



Università  
Ca' Foscari  
Venezia

Dipartimento di Scienze  
Molecolari e Nanosistemi

## IL DIPARTIMENTO DI SCIENZE MOLECOLARI E NANOSISTEMI

### ORGANIZZA IL SEMINARIO:

**dott.ssa Sabrina Manente**  
(Università Ca' Foscari Venezia)

**lunedì 9 dicembre ore 10:30, aula Delta 1B**

#### **Microbiological characterization of biodeterioration.**

#### **A survey at the ancient Library of the Patriarchal Seminary of Venice (Italy).**

In the indoor environment of the Ancient Library of the Patriarchal Seminary of Venice (Italy), it was found an enormous fungal proliferation on wooden surfaces of the shelves and the balustrade that runs around the room, suddenly appeared in a winter period, characterized by an increase in diffuse whitish spots especially on the side of the adjacent outside the library (side of the Venice Grand Canal).

Then, it has been addressed a noninvasive microbiological investigation both on the indoor environment (aerobiological) and on the wooden material contaminated in this Monumental Hall, in order to determine the indoor air quality in relation to the hard biodeterioration phenomenon in place. The wooden shelves and especially the '700 wooden balustrade that runs around the room on the first floor were subject to a massive fungal attack, characterized by an increase in diffuse whitish spots especially in the north side of the library.

away from contaminated wooden surfaces to evaluate fungal species by pattern recognition.

The results obtained from the monthly monitoring RH and T parameters showed how the indoor environment is strongly influenced by the external one actually, despite the centenary positive action of the building. From air sampling morphological recognition showed that the genera are: *Aspergillus* spp., *Penicillium* spp., *Cladosporium* spp., *Alternaria* spp. and *Aureobasidium* spp., all species potentially allergenic and recognized by literature as biological causes of the SBS, *Sick Building Syndrome*. There is also a high amount of yeasts and sterile mycelia. By microbiological sampling performed on wooden surfaces it was clear that the majority of colonies belongs to the genus *Aspergillus* spp. By carried out isolations and direct observations of Fungi-Tape™ it has been possible to recognize *Aspergillus penicilloides* Spegazzini as likely responsible for the biodeterioration in place. Such fungal species, in fact, was detected in most of the wooden surfaces of the shelves and of the sampled balustrade.

Contamination has been found at an advanced stage (1240-1770 CFU<sup>m</sup><sup>-3</sup>) being out of bounds for both Italian and international legislations. Therefore, in light of what occurred, anomalies of these climatic factors may have been the main causes of infection onset fungal within the Ancient Library's wooden shelves.