高発がん遺伝病ファンコニ貧血と複製ストレス解除
Replication stress in a cancer-prone disorder Fanconi anemia

高田　穣 先生
Minoru Takata, M.D., Ph.D.

京都大学 大学院生命科学研究科附属 放射線生物研究センター　教授
Professor, Radiation Biology Center,
Graduate School of Biostudies, Kyoto University

Fanconi anemia (FA) is a devastating hereditary disorder with impaired genome stability resulting in physical abnormalities, gradual loss of hematopoietic stem cells, and development of tumors and leukemia. It has been suggested that functions of FA genes are required to exert normal levels of DNA repair by homologous recombination, and to maintain genome stability by counteracting endogenous metabolites, such as aldehydes, that damage DNA and stall replication forks. Recent studies have also implicated co-transcriptional R-loops, consisting of a DNA:RNA hybrid and displaced single stranded DNA, as one of the potential endogenous sources that induce genome instability and the FA phenotype. Furthermore, the key FA protein FANCD2 has been shown to prevent degradation of stalled replication forks. In this talk, I will summarize the current understanding of the FA pathway function, and show some of our recent work that highlight the importance of FA pathway in genome stability.