conferenceseries.com

JOINT EVENT

12th International Conference and Expo on

Proteomics and Molecular Medicine

12th International Conference on

Advancements in Bioinformatics and Drug Discovery

November 26-28, 2018 | Dublin, Ireland

Molecular dissection of meiotic recombination by screening novel regulatory factors in mice

Hiroki Shibuya University of Gothenburg, Sweden

The human genome is continuously exposed to DNA-damaging agents such as ionizing radiation, ultraviolet light and carcinogenic substances and such damage is a major driver of cancer development and progression. Especially, DNA double strand breaks (DSBs) are considered to be the most threatening form of DNA damage because the integrity of both DNA strands is compromised simultaneously. Despite their potential threat to genomic integrity, DSBs are intentionally introduced genomewide specifically in germ cells. Meiotic DSBs are needed to exchange DNA strands between homologous chromosomes in the initial step of meiotic homologous recombination. A detailed understanding of the molecular mechanisms behind this process is lacking in mammals, because, unlike in simpler model systems, the regulatory factors for key steps remain unidentified. We aim to determine the molecular mechanisms of DSB formation and repair processes in mammalian germ cells by identifying key regulatory factors in mice. We utilized the *in vivo* electroporation technique that we developed in our previous studies, which enables quick visualization of candidate protein localization in live mice testis. So far, we have successfully identified 4 novel proteins that localize to the sites of meiotic recombination. We will present the results of functional analyses of these candidate factors, which shed light on the molecular regulation of meiotic recombination in the mammalian model system.

Biography

Hiroki Shibuya is an Assistant Professor in the Department of Chemistry and Molecular Biology, University of Gothenburg, Sweden. He obtained PhD at the University of Tokyo, Japan, in 2014. During PhD works, he focused primarily on molecular cell biology, using mice as the model organism. He has identified germ cell-specific telomere-binding proteins, TERB1-TERB2-MAJIN, which is needed for the chromosomal movement during meiotic prophase I. After the fundamental work performed in Japan, he worked at Harvard Medical School, as a Human Frontier Scientific Program Long-term Fellowship Postdoc in 2015. He moved to University of Gothenburg in Sweden and became Assistant Professor in 2016. In 2018, he has received the prestigious European grant, the ERC starting grant.

hiroki.shibuya@gu.se

Notes: