the 3rd EMBO meeting

advancing the life sciences

2011

VIENNA

10–13 September

abstracts

Contents

Poster Sessions

Presenters are requested to stand with their posters according to the timetable below:

Poster Session A – Sunday 11 September – Exhibition Hall
Even-numbered posters: 16:15 – 17:00
Odd-numbered posters: 17:00 – 17:45

Poster Session B – Monday 12 September – Exhibition Hall
Even-numbered posters: 17:15 – 18:00
Odd-numbered posters: 18:00 – 18:45

Poster Session C – Tuesday 13 September – Exhibition Hall
Even-numbered posters: 12:30 – 13:15
Odd-numbered posters: 13:15 – 14:00

Participants wishing to be considered for a poster prize need to put their poster up in the morning coffee break on the day of their poster session.

Poster Prizes

The EMBO Journal, EMBO reports, Molecular Systems Biology and ***EMBO Molecular Medicine*** will each award a poster prize. The journal editors and EMBO Young Investigators will determine winners based on high-quality and exciting unpublished research presented in a clear and appealing manner.

The awards will be presented during the closing ceremony.

compared with previous gene transfer methods using repeated transfer or prolonged exposure to potentially harmful gene carriers. However, the epigenetic characterization of protein derived-iPSCs was not undertaken at genome-wide level.
Observations: Here, we globally analyzed chromatin signatures such as histone H3 K4me3 and K27me3 as well as gene expression profiles in two different mouse iPSCs derived from cardiac and skin fibroblasts and ESCs. Our data indicate that chromatin states of somatic cells were dramatically changed during de-differentiation and thus gene expression profiles of two types of iPSCs were almost identical to that of ESC even though iPSCs were generated from two different somatic cells. Histone modification patterns of all 20,550 genes are almost similar at the promoters. The H3K4me3, an active marker shows higher correlation of iPS with ES cells ($r = 0.9885$). In addition, the alterations in chromatin structure during reprogramming process were tightly correlated with the changes in gene expression.
Conclusions: The epigenetic reprogramming should be faithfully accompanied to change the cell fate from somatic cells to ESC-like iPSCs.

A 061 DNMT1 depletion activates a pathway p14ARF/TP53 controlled that induces G1 arrest preventing DNA demethylation and aneuploidy

[1]**V. Barra,** [1]**L. Lentini,** [1]**A. Quartararo,** [1]**A. Di Leonardo** | [1]Dipartimento di Scienze e Tecnologie Molecolari e Biomolecolari, Palermo, Italy

Background: Aneuploidy is considered the result of chromosome segregation errors caused by defects in the mitotic spindle assembly, centrosome duplication, cell-cycle checkpoints and epigenetic changes. Usually, aneuploidy affects negatively proliferation of normal cells. However, it is frequently associated with cancer that is characterized by a uncontrolled proliferation. Thus, understanding the pathway(s) that block proliferation of aneuploid cells might open new avenue to exploit new cancer therapies.
Observations: We found that in primary human fibroblasts (IMR90) knocking down of DNMT1, a member of epigenetic machinery is perceived by the cell as a stress signal that induces p14ARF activation followed by TP53 stabilization that in turn transactivates p21waf1 triggering the G1 arrest. DNMT1 depleted cells bypassed the arrest and became aneuploid when TP53 or p14ARF were simultaneously silenced by RNAi. In addition by using stable near-diploid human tumor cells (HCT116), which are p14ARF-null and TP53-wt, we found that DNMT1 depleted HCT116 cells did not arrest in G1, underwent overall DNA demethylation and become aneuploid.
Conclusions: Our results suggest that Dnmt1 depletion triggered G1 arrest in human fibroblasts by activating a pathway p14ARF/TP53 dependent thus avoiding aneuploidy caused by DNA demethylation coupled with incorrect cycle progression.

A 062 Are multinucleated cells and multipolar spindles associated with chromosomal instability in tumor cells?

[1,2]**B.A. Cortez,** [1]**L.R. Ricardi,** [1]**G.M. Machado-Santelli** | [1]Institute of Biomedical Sciences, University of Sao Paulo, Sao Paulo, Brazil, [2]Institute of Biosciences, University of Sao Paulo, Sao Paulo, Brazil

Background: Aneuploidy is a feature associated to the aggressiveness of most solid tumors and it can result from multipolar mitosis. Disruptions in centrosome cycle and cytokinesis can lead to multipolar spindles. We have previously shown that chrysotile, a type of asbestos fibers, and vincristine, a chemotherapeutic agent, are able to induce multipolar mitosis. The present work aimed to go further in studying the effects of chrysotile and vincristine treatments on the ploidy of cultured human cancer cells.
Observations: Lung cancer cells were submitted to 2 different treatments: chrysotile for 48h or vincristine for 24h, followed by 24-48h of recovery in normal culture medium. The presence and localization of AuroraA, pericentrin and gamma-tubulin in the spindle poles of multipolar mitosis were similar to those detected in control cells centrosomes. Besides, in interphase multinucleated cells were detected multiple focuses of gamma-tubulin and pericentrin. The number of chromosomes analyzed in metaphase preparations was different when comparing the treatments: chrysotile increased the tetraploid cell population while vincristine increased the number of chromosomes randomly. In both treatments the ploidy deviations remained similar even after a 96h recovery period, as well as the presence of multinucleated cells and multipolar mitosis.Time-lapse imaging of GFP-alpha-tubulin-transfected cells indicated that chrysotile-multipolar mitosis can be arrested in metaphase or finish M phase, thus generating 2 or 3 daughter cells and contributing to aneuploid cell formation. Time-lapse experiments with GFP-histone cells are contributing to the understanding of the relation between multinucleation and multipolar spindles.
Conclusions: All together, these data indicate that both agents interfere in mitosis, leading to multinucleation, aneuploid cells and multipolar mitosis with multiple functional centrosomes, and help us to understand how multipolar mitosis affect chromosome instability after chrysotile or vincristine treatments.

A 063 Coexpression of mammalian retrotransposons with the MAST2 gene in testicles

[1]**A. Zabolotneva,** [1]**O. Bantysh,** [1]**M. Suntsova,** [1]**K. Baskaev,** [1]**N. Efimova,** [2]**G.G. Schumann,** [3]**N. Gaifullin,** [1]**G. Malakhova,** [1]**A. Buzdin** | [1]Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry, Moscow, Russian Federation, [2]Paul-Ehrlich-Institut, Federal Institute for Vaccines and Biomedicines, Langen, Germany, [3]Lomonosov Moscow State University, Moscow, Russian Federation

Background: Retrotransposable elements (REs) are mobile genetic elements that are able to self-replicate in the host genome by reverse transcription of their RNA intermediates. In