Title	Aiding the journey from data to publication in the plant sciences
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The aim of open science is to make scientific research accessible to an inquiring public. This often involves mechanisms for preserving and publishing research artefacts such as data, methods, and software in an efficient and timely manner.

Existing mechanisms for enabling open science in plant research, particularly within the genomics field but also high-throughput transcriptomics, proteomics and metabolomics, are limited in a number of ways: (i) complicated and time-consuming procedures for repository deposition; (ii) digital gap or lack of interoperability between disparate information sources; (iii) sub-optimal search and retrieval facilities across data repositories.

We present COPO (Collaborative Open Plant Omics), an information aggregation and publishing platform, to help plant scientists publish and share research outputs, but also to ease access to important services across disparate source of information. In particular, COPO uses a Web front-end and a set of APIs (Application Programming Interfaces) to facilitate the aggregation of disparate research objects into logical profiles representing a body of research. A profile can contain, for example, a sequence of data, source codes, and pdf files, all of which are well described with associated meta data. In the first instance, the system acts as a brokering service, providing a useable interface to different repositories in order to offload the burden of data deposition from scientists. Research objects (e.g., sequence data) can be submitted seamlessly to services such as EBI (http://www.ebi.ac.uk) data repositories, and iRODS (http://irods.org) and accessions to these objects, which correspond to a profile, are persisted within COPO. Using these accessions (e.g., DOIs (Digital Object Identifiers)), a resolution service can direct user queries to the original objects.

By using high quality and stable APIs and virtualised resources, COPO would be able to tie together other existing services such as: the ISATools metadata suite (http://www.isa-tools.org); Galaxy (http://galaxyproject.org) and iPlant (http://www.iplantcollaborative.org/ci) analytical platforms; figshare (http://figshare.com), Research Object, Scientific Data and Gigascience (http://www.gigasciencejournal.com) platforms. This provides much flexibility and ease of access to disparate and geographically distributed resources, from a single point of access. For instance, by hooking into locally hosted instances of iPlant and Galaxy using profile workflows, experimental results can be easily reproduced and verified, or comparative studies can be conducted with alternative data.

We believe that the ongoing development of COPO will contribute to the state-of-the-art in enabling open science, particularly by offering the following utility:

- enforcing community-accepted standards for data representation
- facilitate submission to persistent archival resources, for data publication and citation
- enable seamless transition from data to analysis services
- facilitate discoverability through aggregated provenance (meta data) and suitable publication markup to link citable resources