

## **suPAR in Older Adults – A New Biomarker of Inflammageing, Sarcopenia, and Malnutrition?**

Polish society, like much of Europe, is ageing rapidly. In regions such as the Łódź Voivodeship, people aged 60 and over already make up a significant proportion of the population. As life expectancy increases, so does the risk of developing so-called geriatric syndromes, including sarcopenia (loss of muscle mass), malnutrition, and frailty. These conditions can severely impact the quality of life in older adults, leading to loss of independence, hospitalization, and rising healthcare costs.

One major challenge in managing these conditions is the lack of simple, sensitive tools to detect them at an early stage. This research project addresses that gap by investigating the role of a promising biomarker called **suPAR** – the soluble urokinase plasminogen activator receptor. Preliminary individual studies suggest that suPAR may be a potential indicator of **inflammageing**, a low-grade, chronic inflammatory state associated with ageing.

In simple terms, suPAR acts like a diagnostic sensor in a building – the more systemic "damage" or stress there is, the higher its level. When the immune system remains in a prolonged state of alert (due to age, infection, malnutrition, or chronic disease), suPAR levels increase, even before obvious clinical symptoms appear. This makes suPAR a potential tool for early detection and prevention.

The primary objective of the project is to investigate whether **suPAR levels in the blood of older adults are correlated with sarcopenia, malnutrition, and frailty**. The study will also explore the relationship between suPAR and various aspects of physical and nutritional status, including mobility, independence in daily activities, dietary quality, and overall well-being.

A total of 200 participants aged 60 and older will undergo comprehensive assessments of body composition, muscle strength, mobility, mental health, quality of life, and nutrition. Blood samples will also be collected to measure suPAR concentrations.

The project will use advanced diagnostic equipment available at the Geriatrics Clinic of the Medical University of Łódź and validated tools for assessing functional and nutritional status. It will be conducted over a 36-month period and aligns with the growing international interest in biomarkers of ageing.

**Why does this matter?** Early identification of health risks in older adults enables timely medical and nutritional interventions before serious problems emerge. Biomarkers like suPAR may become key components of preventive medicine, helping to personalize care and improve quality of life in ageing populations.

### **Expected outcomes of the project include:**

- A better understanding of the biological mechanisms of ageing,
- The potential use of suPAR as an early warning tool for declining health,
- new data on how lifestyle and diet influence inflammation in older adults,
- results publication in international journals and for further research in the field of gerontology.