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Open Science – basis for science, innovation and our societies today and in future. How can plant scientists contribute

Open Science includes a range of ideas and approaches, which are all aimed at reducing barriers of access to the process and results of science as a basis for fostering understanding, collaboration, and progress. Much of Open Science is based in protocols and tools for remote sharing and collaboration within the process of carrying out scientific research, ranging from the development of a study design to the management of materials and data, and then to data analysis and report writing. Open Science includes the means for stable and long-term access to data and materials following publication, along with sufficient documentation that meta-analysis is possible. Long-term data storage and availability poses many challenges as the era of precision phenotyping grows to complement the nucleic acid databases derived from high-throughput and genomic sequencing. Lastly, timely and open access to scientific communications both before and after peer-review and publication is a critical component of Open Science. The goal is to democratize the development and exploitation of scientific knowledge for the benefit of all.