Finansowane przez
Unię Europejską

Since Alzheimer disease (AD) affects up to 50% of individuals above 85, we will witness the three-fold increase in the number of patients by 2050 if no efficient therapy will be found.
The FLORIN offers non-invasive real-time monitoring of key mechanisms involved in the AD pathogenesis by avant-garde bioimaging at temporal resolution less than 1 millisecond and spatial resolution 20 - 50 nm combined with the simultaneous all-optical thermal control with 20 mK accuracy. FLORIN relies on three pillars.
(1) super-resolution optical fluctuation image scanning microscopy (SOFISM) and photon antibunching contrast enhanced super-resolved optical imaging (Q-ISM), providing accurate real-time information on fluorescent nanoparticles delivery, their organelle-specific targeting on the molecular level, and intracellular distribution with spatial resolution below 20-50 nm;
(2) frequency upconverting quantum emitters that enable convert excitation in the tissue transparency window (from 650 to 1350 nm) to fluorescence in visual spectral range;
(3) biosensing techniques capable to detect tiny changes of temperature in the living tissue with 20 mK accuracy.
With its vision for the project and beyond, FLORIN will facilitate the further development of the devices for the clinical diagnosis and treatment of AD, being fully in line with the EU Joint Programme - Neurodegenerative Disease Research and contributing to UN Sustainable Development Goal “To Ensure healthy lives and promote well-being for all at all ages”. Uniting 6 well-recognized academic partners from EU and Canada, and 3 hi-tech SMEs, ATOMICUS (Germany), Adamas (USA) and Platformina (Lithuania), FLORIN action as a part of the ‘biophotonics and quantum sensing’ flow will contribute to the rise of the
potential of individuals and improve their career perspectives in research and innovations within this strongly networked European and global Photonics, Material science, Quantum technologies and Neuroscience communities.