京都大学
KYOTO UNIVERSITY

Report of Kyoto University (KU) – University of Zurich (UZH) ECR Mobility program

Section 1

Applicant (at the time of application, i.e. supervisor of the visiting researcher or the visiting researcher themselves)	
Name	Namasivayam Ganesh Pandian
Job title	Principal Investigator and Junior Associate Professor
University	Kyoto University
Affiliation	Graduate School of Engineering, Department of Molecular Engineering, Institute for Integrated Cell Material Sciences, Kyoto University

Section 2

Visiting researcher (if different from the above)	
Name	Mahima Kumar
Job title	PhD Student
University	Kyoto University
Affiliation	Graduate School of Engineering, Department of Molecular Engineering, Institute for Integrated Cell Material Sciences, Kyoto University

Section 3

Host researcher	
Name	Bruggen Marie-Charlotte
Job title	MD, PhD
University	University Zurich
Affiliation	Department of Dermatology, University Hospital Zurich, Switzerland, Faculty of Medicine, University Zurich, Zurich, Christine Kühne Foundation of Allergy Research and Education (CK CARE), Davos, Switzerland

Section 4

Summary of the project (approx. 200 words)

In recent years, the approval of nucleic acid-based theranostic tools has increased remarkably given their demonstrated potential in identifying communicable and noncommunicable diseases. Conventional tools are targeted towards proteins and often result in a transient effect that may vary between patients. In this regard, nucleic acid-based targeted therapeutics and diagnostics are favored because they can achieve a long-lasting effect that is consistent across patients. Interleukin-6 (IL-6) is recently identified as the novel marker associated with the onset and progression of chronic inflammation. To overcome the off-target effect with the conventional modalities of IL-6 detection, we synthesized and characterized a programmable nucleic acid-based synthetic tool called silica-SMART (=programmable molecular recognition)-Flare to probe IL-6 at the molecular level of RNA. With this grant, we verified their biocompatibility by studying their nano-bio interaction with IL-6 proteins through inflammatory model and optimized conditions to selectively probe and alter inflammatory markers in various cell lines.