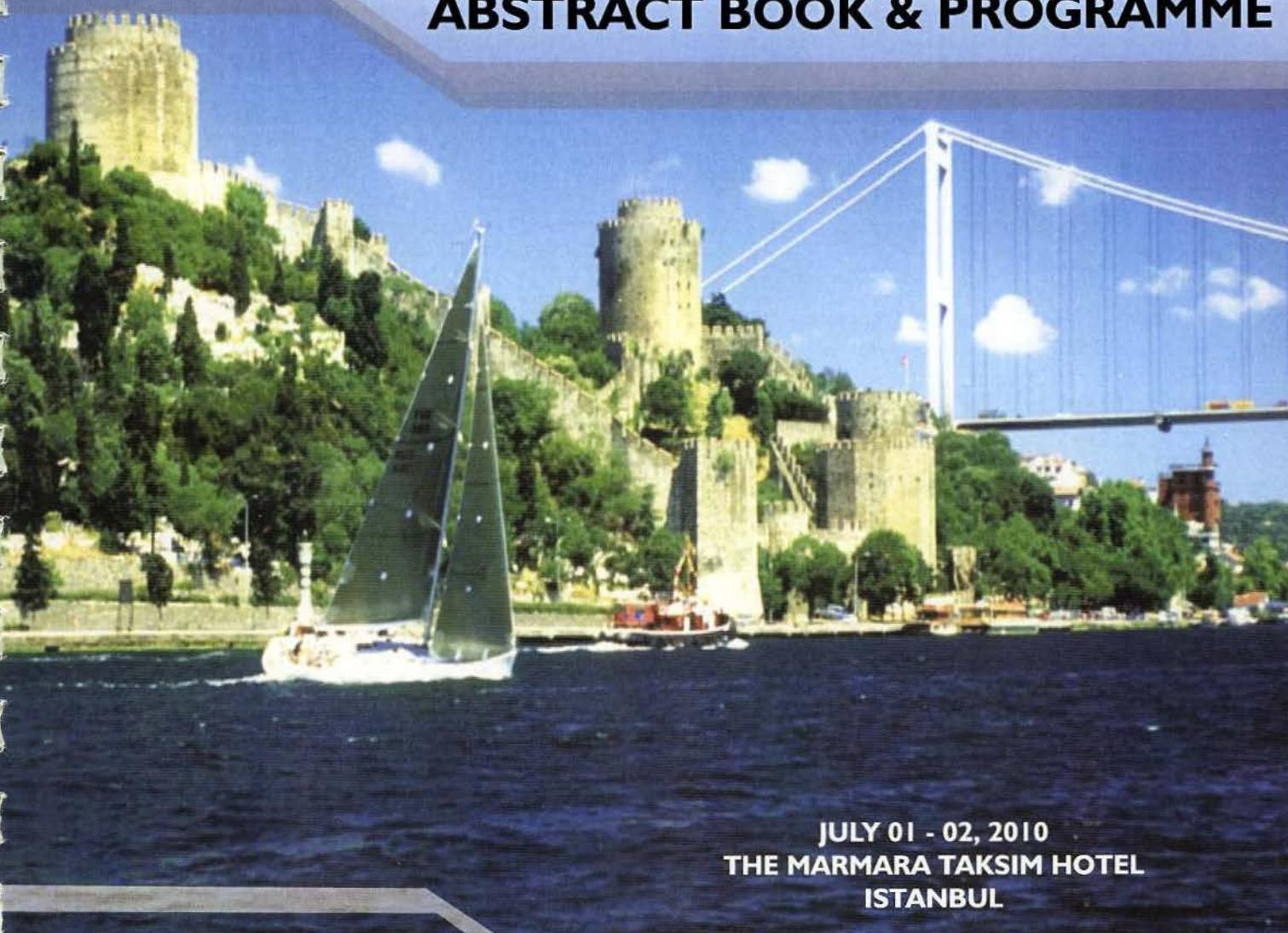




# **ECCO XXIX. Annual Meeting**

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## Use of MALDI-TOF ICMS to Identify *Candida* Species with Clinical Relevance

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Matrix-Assisted Laser Desorption/Ionization Time-Of-Flight Intact Cell Mass Spectrometry (MALDI-TOF ICMS) technique has appeared as a sound technique for rapid and reliable microbial identifications. The capability to register biomarker ions in a broad mass charge ( $m/z$ ) ratio range, that are unique and representative for individual microorganisms, forms the basis of current applications of mass spectrometry in microbiology. The remarkable reproducibility of this technique is based on the measurement of constantly expressed and highly abundant proteins, such as ribosomal molecules. The usually observable molecular mass range is between 2,000 and 20,000 Da, where important metabolites appear, which is an advantage because they can be easily used as biomarkers (Santos et al., 2010). The clinical impact of several infections with yeasts has increased especially in immunocompromised hosts. In the last years, yeasts belonging to the genus *Candida* have emerged as the major opportunistic pathogens between these patients and currently, *Candida albicans* constitutes the fourth most common cause of nosocomial infections in intensive care units. With an estimated total of 72.8 million opportunistic *Candida* infections per year worldwide, the case/fatality rate due to *Candida* species is in the range of 33.9%. About 20 species of *Candida* have been shown to cause disease in humans, but the list of medically important species continues to grow. Improved molecular methods for detecting and differentiating yeasts are able to distinguish closely related species, providing evidence for the existence of new *Candida* species previously misidentified by conventional chemotaxonomic criteria and which may represent new emerging pathogens. However, some of these techniques are time and reagent consuming. The aim of the present work is to use MALDI-TOF ICMS for microbial identifications and evaluate its capability to distinguish among closely related *Candida* species. Forty yeast isolates were analysed, including several *Candida* species, *Saccharomyces cerevisiae* and *Lodderomyces elongisporus*. Results showed that all isolates belonging to the same species grouped together and that the closely related species *C. albicans* and *C. dubliniensis*, *C. parapsilosis*, *C. metapsilosis* and *C. orthopsilosis*, as well as *C. glabrata* and *C. bracarensis*, could be clearly distinguished. Thus, MALDI-TOF ICMS appears as a sound and fast technique for *Candida* sp identification and since the time required for pathogen recognition is an important determinant of infection-related mortality rates of hospitalised patients, this technique stands out as a promising tool.

**Reference:** Santos, C. et al. (2010) J Appl Microbiol 108, 375–385.