Genetic and environmental influences on psychological adaptation of children and adults (GENIUS)

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Building upon the research within the first twin study in Serbia, GENIUS is focused on examining the mechanisms that shape human behavior and adaptation styles. The main novelty of the GENIUS project is the introduction of epigenetic research and the inclusion of children and adolescents, which will result in the first national full life-span behavioral genetics research. Additionally, new methodology (e.g. experimental and family design) will be introduced and evaluated. The study will include 2000 twins of all ages and their family members, who will participate in the assessment of dispositional characteristics, physical attributes, cognitive abilities, environmental factors, and adaptation styles. All research will be underpinned by the creation of the Serbian Twin Advanced Registry (STAR) and the STAR Biobank containing twins buccal-derived DNA samples. The second segment of the Project will be an epigenetic study, i.e. genome-wide methylation study in MZ adult twin pairs having discordant adaptation styles. Next-generation sequencing (NGS), as the state-of-the-art method in the field, will be used to detect broad regions of DNA methylation. The results of the Project will unravel the nature of interactions among specific and common genetic and environmental factors, and their influences on epigenetic changes and health-related habits and characteristics. GENIUS is expected to have significant scientific, social, healthcare, and educational impacts. Apart from the general contribution to the scientific knowledge, the creation of the STAR and STAR Biobank will provide a solid ground and valuable resource for future multidisciplinary research in psychology, molecular biology, genetics, and health sciences. The citizen science approach should advance scientific culture among the various stakeholders outside academia. The results of the research will be used to promote desirable upbringing patterns and individually tailored medical and psychological guidelines.