



*An open letter to the maize community*

***The iPlant Collaborative: what potential does it have for advancing maize research?***

I'm writing to encourage creative thinkers in the maize community to invest a little time in understanding the iPlant Collaborative ([www.iplantcollaborative.org](http://www.iplantcollaborative.org)) and thinking about what it might be able to do for the plant sciences. To jumpstart your thinking process, you might want to consider participating in the iPlant Collaborative's April kickoff conference at Cold Spring Harbor Lab, either in person or via our free, live webcast which will allow for direct participation (details at our web portal). Participation in the conference is NOT necessary for participation in the Collaborative, but may be helpful in understanding how best to participate.

The first principle of the iPlant Collaborative – our "prime directive", one might say – is that it must be "**by, for and of the community**". A second major principle is that the iPC's cyberinfrastructure designs must be **driven by specific, compelling, and tractable Grand Challenges in the plant sciences**. A third major principle is that the Collaborative **must serve the entire breadth of the plant sciences**, including ecology, evolution and organismic biology as much as the molecular, cellular and developmental disciplines, and via Grand Challenges integrated across the 'divide', from the molecular to the organismic to ecosystems. In order to ensure Collaborative resources are dedicated to the most compelling Grand Challenges in the Plant Sciences, the best and the brightest in plant biology will need to invest time and provide leadership to ensure the field assembles and submits the best possible GC proposals to iPlant's external Board of Directors.

Importantly, **the project is NOT based on the idea that "if we build it, they will come."** Rather, the community must FIRST come together and decide WHAT we should build, or no cyberinfrastructure will actually be built. So, the first challenge we face is to engage the community and convince those of you who think deeply about the important questions in plant biology, as well as comprehend the real, down-and-dirty details of data quality, availability and analysis, to identify the most compelling and tractable Grand Challenges that require computational approaches and cyberinfrastructure development. (see iPlant's community wiki to contribute your discussion of what these GC's ought to be.)

**Self-forming Grand Challenge Teams are the most direct way to participate in the iPlant Collaborative.** Any group can start a Grand Challenge Team, or propose a Grand Challenge Workshop at which to develop one. GC Teams are central to the iPlant Collaborative because the community through its Board of Directors will choose which Grand Challenges should be prioritized for cyberinfrastructure design and development. Once GC Teams are chosen (our target is 2-4 GCT's before late 2008/early 2009), the iPC's Integrated Solutions Team, led by Lincoln Stein (CSHL) and Sudha Ram (UA), will work with each GCT to design a 'Discovery Environment' to address a particular grand challenge. Successful development of these prototype cyberinfrastructures (Discovery Environments) will require close interaction between IS Team and GC Team members. (See the Grand Challenge Process tab at our web portal for more details.)

**Self-forming Grand Challenge Teams do not need to wait** for the conference in April to get started. The conference is an opportunity for plant and computing researchers to get together and so attendance is one way to foster or participate in formation of GC Teams. It is not obligatory for participation in the project (though we do hope to have broad representation of the full range of plant biologists and computing researchers so that discussions will be high quality and balanced).

**The conference is NOT a bioinformatics meeting - it is a biology conference aimed at defining which are the most compelling and tractable grand challenges in the plant sciences** that might benefit from cyberinfrastructure development. The conference will be webcast live, allowing for direct participation in discussions over the web (and will be archived for later viewing). You can participate on

your laptop. Another suggestion I would offer would be for interested campuses to arrange a common webcast location (requiring only a computer, web access and a projector) where campus researchers could come together to participate in and discuss the conference - we will have facilitators to ensure all persons can participate in discussion. Some institutions are also holding pre-meetings to discuss the project: what it might mean for the campus and how to participate most effectively in the Grand Challenge identification process which will define the direction of the project. I hope the maize community will consider participating substantively so it will not be left out of the conversation, and so it will be positioned to participate prominently in the Collaborative as it develops. (Program and pre-registration links for both in-person and virtual attendance are at the project's web portal.)

To ensure community buy-in and ownership of the Collaborative, ***an independent Board of Directors has been selected which will set priorities for the allocation of Collaborative resources*** to particular grand challenges, through a process involving self-forming grand challenge teams that will arise from the community and make proposals to the Board. The PI's will be available to facilitate the efforts of GC teams, but we are agnostic about which grand challenges should be prioritized. To ensure substantial independence, the Board of Directors was appointed through a bootstrapping process, via a Nominating Committee, not by the PI's. One third of the Board will refresh annually, allowing new members of the community to serve.

The composition of both the Board of Directors and the Nominating Committee can be found at the project's web portal, [www.iplantcollaborative.org](http://www.iplantcollaborative.org). The inaugural Board includes biologists Rob Last (chair), Sabeeha Merchant, Jim Birchler, Toby Kellogg, Susan Singer, Russ Monson, David Rand, Jean-Philippe Vielle (note, three maize researchers) and several others to be recruited, mainly in the EEOB area and internationally so that field will be well represented. An equal number of Board members represents the computing research community, from bioinformatics to computational biology to computer science, information science, and computing infrastructure, in order to be able to determine which proposals are really tractable and to guide Collaborative staff in designing the right CI. Thus, the Board will possess diverse, balanced expertise with which to evaluate any Grand Challenge proposal submitted by the community.

The iPlant Collaborative is funded by NSF's Plant Sciences Cyberinfrastructure Collaborative program in the Emerging Frontiers division of BIO, as a \$50M grant over 5 years to develop a cyberinfrastructure for the plant sciences, from molecules, genes, and cells to organisms, ecosystems and evolution. As plant biologists, we are quite fortunate that our community has been given this unique opportunity to lead biology cyberinfrastructure development in the service of trying to solve biology's major, unanswered questions. The reason the plant biology community has been entrusted with this opportunity and responsibility is, I believe, because we have shown exceptional openness, creativity and leadership across disciplines and experimental organisms over many years. What better community than plant scientists could NSF have chosen for this program? Also, had it not been the plant sciences, these funds would presumably have gone instead to other areas of biology, *not* to plant biology. So, this is an extraordinary opportunity for the whole community, and one that we can all feel proud to have earned.

Feel free to pass this letter along to your colleagues. I look forward to seeing many of you at CSHL, either online or in person, for what I believe promises to be a pivotal event for plant biology. We are able to waive onsite costs to increase diversity in the conference, so please don't hesitate to ask if you feel you are in that category (flexibly defined).

More information on the Collaborative can be found at [www.iplantcollaborative.org](http://www.iplantcollaborative.org), including the NSF solicitation, our proposal, site visit questions and answers, a ppt presentation, and other documents, as well as 1-2 page backgrounders on different aspects of the project. I am available any time to discuss any aspect of the project.

Best regards to all,

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