WWTF Project NXT17-017

Applying a new UV laser-based module to monitor protein-protein interactions after DNA damage using time-resolved spectroscopy

Abstract

DNA damage poses a serious threat to human health and can give rise to cancer and various diseases. DNA repair proteins need to be recruited to DNA damage sites at the right time. Specific interactions among proteins ensure timely and precise recruitment. Protein-protein interactions in response to DNA damage have been analysed so far at a population level, which may hide complex cell behaviour. To tackle these limitations, we integrated a controllable UV add-on module on a confocal time-resolved fluorescence microscope. This experimental configuration for the first time allows us to induce DNA damage and investigate and quantify the dynamics of protein interactions at a single cell level. Our 'Next' goal is to transfer the proof-of-principle of this new system closer to a commercial setting. The transfer from bench to commercial application will entail various steps including integration of the new UV laser configuration to meet industrial requirements and commercialization of the system together with commercial partners.

Keywords:
DNA damage, FLIM-FRET, laser microirradiation

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Further links about the involved persons and regarding the project you can find at
https://archiv.wwtf.at/programmes/new_exciting_transfer_projects/NXT17-017