

# Osaka Mito 2019

## International Workshop on Mitochondrial Dynamics

Tuesday, December 10, 2019, 15:00-17:00

Place: 2F Seminar Room | Biosystems Building | Graduate School of Frontier Biosciences | Osaka University

### Invited Speakers



#### Takuya Shiota, Ph.D.

Associate Professor

Organization for Promotion of Tenure Track, Miyazaki University, Miyazaki, Japan

#### *Two major technical improvement unlocked the secret of mitochondrial protein entry gate*

The mitochondrion is composed of about 1000 different proteins. Most of them are synthesized at the cytosolic ribosome and imported into the mitochondria. The TOM complex is responsible for the protein import. Mitochondrial proteins are large variety such as membrane protein, soluble protein, a small protein, and large protein. The TOM complex can handle a large variety of mitochondrial proteins. The TOM complex became one of the most understood protein translocators in this decade. In this seminar, I will introduce the highly sophisticated molecular mechanisms of the TOM complex and two major technical improvements that enabled to reveal the mechanisms.



#### Shiori Sekine, Ph.D.

Assistant Professor

Aging Institute, Department of Medicine, University of Pittsburgh School of Medicine, Pittsburgh, PA, USA

#### *PINK1 import regulation at a crossroad of mitochondrial fate*

PINK1/Parkin-mediated mitophagy is a mitochondrial stress signaling pathway, which can eliminate damaged mitochondria from cells by autophagy. Loss-of-function of PINK1/Parkin-mediated mitophagy results in the accumulation of dysfunctional mitochondria, which could be one etiology of Parkinson's disease (PD). Within step-by-step signaling cascades of PINK1/Parkin-mediated mitophagy, mitochondrial damage-dependent PINK1 kinase activation is a critical step to trigger the mitophagy signal. Recent investigation of this process reveals that this stress-dependent PINK1 kinase activation is achieved by its regulated import into different mitochondrial compartments depending on the health status of mitochondria. In this seminar, the regulation of PINK1 import and activity will be discussed.



#### Takehiro Yasukawa, Ph.D.

Assistant Professor

Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan

#### *The mechanism of DNA replication in mammalian mitochondria*

While the majority of DNA is enclosed within the nucleus, mitochondria also contain their own, separate DNA, the mitochondrial DNA (mtDNA). Intriguingly, mammalian mtDNA replication is surprisingly complex with three replication mechanisms. The importance of mtDNA replication can be recognized by the fact that mtDNA mutations and depletion are associated with various human diseases. Currently, however, the molecular processes underlying the replication mechanisms and physiological and clinical significance of the complexity are still elusive, requiring further research. In this seminar, I will discuss how far we understand mtDNA replication mechanisms and propose a new model of mtDNA replication regulation.

**Organizer:** Koji Okamoto, Graduate School of Frontier Biosciences

No registration is required. Light bites will be served after the workshop (17:00-17:30).

For inquiry, please contact Koji Okamoto (Tel: 06-6879-7970 Email: kokamoto@fbs.osaka-u.ac.jp)

