

The Nottingham Arabidopsis Stock Centre has played a vital core role in developing infrastructure support for the highly distributed and prolific Arabidopsis community.

Arabidopsis is the most widely used model system to study plant biology and has delivered numerous breakthroughs in our understanding of plant and basic biological processes. Many of the strengths of Arabidopsis stem from a fully available annotated genome sequence, and a wealth of associated enabling tools and resources. Only Arabidopsis has the genomic tools, data and resources, and intrinsic properties (that directed its choice as a model system), necessary to generate predictive models for producing robust crop yields in future changing environmental conditions.

This proposal seeks funds to support continuation and improvement of the bioinformatics infrastructure at the Nottingham Arabidopsis Stock Centre (NASC; also known as arabidopsis.info). Established in 1991 as part of the multinational Arabidopsis genome programme to distribute seed, clones and other physical materials to the wider plant community; this centralisation of biological resources has proved crucial to the Arabidopsis community and has maximised access to high quality and extensive resources for researchers worldwide.

Researchers gain efficient access to timely resources without having to 'chase up' the original developers of mutants and transgenic populations and have a wealth of associated data to mine regarding these physical resources. Donors do not have to shoulder the responsibility and labour to maintain and distribute their lines and these lines are thereby not lost to the community. Given our status as a secure and trustworthy repository and redistribution centre we thereby receive 10s of thousands of seed donations per year (70, 25, 25, 65, 75, 50 thousand donations per annum for 2003-2008 respectively).

The seed service held at NASC has blossomed from a mere 200 stocks in 1991 to a little over 20,000 stocks in 1999 and currently stands at well over 500,000 stocks (plus clones and other genetic materials). We provide materials, data and guidance worldwide (between 50K and 100K seed tubes per year, mainly to Europe). Our existence clearly helps many tens of thousands of users to save time, money and effort through centralised services.

In the case of Genechip data (which allows researchers to assess the simultaneous activity of most of the 25,000+ genes in arabidopsis); we have chosen to take on the generation of this kind of data within NASC itself and have successfully provided a cost-recovery service for this kind of data generation over the last four years. This has been necessary principally because the community itself has only just started releasing array data into the public domain for us to warehouse. We are still the primary world producer of public array data for arabidopsis (4,128 slides to June 2009) although the message that users can leverage local benefit from the public dissemination of their array data is starting to spread within the Arabidopsis community. Array data for other plant species is still rare but we hope to help to expand this in the coming few years by partnership with groups providing and developing tobacco, brassica and model grass species (brachypodium).

Our ethos is entirely open access and in the years that we have been running we have redistributed all of our data many times over to the general community and to secondary providers