Title: Role of genetic factors on smoking habits and secondhand smoke sensitivity: A twin study

Dr. Adam Domonkos 13169 Tarnoki tarnoki2@gmail.com MD 1, Dr. David Laszlo 13170 Tarnoki tarnoki4@gmail.com MD 1, Dr. Zsofia 13171 Lazar zsofia.lazar@yahoo.com MD 2, Dr. Kinga 13172 Karlinger kinga.karling@gmail.com MD 1, Dr. Andrea Agnes 13173 Molnari molnardi@gmail.com MD 3, Dr. Zsolt 13179 Garami ZGarami@tmhs.org MD 4, Prof. Dr Viktor 13181 Berczi berczi@hotmail.com MD 1 and Prof. Dr Ildiko 13182 Horvathy kiss.horvathy@t-online.hu MD 2. 1 Department of Radiology and Oncotherapy, Semmelweis University, Budapest, Hungary, 1082 ; 2 Department of Pulmonology, Semmelweis University, Budapest, Hungary ; 3 Research Group for Inflammation Biology and Immunogenomics, Hungarian Academy of Sciences and Semmelweis University, Budapest, Hungary and 4 DeBakey Heart and Vascular Center, The Methodist Hospital, Houston, TX, United States.

Body: Introduction: The role of genetic factors on nicotine dependence, withdrawal and quitting is well understood, however no information is available on secondhand smoke (SHS) exposure sensibility. Our aim was to assess SHS exposure, smoking habits and characteristics, smoking regulations at home, during driving and at workplace of monozygotic (MZ) and dizygotic (DZ) twins, and the contribution of genetic factors to SHS sensibility. Methods: 161 Hungarian and 50 American adult twin pairs (151 MZ and 62 DZ; mean age 44±17 years±standard deviation/SD/) were recruited in this classical twin study. Results: The overall rate of current, ex and never smokers was 14.6%, 16.4% and 69.2%. MZ twins reported higher rate of everyday and regular smoking for at least one year (p<0.05). 88% of MZ twins were both ex or current smokers, while the number was 70% in DZ twins (p<0.01). Significantly higher concordance was found in the disturbing effect of secondhand smoke in MZ versus DZ pairs (58 to 94% versus 39 to 79%, p<0.05 to p<0.005) on a self-reported smoke pollution scale between 1-7. Significantly smaller difference was observed in self-reported smoke pollution rate in MZ twins compared to DZ pairs concerning the restaurants and cafés (1.2±1.3 vs 1.8±1.5, p<0.05) which was not present regarding restaurants and cafés and transportation facilities. Conclusions: In conclusion, this study estimated a genetic influence on smoking habits and secondhand smoke sensibility especially in smoke pollution rate of restaurants and cafés.