/Prof. Yoshimasa Kawaguchi visited UNIVIE in December 2023 and A/Prof. Muttenthaler and PhD student Bernhard Jandl visited KU in February 2024. Both visits entailed several lectures and meetings with members of the faculties as well as with researchers from other departments and institutions. The two groups established strategic frameworks and research directions towards the development of new therapeutic strategies targeting bacterial biofilms in patients suffering from gut disorders and generated the first preliminary data. Design and synthesis of AMPs was carried out in the Muttenthaler group followed by screening in the Futaki group, yielding the first promising leads. These results will underpin further collaborative efforts and research endeavours between KU and UNIVIE.



Prof. Shiroh Futaki and Yoshimasa Kawaguchi attended at 12<sup>th</sup> Austrian Peptide Symposium when they visited the University of Vienna, where Prof. Futaki held an invited lecture, and Kawaguchi had a poster presentation to introduce their works).



Prof. Muttenthaler and graduate student Bernhard Jandl had several discussions and meetings with young faculty members and students of the Futaki laboratory while they stayed in Kyoto.

日本薬学会関西支部主催  
外国人特別講演会のご案内

演者: Markus Muttenthaler博士  
(Associate Professor, Institute for Molecular Bioscience,  
University of Queensland, Australia, and Institute of Biological  
Chemistry, University of Vienna, Austria)



演題: New opportunities for gut-specific oral peptide drug development

日時: 2024年2月29日(木) 16時00分~17時30分

場所: 京都大学大学院薬学研究科講義室A(医薬系総合研究棟2階)

要旨: Peptides have long been ignored as good drug leads for gastrointestinal disorders due to their intrinsic metabolic limitations. However, we argue that peptides could be ideal drug candidates for gut-specific treatments and have developed methods to render them gut-stable for oral treatment. We exemplify this new frontier with several examples, including the trefoil factor family, blockbuster linaclotide, oral oxytocin for abdominal pain, and new treatment opportunities for diseases associated with gastrointestinal biofilms.

事前の申込は不要です。皆様のご来聴を歓迎します。

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A/Prof. Muttenthaler held a seminar at the Graduate School of Pharmaceutical Sciences, Kyoto University. The lecture was also announced to the members of the Pharmaceutical Society of Japan.



Muttenthaler and Jandl had discussions with Professors of the Graduate School of Pharmaceutical Sciences, Kyoto University, during their visit to Kyoto.