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ICCB 2016



- P 311 **Fullerene C60 Increases Doxorubicin Efficiency in Leukemic Cells**
Anna Grebinyk (Germany)
- P 312 **Retargeting of Polyomavirus Based Nanoparticles to Cancer Cells**
Jirina Zackova Suchanova (Czech Republic)
- P 313 **Novel HBV and HCV Antigens for Vaccine Production in Plants and Mammalian Cells**
Mihaela-Olivia Dobrica (Romania)
- P 314 **An Albumin-based Nanoparticle Bound to Anti-tumoral Drug: Effect on Cell Toxicity and Immune Response**
Macarena Siri (Argentina)

Poster Session III – Cellular Metabolism in Health and Disease

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Aifeng Zhang (China)
- P 316 **Immunocytochemical Assessment of TCA Enzyme in Asthenozoospermia Infertile Male**
Rashmi Tomar Rana (India)
- P 317 **Fine Structure and Dynamics of “Rods and Rings” Inclusions Formed by Inhibited Inosine-5'-Monophosphate Dehydrogenase 2**
Pavel Juda (Czech Republic)
- P 318 **Frequencies of Polymorphic Variations of Genes for Blood Clotting System in Women of Kazakh Ethnic Group with Complicated Pregnancy**
Aitkali Kalimagambetov (Kazakhstan)
- P 319 **Regulation of ATP Production During Terminal Differentiation of Human Erythroblasts**
Wataru Nunomura (Japan)
- P 320 **Characterization of Dermal Fibroblasts in New *In Vitro* 3D Chronic Wound Model**
Anna Zavadakova (Czech Republic)
- P 321 **Novel Nutraceutical Formulations Assessment on a Model of Non Alcoholic Fatty Liver Disease *In Vitro***
Anna Virginia Adriana Pirozzi (Italy)
- P 322 **Morphology of Right Atrial Endocardial Endothelial Cells in Different Acquired Heart Diseases**
Edite Vartina (Latvia)
- P 323 **Effects of Gestational Hyperglycemia on the Inflammasome Pathway in Chorionic Villi of Human Term Placenta**
Estela Bevilacqua (Brazil)
- P 324 **Nonsteroidal Anti-Inflammatory Drugs Modulate Glycosaminoglycans Synthesis in Human Dermal Fibroblasts by Affecting EGFR and PI3K Signaling Pathways**
Pawel Mozolewski (Poland)
- P 325 **Small Dense LDL Particles - Risk Factor for Atherosclerosis**
Dimitri Apostol (Romania)

Poster Session III – Cell Organelles, Mitochondria

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Yuki Hara (Japan)
- P 327 **Do Proteins Involved in Mitochondrial Fusion/Fission Processes Have Influence on Recognition Memory of Visual Imprinting in Chicks?**
Maia Nozadze (Georgia)
- P 328 **CDC20B is a Novel Component of the Deuterosome Required for Centriole Amplification in Multiciliated Cells**
Camille Boutin (France)
- P 329 **A Novel Immunoprecipitation-Based Approach Reveals Constituents of Flagellum Tip and Base Structures in *Trypanosoma Brucei***
Vladimir Varga (Czech Republic)
- P 330 **Systematic Investigation of the Role(s) of Microtubule-Associated Proteins in the Regulation of Mitochondrial Morphology in *Schizosaccharomyces Pombe***
Dana Lajdová (Slovak Republic)
- P 331 **Behavior of Lysosome Related Organelle During Differentiation of *Giardia Intestinalis***
Marlene Benchimol (Brazil)



P 318 - Frequencies of Polymorphic Variations of Genes for Blood Clotting System in Women of Kazakh Ethnic Group with Complicated Pregnancy

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During pregnancy, due to the adjustment of coagulation, anticoagulation and fibrinolytic networks the risk of thrombophilia increases. It was found that inherited or acquired thrombophilia is a factor in most of pregnancy complications: fetal loss syndrome, pre-eclampsia and eclampsia, premature detachment of normally situated placenta, and etc. One of the thrombophilia markers are mutations in genes of blood coagulation system. Results of studies on the role of thrombophilia in the occurrence of complications during pregnancy are rather controversial.

Aim of this study was to determine the frequency of alleles and polymorphic variants of 7 coagulation genes F2 G1691A, F7 G10976A, F13A1 G103T, FGB G(-455)A, PAI1 (SERPINE1) 5G(-675)4G, ITGA2 C807T, ITGB3 T20210A, F5 G1691A and ITGB3 T1565C for the mutant allele are not determined.

We analysed DNA of 129 pregnant women using Real-time-PCR. Main group consisted of women (n = 90) with history of two or more pregnancy complications in the form of pre-eclampsia, eclampsia, fetal loss syndrome, and etc. Control group consisted of women (n = 39) with two or more normal pregnancy outcomes, and had no complications during pregnancy history. Average age of women in the experimental group was 32.0 ± 0.50 years compared with control of the age 32.0 ± 0.50 years.

The statistical analysis of the frequency distribution of the studied alleles in the experimental group showed no significant differences with respect to the frequency distribution in control group. Analyzed distribution of polymorphic variants by the criterion χ^2 and OR (95% CI) showed that significant differences between the group of women with complicated pregnancy and a control group in frequency of occurrence of homozygous wild-type allele, heterozygous and homozygous mutant allele are not observed. At the same time in the two groups of women homozygous genotypes for the mutant allele are not determined.

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P 319 - Regulation of ATP Production During Terminal Differentiation of Human Erythroblasts

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It is estimated that more than 2 million human erythroblasts extrude their nucleus every second in the hypoxic environment (under 5% oxygen concentration) of the bone marrow. Although enucleation requires multiple signal transduction and polarization of the cell by accumulation of dynein and local assembly of a contractile actomyosin ring [1,2], the energy driving these events is still unknown. In an attempt to identify the energy source for enucleation, we investigated the mechanism of energy production in human erythroblasts during terminal differentiation. To this end, we analyzed colony-forming unit-erythroblasts (CFU-E) and mature erythroblasts generated from purified CD34(+) cells for cell growth, enucleation, mRNA level, protein phosphorylation and ATP concentration. Here we show that human erythroblasts cultured in a 5% oxygen environment are capable of proliferating and extruding their nucleus and that enucleation is accompanied by a decrease in ATP levels and an uptake of 2'-deoxy-glucose. When the activity of lactate dehydrogenase (LDH), an enzyme that catalyzes the final step of glycolysis, is inhibited in CFU-E with the inhibitor stiropterin [3], enucleation and ATP production are blocked. Concomitant with erythroblast maturation, we observe a decrease in ATP concentration and an increase in hypoxia inducible factor (HIF) 1- α and pyruvate dehydrogenase (PDH) kinase 1 and 4 mRNA and protein levels. PDH kinase mediated-phosphorylation of PDH at the 300th serine residue accounts for the decrease in aerobic ATP production in late stage erythroblasts. Based on our results, we hypothesize that the enucleation of erythroblasts relies mostly on anaerobic glycolysis and constitutes an adaptation process to low oxygen atmosphere (~15%) that likely took place in primitive mammals during the Mesozoic era [3].

References:

[1] Kobayashi I. et al. (2016) *Exp. Hematol.* 44: 247. [2] Ubukawa K et al. (2012) *Blood* 119:1036. [3] Ward P.D. (2011) *Thin Air: Dinosaurs, Birds, and Earth's Ancient Atmosphere*, Natl Academy Press, pp.1-282.