Popular Science Summary:

Vulvar lichen sclerosus (VLS) is a chronic, inflammatory skin disease that primarily affects women's intimate areas. It manifests with itching, burning, pain, and progressive skin thinning and scarring. The disease can lead to serious structural changes in the skin and may even increase the risk of cancer development. Despite its significant impact on patients' quality of life, VLS is often diagnosed late—when the changes are already irreversible.

Currently, VLS diagnosis relies mainly on visual assessment by a doctor or invasive biopsy. There are no objective, non-invasive tools that would allow for early detection or reliable monitoring of treatment effectiveness.

Women's intimate health remains an underrepresented topic in scientific research. Our project aims to change that by developing a modern, non-invasive model for assessing vulvar skin condition in women with VLS.

We will use advanced skin imaging techniques—high-frequency ultrasound (HFUS), dermoscopy, and specialized devices that evaluate skin properties such as elasticity and hydration. Thanks to artificial intelligence (AI), we will be able to analyze skin images in detail and detect even the earliest signs of disease.

The study will enable not only earlier diagnosis but also effective monitoring of treatment and identification of women at increased risk of developing vulvar skin cancer. Importantly, all assessments will be completely painless and non-invasive.

Our approach is unique because it combines cutting-edge technology with a deep understanding of female skin physiology. We aim to improve the diagnosis of diseases affecting intimate health—an area often overlooked, yet crucial for daily comfort and well-being. The outcomes of this project may, in the future, lead to the development of diagnostic and therapeutic standards that can be widely used in medical practice, helping women combat this difficult and often stigmatized condition.