

INNOVATIVE AND MULTIDISCIPLINARY APPROACH FOR THE IDENTIFICATION OF HEALTHY AGING BIOMARKERS

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Background:

Aging is a complex biological process characterized by a gradual decline in physiological functions and an increased risk of diseases, which represent a growing societal burden. While chronological aging affects everyone, the trajectory of aging and the quality of life can vary significantly, influenced by the exposome.

Methods and Results:

An integrated approach will be used to identify biomarkers of healthy aging, exploring also the exposome influence. By the enrollment of a cohort of healthy individuals aged over 40, we collected multimodal data including age, biological sex of the subjects, lifestyle questionnaires and age-related parameters (i.e., cognitive function, physical health). We also obtained hyperspectral images and non-invasive biological samples (saliva, oral swabs, strip test) to analyze specific miRNAs and metabolites.

At the moment 50% of the volunteers have been enrolled in the study. A standardized protocol has been established for the analysis of miRNA from both saliva and oral swabs.

Conclusions and Significance:

Future work on an enlarged cohort will analyze signatures of hyperspectral images and metabolites as potential biomarkers, correlating them with age-related parameters, exploring also the potential influence of lifestyle factors on aging. Personalized strategies for early detection of age-related decline will be proposed, to promote longevity and prevent age-associated diseases.

Keywords: healthy aging, exposome, miRNA, hyperspectral imaging

References:

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