Hellenic Proteomics Society

ItPA Italian Proteomics Association

SePA СРПСКО УДРУЖЕЊЕ ЗА ПРОТЕОМИКУ-SePA

XVII International Italian Proteomics Association Annual Meeting
in partnership with the Hellenic Proteomics Society and Serbian Proteomics Association

Proteomics and Metabolomics towards Global Health

Ospedale Isola Tiberina – Gemelli Isola,
ROMA, ITALY
November 29th -December 1st, 2023

Ospedale Isola Tiberina
GEMELLI ISOLA

UNIVERSITÀ CATTOLICA del Sacro Cuore

Fondazione ItPA onlus
Italian Proteomics Association

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GENERAL INFORMATION

CONFERENCE REGISTRATION FEES

Before October 13th, 2023: ItPA/EuPA member: 170 euroYPI (< 7years /PhD) ItPA/EuPA member: 150euro- After October 13th , 2023: 200 euro

CONGRESS VENUE
Ospedale Isola Tiberina – Gemelli Isola, Via di Ponte Quattro Capi, 39, Roma, Italy

OFFICIAL LANGUAGE
The Congress official language will be English

POSTER PRESENTATIONS AND AWARDS
Posters will be displayed from 30th November to 1st December 2023. During poster sessions the presence of one of the authors is required. Presentations from young corresponding authors will be candidate for poster prize competition. Awards will be supported by European Proteomics associations (EuPA), Waters S.p.A Global Services and Fondazione ItPA Onlus.

CERTIFICATE OF ATTENDANCE
Certificates of attendance and payment fee receipts will be available at the registration desk.

COFFEE BREAKS AND LUNCHES
Welcome cocktail, coffee breaks and lunches will beserved at the venue.

CONFIRMED INVITED SPEAKERS

JEAN ARMENGAUD, Université Paris-Saclay, CEA, INRAE, Département Médicaments et Technologies pour la Santé (DMTS), (Bagnols-sur-Cèze, France)

TANJA CIRKOVIC VELICKOVIC, University of Belgrade, Belgrade, Serbia

HEEYOUN HWANG, Korean Basic Science Institute, (Cheongju-si, South Corea)

JANNE LETHIO**,** Science for Life Laboratory and Department of Oncology and Pathology, Karolinska Institutet, Stockholm, Sweden.

PL-02

Proteomic insight into allergenic food corona on polyethylene terephthalate microplastics

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Microplastics is abundant in the environment, food and beverages and get ingested by humans. Its complex interplay with proteins lead to formation of corona. Tightly bound proteins represent hard corona, while weaker binding partners are found in soft corona. Separation of hard and soft corona of allergenic proteins of shrimps, eggs and cow's milk, tropomyosin (TPM), ovalbumin (OVA) and beta-lactoglobulin (BLG) and identification of binding partners by proteomics was aim of our study.

Allergenic proteins were purified from egg white, shrimps and cow's milk. Binding to polyethylene terephthalate microplastics (PET) (70-100 μm) was probed at pH 7 for purified allergens and egg white proteins. After establishment of binding equilibrium, soft and hard corona were separated and analyzed by SDS PAGE, followed by identification of bound proteins by nanoLC-HRMS. Binding of all allergenic proteins was observed in both soft and hard corona. Soft corona contains exclusively intact, full length OVA, TPM and BLG. Hard corona is enriched for truncated OVA and oligomers of TPM. OVA fragments are partially or fully enfolded and have higher level of exposed hydrophobic patches resulting in higher affinity for PET microplastics. In comparison to OVA and TPM, hard corona of BLG is less abundant under similar conditions. BLG is compact globular protein with lower level of exposed hydrophobic patches in comparison to ovalbumin and tropomyosin. In hard corona, trace amounts of contaminating alfa-lactalbumin become enriched. In the presence of egg white protein extract OVA forms both SC and HC on microplastics, being the dominant protein of hard corona (with ovotransferrin). Lysozyme and ovomucin are present only in hard corona. Both proteins are known for their strong bioactivity and represent a small fraction of total egg white proteins.

Our results show that allergenic proteins form hard corona on PET microplastics. Among egg white proteins, minor proteins such as lysozyme and ovomucin become enriched. Denaturing effect of strong binding to microplastics may change functional characteristics of allergens and bioactive proteins of foods and should be further investigated in functional assays.

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