What do human vision and the nutrition of single-celled organisms from the Archaea domain have in common? The answer may surprise you, but it's quite a lot. In both cases, retinal is involved, a natural photoswitch “imprisoned” in proteins called opsins. It is responsible through structural changes for converting light into an electrical impulse or chemical energy. Scientists have been trying to apply a similar principle to the fabrication of various functional materials for many years. However, it is not an easy task. The main problem lies in the formation of strong ties between the retinal-mimicking "prisoner" and the protein-like "prison" molecules. As a result, the former often hesitate to leave the latter upon request, even when offered a lot of light instead of “dark cells." In the current project, we propose an innovative strategy that aims to force the imprisoned molecules to leave their "cells," allowing the latter to be used for other purposes. It may sound bizarre, but we intend to impose even more constraints, creating maximum discomfort for the imprisoned molecules, making their further stay in the molecular "prison" unbearable. In other words, we want to completely reverse the roles, making the prisons hosts and the prisoners guests who can come and go whenever we desire. Our research will expand knowledge about the behavior of light-sensitive molecules in confined spaces and contribute to the development of new methods for designing materials with enhanced functionality.