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43rd FEBS Congress

Biochemistry Forever

July 7–12, 2018

Prague, Czech Republic

Abstracts submitted to the 43rd FEBS Congress, taking place in Prague, Czech Republic from 7th to 12th July 2018, and accepted by the Congress Organizing Committee are published in this Supplement of *FEBS Open Bio*. Late-breaking abstracts are not included in this supplement. The abstracts are available as six PDF files: Plenary Lectures, Symposia, FEBS Special Sessions, Hot Topics, Speed Talks and Posters.

About these abstracts

Abstracts submitted to the Congress are **not peer-reviewed**. In addition, abstracts are published as submitted and are **not copyedited** prior to publication.

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Indexing

Abstracts published in *FEBS Open Bio* Supplement for the 43rd FEBS Congress will be included individually in the Conference Proceedings Citation Index published by Web of Science.

How to cite these abstracts

AuthorOne, A., AuthorTwo, B. (2018). Abstract title. FEBS Open Bio, 8: Abstract number*. doi:10.1002/2211-5463.xxxxx**

* The Abstract number can be found atop each abstract's title in the PDF file.

** DOIs are as follows:

Plenary Lectures:	10.1002/2211-5463.12448
Symposia:	10.1002/2211-5463.12449
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POSTERS

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* Each poster has been given a unique number beginning with the letter P; the next part relates to the session in which the poster will be presented.

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P.03 Genome dynamics and epigenetics
P.04 The structural organization of the cell
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(CD) signal in 350–600 nm range. The most pronounced CD responses gain compounds with carboxyphenyl ribbed substituents. Here we explored the clathrochelates' ability to induce CD response upon binding to series of proteins of various structure and functionality: beta-lactoglobulin, lysozyme, trypsin, lipase and insulin. Dependence of the binding to proteins on number (one/two/six) and isomery of carboxyphenylsulfide substituents in clathrochelate molecule was analyzed. In case of beta-lactoglobulin, clathrochelates acquired the strongest CD responses of different shapes and intensity; the most pronounced CD bands (90 mdeg) gained by di-*ortho* clathrochelate. Binding to insulin resulted in inducing the intensive CD response only by compounds with six substituents (up to 76 mdeg for hexa-*para* isomer); CD signals varied by the intensity and shape for different isomers. CD bands induced by lysozyme were less strong (up to 13 mdeg for di-*meta* isomer), had similar shape for all clathrochelates. CD bands of clathrochelate series in presence of trypsin and lipase were indistinct (1–4 mdeg). Thus, it is shown that the number and geometry of ribbed substituents are important for clathrochelate binding to proteins; these affect the fitting of the compound to a binding site and determine the arrangement of the guest-host assembly. Clathrochelates could serve as prospective scaffolds for development chiroptical probes; to reflect the protein structural peculiarities by distinctions in CD spectra, clathrochelates could be adjusted by various number and isomery of substituents. The project leading to these results has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 778245.

P.09-026-Tue
Effect of gender on blood lipids parameters of the *Ovis aries* and the *Ovis ammon* interspecific hybrids

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Hybridization of domestic and wild species is the promising way to introduce the new capacities in farm animals. Here, we estimated the gender influence on major lipids of lambs blood serum of interspecies hybrids of Argali and domestic sheep with different genotypes. Blood samples were collected before feeding from female (n = 15) and male (n = 12) lambs at the age of 5 months. The animals (of each gender) were divided among the three groups according to their genotype: 1) hybrids of 25% Argali and 75% of Romanov sheep; 2) hybrids of 18.75% Argali and 81.25% of Romanov sheep; 3) purebred Romanov sheep. The cholesterol and triglycerides concentrations by automatic analyzer ChemWell (Awareness technology, USA) with Spinreact assay kits (Spain) were measured. Kruskal-Wallis test (comparison of analog groups) and U-test (effect of gender) were used for statistical analyses. The female lambs of 2nd group had a higher concentration of triglycerides ($P < 0.01$) in comparison with 1st group (+15.9%) and 3rd group (+10.3%). Male lambs of 3rd and 1st groups had a higher cholesterol concentration ($P < 0.05$) comparing to 2nd group at 4.8% and 6.5%, respectively. We found gender-related differences in 1st group for cholesterol concentration ($P < 0.05$), in 2nd group – for triglyceride concentration ($P < 0.05$) and in purebred Romanov sheep (3rd group) - for both lipids ($P < 0.05$). Female lambs had higher concentrations of lipid metabolites in comparison with male lambs: +20.3% for cholesterol in the 1st group, +19.7% for triglycerides in the 2nd group, +14.6% and 20.6% for triglycerides and cholesterol, respectively, in the 3rd group. The patterns, established in this study, indicated the essential differences in lipid parameters between hybrid and purebred lambs as well as between male and female lambs of the same genotype. This study was supported by Russian science foundation (project No. 14-36-00039).

P.09-027-Wed
Digestive complex of Tenebrionidae insects effectively degrades resistant to proteolysis gliadins

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Gliadins are widespread dietary proteins, which contain 10–30% Pro and 30–50% Gln residues. Several toxic gliadins peptides, resistant to proteolysis by human digestive enzymes cause autoimmune Celiac Disease in 1% of the susceptible human population. Search for natural enzymatic systems, capable to hydrolyze gliadins is an urgent task. Tenebrionidae insects are stored product pests and predicted hosts of such proteolytic system. Gliadins are their main food proteins; therefore, tenebrionids should possess enzymes capable to digest them. We have carried out a bioinformatic search for proline-specific peptidases (PSP) in Tenebrio molitor larval gut transcriptome and found 11 sequences homologous to human PSP. Combination of gene expression studies of the larval gut transcriptome with biochemical localization experiments allowed us to propose the digestive function for the highly expressed secreted dipeptidyl peptidase 4 (DPP 4) and prolylcarboxypeptidase (PRCP), and also for tissue localized prolidase (XPD). Previously we have shown that cysteine cathepsins (CC) are the major post-glutamine cleaving endopeptidases (PGP) in Tenebrionidae insects. We studied the effect of individual T. molitor digestive PGP–CC and PSP–DPP 4 and PRCP, and combined action of these peptidases on gliadins and suggested the hypothetical scheme of complete hydrolysis of γ- and ω-gliadins fragments with PQQPFPQ repeats. At the first stage, CC can hydrolyze the bond between two Gln residues. Resulting fragments are substrates for DPP 4, which cleaves dipeptides from their N-terminus. Remaining tripeptides can be hydrolyzed by PRCP. XPD may complete gliadins degradation, cleaving final dipeptides. Therefore, this natural complex provides complete gliadins hydrolysis and has a high potential as a possible preparation for Celiac Disease enzyme therapy. This work was supported by RFBR grants 17-54-61008 Egypt_a, 18-04-01221_a; RFBR-National Intellectual Development grant 17-34-80158 mol_ev_a.

P.09-028-Mon
DNA-binding ability, topoisomerase I/II and anticancer activity of novel biscoumarin derivatives with different length linkers

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Coumarin derivatives exhibit antitumor activities at different stages of cancer formation through various mechanisms, such as blocking of the cell cycle, the induction of cell apoptosis or the inhibition of DNA-associated enzymes. In recent years, the *O*-