OH• have been investigated. Hydroxyl radical was chosen, because of its high reactivity which makes it a very dangerous compound for the organism. Aim reaction mechanisms that OH• has been reacted with glycine and alanine, have been targeted modeling classical and quantum mechanical methods in detail and understanding the selectivities observed for different conformers of the studied amino acids. Method initially, conformational analysis has been done for glycine and alanine. Afterwards, the geometries of all conformations have been fully optimized for all the minimum energy conformers and frequency analysis has been carried out for characterizing stationary points at the B3LYP level of theory implementing the 6-31++G** basis set by using the Gaussian03 series of programs. Consequently, reaction mechanisms and energy surfaces have been obtained for glycine and alanine on the basis of two reactions have been mentioned (reactants, products, transition states). H abstraction by OH• reactions, that have been observed, are barrierless. But OH addition to Cα reactions are not barrierless. This study has been characterized like a prestudy that would been provided developing new experimental methods to minimize the damage of OH radical on metabolism.

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## G40

### Auxin receptors ABPs and phytochromes interact in maize (*Zea mays* L.) growth

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Previous research in old and modern maize hybrids indicated involvement of auxin binding proteins (ABPs) in light signaling during maize seedling development. Here, we investigated expression of phytochrome genes *PHYB* and *PHYA* in loss-of-function mutants in *ABP1* and *ABP4* genes in maize (*Zea mays* L.). Using a semi-quantitative RT-PCR we studied how expression of the *PHYB* and *PHYA* in mesocotyl is regulated by blue and white light, and whether auxin NAA influences the expression of the phytochrome genes in the dark. Experiments on *abp* mutant showed that blue light could decrease or block the expression of both phytochromes, and the results suggest that in the case of *PHYA*, *ABP1* and *ABP4* may be positively involved in phytochrome gene expression. We also revealed that auxin can reduce expression of *PHYB* genes, and the results suggest *ABP1* and/or *ABP4* mediate the effects of auxin. The results of our experiments support the existence of cross-talk between light and auxin signaling pathway, and provide some evidence that ABPs may function as elements of phytochrome signaling pathways involved in development of maize seedlings.

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## G41

### Genetic diversity of Romanian *Rhizobium leguminosarum biovar.trifolii* strains isolated from root nodules of clover grown in heavy metal polluted soil

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The isolation and characterization of *Rhizobium leguminosarum* strains from *Trifolium repens* and *T. pratense* root nodules, from plants grown in soil containing heavy metals (Zn, Cu and/or Pb). The new isolates were investigated for nodulation efficiencies and growth performance in the presence of heavy metal and antibiotics. The genetic diversity of these isolates, compared with reference strains was examined using PCR fingerprinting (PCR-RFLP analysis, rep-PCR, PCR-RFLP of *nifH* and *nodC* genes). The bacterial isolates originated from unpolluted soils were very sensitive both to antibiotics and heavy metals, except Pb. Contrary, the strains isolated from contaminated soil were resistant to these compounds. Moreover, some of these isolate were able to grown in different concentrations of NaCl. The analysis of nod genes using nodCF/nodCI primers allowed the detection of differences in amplicon profiles between isolates. The differences encountered could be related to heavy metal concentrations and were of practical interest in order to select some strains and use them for inoculums preparation, for plant treatment. Five strains were resistant to antibiotics and heavy metals and tolerant to some concentrations of NaCl, but their symbiotic and nodulation abilities were not affected, proving their usefulness as bioinoculants.

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## G42

### Unknown picophytoplankton in Transylvanian salt lakes: great biotechnological potential in extreme environments

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The picophytoplankton (PPP; <2 μm) plays an important role in most aquatic environments contributing significantly to the biomass and the primary production of the phytoplankton. The surface/volume ratio of the PPP cells is the largest among algae, which not only provide an advantage in the competition for limiting nutrients, but the picoplankton cells are able to utilize the light more efficiently than the nanoplankton and microplankton organisms. These features could be very important for biotechnological purposes. Although PPP has been studied extensively during