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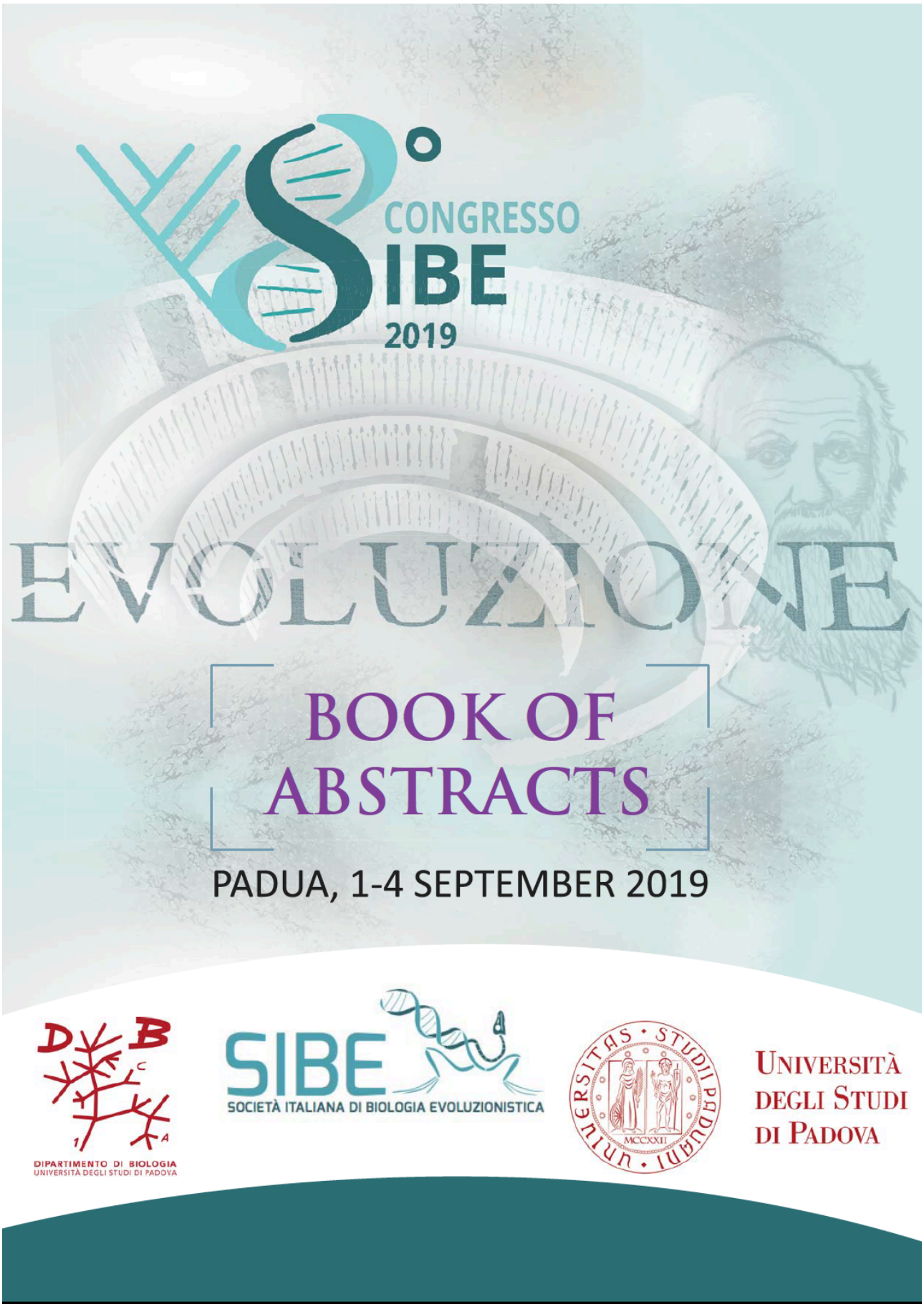

BOOK OF ABSTRACTS

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UNIVERSITÀ DEGLI STUDI DI PADOVA

Association of APOE, eNOS, and FTO gene polymorphisms with longevity

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Research on the evolutionary genetic bases of biological diversity has shown that longevity varies among individuals and populations and is influenced by the interaction of both genetic and environmental factors. Moreover, human longevity varies in different geographic areas according to the population-specific gene pool and to the socioeconomic level of the population. Among environmental factors, lifestyle and nutritional status seem to play an important role. High levels of adiposity, typical of individuals with a body mass index (BMI) more than 30 kg/m^2, were linked to increased incidence of many diseases and, consequently, to higher mortality rates. Many gene polymorphisms were positively or negatively associated with longevity. Most of them were metabolic gene polymorphisms. The main objectives of this study were to investigate the possible association of BMI and some metabolic gene polymorphisms with longevity in a northern Italy cohort. The hypothesis is that some anthropometric parameters, such as BMI, and some genetic variants could be differentially represented in long-lived individuals with respect to younger subjects. We genotyped 1,100 healthy volunteers aged 10-100 for APOE, ACE, eNOS and FTO gene polymorphisms. The sample was split into four age groups: 1-24, 25-49, 50-85 and 86-100. Significant differences were found in BMI values between age groups, with the exception of 1-24 with respect to 86-100. A significant decrease of the APO E4, eNOS 393 and FTO A and allele frequencies were observed in the 86-100 age group with respect to younger groups, whereas for ACE gene, no significant differences were found. In conclusion, this study provides evidence for a role of APOE, eNOS, and FTO gene polymorphisms in longevity. It has been estimated that the number of centenarians worldwide will double each decade until 2100, making population data about gene polymorphisms relevant for further studies about longevity.