



UNIVERSITÀ
di **VERONA**

Scuola di Dottorato
di SCIENZE NATURALI ED INGEGNERISTICHE

Corso di Dottorato in Biotecnologie

"EVA technology and proteomics: a two-pronged attack on Cultural Heritage"

September 4th, 2020 – h 11:00

Pier Giorgio Righetti

Prof. Onorario – Politecnico di Milano

The lecture will take place by ZOOM

Local organization and contact: **Prof.ssa Daniela Cecconi**
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For each hour of seminar, 1 CFR (provided for the specific activities of PhD Program in Biotechnology) will be recognized to students attending the event.

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EVA technology and proteomics: a two-pronged attack on Cultural Heritage

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A novel way for exploring the world Cultural Heritage in the absence of damage or contamination (such as removing pigments in paintings or chipping away pieces of bones) of the items under investigation is here reported, called the EVA technique. It is based on films of ethylene vinyl acetate (EVA) impregnated with strong anion and cation exchangers, admixed with hydrophobic resins, C₈ and C₁₈. When in contact with any surface these films can harvest nano-moles of macromolecules as well as metabolites, which can then be identified by standard instrumentation. Some applications are reported, such as the findings of the renal pathology and assumption of morphine in the original manuscript of Master I Margarita by Bulgakov, the presence of TBC bacterium in Chekhov's shirt and in a letter by G. Orwell, the *Y. pestis* and anthrax bacteria in the death registries of Milan's lazaretto in the 1630 plague bout, as well as ample traces of five metals in Kepler's manuscripts, suggesting his potential practice of alchemy. Also in the pages of the Memoirs of Casanova, although the gonorrhoea bacterium could not be found, spots of HgS could be measured, suggesting its use for curing the disease. The latest result, not yet published, is the exploration of the pages of a novel (Ivan The Terrible) that Stalin was reading in 1942, at the peak of World War II. He fully annotated the first void page after the cover. Upon application of the EVA film and analysis of the eluate, we could detect Lithium levels compatible with treatment of bipolarity, suggesting that he was affected by this pathology, something not to be found in any historical record!

Righetti P.G., Zilberstein G., Zilberstein S. EVA Technology and Proteomics: A Two-Pronged Attack on Cultural Heritage. J. Proteome Res. 2020; 19: 2914–2925.

Righetti PG, Zilberstein G, D'Amato A. What Sherlock sorely missed: the EVA technology for cultural heritage exploration. Expert Rev. Proteomics 2019 Jun;16(6):533-542.

