

IMSUT International Joint Usage/Research Center
International Project-completion Report (FY2022 ver.)

Date of submission: **05 / 04 / 2023**

Principal Investigator	Position, Institution: Professor, Massachusetts General Hospital ----- Name: Konrad Hochedlinger
IMSUT Host Researcher	Division: Division of Stem Cell Pathology ----- Name: Yasuhiro Yamada
Project Title	Modulating epigenetic regulation to promote muscle regeneration and rejuvenation
Duration	From 04/01/2022 to 03/31/2023
Project Members	
Name	Position, Institution
Masaki Yagi	Research Fellow, Massachusetts General Hospital
Takuya Yamamoto	Associate Professor, CiRA, Kyoto University
Jumpei Taguchi	Project Assistant Professor, IMSUT, University of Tokyo
Project-completion Report on achievements/progress through the entire project period	
<p>Throughout this grant, we aimed to uncover basic principles by which epigenetic regulations and signaling pathways control cell fate, homeostasis, regeneration, and rejuvenation in various tissues. Studying their regulation will lead to a deeper understanding of mechanisms underlying disorders and pave the way for novel therapeutic strategies. Dr. Jumpei Taguchi, a project assistant professor, in the Yamada lab utilized CRISPR/Cas9 tools to generate novel transgenic mouse embryonic stem (ES) cell lines carrying either a flox allele on putative Myod1 enhancer locus (referred to as Myod1 En Flox ES cells) or a point mutation on a particular phosphorylation site of Uhrf1 (referred to as Uhrf1 S76G ES cells). The Yamada lab shared these ES cell lines with the Hochedlinger lab as a collaboration basis. The Yamada lab and the Hochedlinger lab would share any materials or results about this project each other. Dr. Masaki Yagi, a research fellow in the Hochedlinger lab, has been characterizing these ES cells and trying to generate transgenic mice from these ES cells by blastocyst injection at MGH/Harvard. The Hochelinger lab will investigate the roles of putative Myod1 enhancer in skeletal muscle development and regeneration, and study post-translational mechanisms of Uhrf1 with the transgenic ES cells and mice.</p>	

Research Results from the Project during FY2022

<Publications>

No paper related to this grant project has not been published yet.

<Patent Applications>

No patent related to this grant project has not been filed yet.

Days of visits to IMSUT during FY2022

Dr. Masaki Yagi visited CiRA on July 11-12 and IMSUT on July 13-14, 2022 to discuss the project with Dr. Takuya Yamamoto and Dr. Yasuhiro Yamada.

Dr. Masaki Yagi, Dr. Konrad Hochedlinger and Dr. Yasuhiro Yamada had a zoom meeting to discuss the project.

Name	Position, Institution	Sex	Age	Visits to IMSUT (Days)
Masaki Yagi	Research Fellow, MGH	Male	35 or younger	2 days
		Pull-down ▼	Pull-down ▼	
		Pull-down ▼	Pull-down ▼	
		Pull-down ▼	Pull-down ▼	
Name	Position, Institution	Sex	Age	Online Meetings (Days)
Masaki Yagi	Research Fellow, MGH	Male	35 or younger	1 day
Konrad Hochedlinger	Professor, MGH	Male	40 or older	
Yasuhiro Yamada	Professor, IMSUT	Male	40 or older	
Takuya Yamamoto	Associate Professor, CiRA	Male	40 or older	
Name	Position, Institution	Sex	Age	Discussions via E-mail, Slack, etc. (Days)
Masaki Yagi	Research Fellow, MGH	Male	35 or younger	Discussion via email
Konrad Hochedlinger	Professor, MGH	Male	40 or older	

Yasuhiro Yamada	Professor, IMSUT	Male	40 or older	
Jumpei Taguchi	Project assistant Professor, IMSUT	Male	35 or younger	

Usage of Facilities/Equipment during FY2022			
Name of Facility	Equipment	Number of Use (Times)	Usage time (Hours)
FACS Core Laboratory	e.g.) FACS Aria (BD)	0	
Medical Proteomics Laboratory	e.g.) Orbitrap QSTAR Elite	0	
Imaging Core Laboratory	e.g.) Zeiss Multiphoton Microscopy (LSM710NLO)	0	
Gene Manipulated Mouse Section	Creation and cryopreservation embryo of Knockout mouse	2	
Human Genome Center	Supercomputer	0	
Amami Laboratory of Injurious Animals	Experimental lab	0	
Other	Gene editing in mouse ES cells	2	A few months
Usage of Scientific Resources			
Name of Scientific Resource			Number of Samples/Lines
Serum (BioBank Japan)			0
DNA (BioBank Japan)			0
Knockout mouse			0
Pathogenic bacteria			0
Other			
Usage of Database			
Name of Database			Number of Use (Times)