BIOMEDICAL CENTER

The Laboratory of Reproductive Medicine presents

Dr. Petr ŠOLC

Institute of Animal Physiology and Genetics, Czech Academy of Sciences

and his lecture entitled

DNA DAMAGE RESPONSE AND DNA REPAIR DURING MOUSE OOCYTE MATURATION

Because low levels of DNA double strand breaks (DSBs) appear not to activate the ATM-mediated prophase I checkpoint in full-grown oocytes, there may exist mechanisms to protect chromosome integrity during meiotic maturation. Using live imaging we demonstrate that low levels of DSBs induced by the radiomimetic drug Neocarzinostatin (NCS) increase the incidence of chromosome fragments and lagging chromosomes but do not lead to APC/C activation and anaphase onset delay. The number of DSBs, represented by γH2AX foci, significantly decreases between prophase I and metaphase II in both control and NCS-treated oocytes. Transient treatment with NCS increases >2-fold the number of DSBs in prophase I oocytes, but less than 30% of these oocytes enter anaphase with segregation errors. MRE11, but not ATM, is essential to detect DSBs in prophase I and is involved in H2AX phosphorylation during metaphase I. Inhibiting MRE11 by mirin during meiotic maturation results in anaphase bridges and also increases the number of γH2AX foci in metaphase II. Compromised DNA integrity in mirin-treated oocytes indicates a role for MRE11 in chromosome integrity during meiotic maturation.

Wednesday 9th May, 10 a.m.

seminar room of Biomedical Center

The lecture will be about 45 min., accompanied by small refreshment.

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