

Basidiomycete Research Networks - Discussion Document

The Basidio3 workshop, held on the 9th April 2008 as a satellite to the Edinburgh ECFG conference, was organised to bring together researchers with interests in the rapidly expanding number of basidiomycete genome sequencing projects.

Basidio3 global objectives included:

- Establish forum to present project updates
- Develop community networks
- Encourage information, resource and capability exchange to expedite basidiomycete genome projects
- Identify funding sources and improve opportunities for multi-partner project proposals

Following project updates and case studies, a breakout workshop was held to discuss community issues. The need to further develop community networks was widely recognised, to promote basidiomycete genome research and share expertise. Suggestions included: use of regular meetings to keep each other up-dated, developing more formal councils, assisting the exchange of Postdoctoral scientists and students between labs and the development of training loops for new people, improve web resources for sharing information, development of common tools for fungal genomics and forming collaborative projects and papers (especially relevant for the smaller project teams). Any developments should include the wider basidiomycete research community, and should not just be limited to the attendees at the Edinburgh meeting. Thus, further discussions were held at the Genetics and Cellular Biology of Basidiomycetes (GCBB7) meeting in Missouri, May 2008.

This document collectively summarises discussion points and aims to stimulate downstream community activity. Activity should be inclusive and participation of all basidiomycete groups should be encouraged to ensure that decisions/actions are representative.

Actions proposed aim to stimulate activity, they are not exclusive and further suggestions will be welcomed.

Meetings

Regular meetings are critically important to community development, organisation and planning of these, should however, be balanced with the recognition that there are limits on the number of meetings that individuals can attend, and recognise that is unrealistic that all interested parties can be gathered at a single event.

A recent decision (GCBB5, Pamplona, 2005) was that GCBB events should take place every 3 years, staggering respective clashes with the US (Asilomar) and EU Fungal Genetics Conferences that are held on alternate years. The next GCBB (2011) will be organised by the Utrecht group (Lugones, Wösten et al.).

At Basidio3 there was demand for regular genome-focussed meetings. The preferred choice was workshop-style events focussed on particular activities, such as functional genomics, comparative genomics and hands-on annotation. However there was also a alternative view that meetings should not be limited to 'genomes', and should include some 'biology'; thus the value of GCBB type meetings was endorsed.

Round table discussion groups were considered productive and there was demand for practical training sessions. Piggybacking such future gatherings onto larger conferences, such as ECFG and/or Asilomar, was seen as advantageous, although there was preference expressed that this should be before the main meeting.

Francis Martin announced that the Laccaria group holds regular annotation workshops (twice yearly) and that participation in these could be extended to the wider basidiomycete community.

ACTIONS:

- Igor Grigoriev and Dan Cullen to investigate possibility of a basidiomycete-focused session at Asilomar 2009
- Consider also: another satellite at ECFG (Netherlands, Spring 2010) or IMC9 (Edinburgh, August 2010)
- FM to inform community of forthcoming annotation workshops

Basidiomycete Council

Another proposal made at Basidio3 was that we follow the lead of Aspergillus and Neurospora research communities by forming a 'Basidiomycete Council' that would be responsible for developing the community, e.g. steering the organisation of meetings and web resources etc. An outline was presented where by a committee of approximately 8 people would form, with membership rotation every couple of years. In the short term, Dan Eastwood (UK) and Dan Cullen (USA) would attempt to move this forward; some suggestions were made and a few volunteers have come forward, but wider community engagement is necessary if such a proposal is to succeed.

The value of a steering group was also recognised at GCBB7 and there was broad support for approaches that would strengthen community cohesion. Ideally the council should aim to include experienced PIs with proven track record in securing funding streams.

ACTIONS:

- Community feedback required on Council/Steering Group
 - candidates / volunteers
 - mandate / objectives

Wiki / Web resources

At Basidio3 there was call for improved web resources for the community, in particular it was felt that wiki type web pages could help groups starting out in genomes analyses and expedite the exchange of information resources (project updates, meeting information, community contacts etc.)

Following GCBB5 (Mississauga, 2001), Allen Gathman and Walt Lilly established the www.basidiomycetes.org pages. Through this portal it is possible to blast screen basidiomycete genomes, and there are some links to community labs. The site would however benefit from some updating, but it would be sensible to expand this established site rather than reinvent the wheel.

