

Plants are exposed to many stressors to which they must be able to adapt. It has been found that plants can memorize the respective stress response and may respond to a subsequent stress exposure faster and to a greater extent. The mechanism of this so-called priming could be associated with the changes in the levels of chromatin modifications. Chromatin modifications are usually dynamically changing during the stress reaction. Some of these changes could persist for some time, thus the specific stress memory, mitotically and meiotically transmissible, could be established. Such a phenomenon was observed for stress caused by dehydration, salinity, mechanical damage, a combination of various stressors and a systemic resistance to pathogenic bacteria. So far, only a few studies on this topic exist; but even now it is clear that there are differences in the response of specific genes as well as the dependence on the length of the stress stimulus and the duration of the period between the first and second stress. A major disadvantage of existing studies is that they focus solely on histone modifications. Regarding the chromatin modifications studied so far, H3K4me3 could serve as the main mark for such priming. On the other hand, H3K27me3 modification is apparently not used as a memory tag. However, it is still too early for making definitive conclusions about the role of chromatin modifications in plant somatic/mitotic stress memory.