Particularly noteworthy is www.FungalGenomes.org and related pages established by Jason Stajich; these already form an excellent wiki hub for the exchange of community information, resources, links etc., and is not only limited to basidiomycetes.

ACTIONS:

- Review and revise www.basidiomycetes.org pages
- Expand editorial users group, to reduce workload/dependency on AG
- Community to work with JS to expand utility and basidiomycete content of existing FungalGenomes wiki
- Improve cross-linking between wiki-hub and existing lab/community-based pages e.g. www.basidiomycetes.org

Additional Discussions

Other Basidio3 discussions looked at funding options, ways to manage genome browsers at the species level, and the possibility of combining JGI funded genomes with other basidiomycete projects. The utility of JGI genome tools was praised during GCBB7 discussions, but not all projects had access to these. This was of particular relevance to the Coprinopsis team, who as early pioneers of

basidiomycete genome sequencing (FGI - Broad Institute), had not benefited from the tools and resources now being provided to JGI genome sequencing projects. The whole community would benefit, if such projects could be transferred to a single central repository, to expedite comparative analyses. JS stated that ENSEMBL would eventually take fungal genomes.

Discussion at GCBB7 indicated that there was considerable discontent with existing tools for automated gene calling. The next hurdle was probably going to be the development of tools to expedite comparative genomic approaches; the need for these is likely to become more urgent as the number and range of genomes continues to expand. The community would benefit from a dedicated bioinformatist who could develop novel comparative tools; a funding route would need to be identified.

ACTIONS:

- Continue discussions at subsequent meetings
- Coprinopsis team to investigate possibility of sequence deposition with JGI
- Identify approaches to develop novel comparative bioinformatic tools

Network Funding

Some discussion was held on how to further the development of a basidiomycete genomes network and all inputs in this area are welcomed.

Views on the role of such funded activities included annotation and bioinformatics training visits, exchange programmes for students and researchers between labs, and funding for meetings and web resources. The lack of bioinformatics expertise and resources within the community is a particularly important issue and initiatives to overcome these are required.

Many suggestions relating to potential funding options were raised at Basidio3 and researchers are encouraged to pursue any avenues they consider appropriate and provide feedback to the group. Options included looking for industrial support or lobbying the EU, sources within the US such as research co-ordination networks, USDA partnering with NSF (Dan Cullen & Rytas Vilgalys) and the sequencing of further fungal genomes (e.g. *Trametes versicolor* or *Phlebia radiata*). Initial investigations into EU Marie Curie funding options were not promising as there is a general feeling that interdisciplinary networks are favoured and there would not be sufficient time to submit a strong proposal within the current timescale.

At GCBB7, Pat Pukkila identified the NSF as a possible funding source for the development of community tools

Basidio 3 recognised that collaborative programmes are more likely to be successful if linked to an appropriate funding themes/trends. Themes identified included biofuels and carbon cycling, global health initiatives, symbiosis/interaction biology, biotechnology, fungal physiology, life style/ecology/conservation and population biology. Suggestions for appropriate funding streams and opportunities are welcomed.

ACTION:

- Mike Challen and Dan Eastwood to investigate Leverhulme Trust funding for International Networks and provide community feedback
- DC and RV to explore NSF/USDA partnering options
- PP to investigate NSF funding routes
- Develop basidio-community discussion/forum/blog to facilitate information exchange (MC discuss with JS)

e-Resources / References

<http://www.warwick.ac.uk/go/agaricusgenome/basidio3>
<http://www.basidiomycetes.org/>
<http://www.basidiomycetes.org/gcbb7.htm>

<http://fungalgenomes.org/blog/wiki/>
http://fungalgenomes.org/wiki/Fungal_Genome_Links

Aspergillus Genomes Research Policy Group pages:
<http://www.fgsc.net/Aspergillus/agprcbylaws.htm> - bylaws
<http://www.fgsc.net/Aspergillus/asperghome.html> - Aspergillus at the FGSC

<http://www.fgsc.net/25thFGC/FGC25.htm>
<http://www.imc9.info/index.htm>

NEXT STEPS

Develop community database: combine Basido3, GCBB7 attendee/mailling lists
Execute action points
Identify / Arrange next meetings / project annotation jamborees

Dan Eastwood, Mike Challen
July 14, 2008

Footnote:

This 'Basidiomycete Research Networks - Discussion Document' is not restricted to participants in the Basidio3 & GCBB7 meetings. Please distribute to others within the basidiomycete research community