Programmatic Terms and Conditions for Cyberinfrastructure for the Biological Sciences: Plant Science Cyberinfrastructure Collaborative (PSCIC) (NSF 06-594) Cooperative Agreements

1. **Key Personnel:** Except for the principal Investigators(s) (PIs) or co-PIs identified in this award, requests to make any changes in personnel, organizations and/or partnerships specifically named in the proposal, that have been approved as part of this award, shall be submitted in writing to the cognizant NSF Program Official for approval prior to any changes taking effect. Changes to PIs/co-PIs must be submitted through FastLane for Grants Officer approval.

2. **Program/Project Description:** The goal of the program is to establish the iPlant Cyberinfrastructure Collaborative, taking into account the following considerations:

   a) The iPlant Collaborative will utilize new computer, computational science and cyberinfrastructure (CI) solutions to address an evolving array of grand challenge questions in plant science;

   b) The project will be community-driven, involving plant biologists, computer and information scientists and experts from other disciplines working in integrated teams to enable interdisciplinary systems-level scientific queries and analyses;

   c) The project will use community-based processes to select grand challenge questions, employing a multi-step process that includes a community-wide conference at which candidate questions are selected for subsequent feasibility, impact and needs assessment via "readiness symposia";

   d) The project will develop community-driven, open-access digital Discovery Environments (DE) that are each focused on a grand challenge question through a selection process that includes evaluation of proposals from readiness symposia by a community Board of Directors (BoD);

   e) The DEs will be comprehensive CI systems constructed around a grand challenge question and designed to enable collaboration, information access and integration, computational capabilities, visualization and analysis, modeling and simulation, learning resources, community annotation and other forms of content creation;

   f) The DEs will comprise hardware, software, network infrastructure, connectivity, and the full range of appropriate science and technology expertise emphasizing Web 2.0 and web services approaches along with open-source, community development methods;

g)   The DEs, software tools and systems, novel data sets and the like developed under direct project funding, will be open source and will be made openly available for reuse and repurposing, with attribution;

h)   The research, education and outreach activities will be integrated fully into the project plan through involvement of students and educators in development of DEs;

i)   Education activities will include, but not be limited to i) teacher intern programs with an emphasis on minority recruitment, and built around standards-based teaching modules that use DEs for discovery-based learning, ii) traveling workshops, iii) iPlant Action Teams (IPATS) and iv) integrated active assessment and evaluation components;

j)   A designated Diversity Officer will ensure diversity of all levels of the iPlant Collaborative by: promoting diversity across the project team and advisory groups; engaging school districts serving minority and economically-disadvantaged populations in the educational development programs; performing outreach to a diverse range of professional societies, associations and academic institutions; and designing and implementing project educational activities to reach a diverse population;

k)   Social science activities will be integrated into the project through development by an independent evaluator of a continuing evaluation process with formative and summative phases, organization of regular social science planning workshops by the iPlant Collaborative, and cooperation with social scientists who may conduct their own studies of the iPlant project.

3.   **Project Governance:** The Awardee will ensure that an effective governing structure is in place throughout the funding period, with the structure established, developed and recorded by the Awardee, in consultation with the cognizant Program Official.

a)   The PI will direct the activities of the project and serve as the intellectual leader of the Collaborative, with assistance from a Director of Cyberinfrastructure Development (DCD) and a Director of Community Interactions (DCI) who are both responsible for day-to-day project management. The PI is the primary point of contact with the cognizant NSF Program Official for all project-related matters. Appointment of the DCI and the DCD is subject to NSF approval. Both the DCD and DCI are expected to have formal training in large project management or to receive such training within the first year of their appointment.

b)   A Board of Directors (BoD) will be assembled, comprising members of the relevant science and education communities. Appointment of BoD Members is subject to NSF approval. The BoD will serve in an advisory role to the project in addition to participating in the grand challenge

selection process. Board members will be compensated only for their actual costs of participation (e.g. travel, lodging, meals, transportation). Membership of the BoD will be representative of the disciplinary, geographic, institutional, cultural, gender and racial diversity of the U.S. population. The BoD will meet face-to-face at least once each year of the project and after each meeting will prepare a written report describing its discussions, conclusions and recommendations. The written report will be made available to the PI no later than 7 days after the conclusion of each meeting. This written report, along with the response of the PI, will be provided to NSF as part of the annual reporting requirements. The NSF Program Official will attend periodic Board meetings.

c) The PI will cooperate and coordinate with the cognizant NSF Program Official by:

   1) Providing notifications in advance of all BoD meetings;
   2) Providing written BoD meeting reports, and responses to their recommendations with the annual report;
   3) Contributing to the assessment of scientific progress and administration against targeted goals for each participant; and
   4) Participating in NSF-initiated reviews conducted *via* telephone or site visit, on an as needed-basis during the course of the project.

d) The designated Principal Investigator (PI) is responsible for:

   1) Overall project management;
   2) Development of yearly research plans and timetables to be provided to the cognizant NSF Program Official at least 90 days prior to each start date;
   3) Development, execution and monitoring of a plan to manage conflicts of interest for project, including the Board of Directors and Discovery Environment teams.
   4) Coordination of activities among all project participants and institutions;
   5) Ensuring that yearly project goals and milestones are met;
   6) Providing a written plan for the transition of the collaborative, and if appropriate, disposition of its resources including databases when NSF funding ends;
   7) Submission of Annual Progress Reports at least 90 days prior to the end of each funding prior period that should include any BoD reports and responses for the previous reporting period as well as a yearly work plan; and
   8) Coordination with other related activities in the US and internationally.

4. **Reporting Requirements:** The Awardee will submit all ad hoc and regular reports with content, format, and submission dates designated by the cognizant NSF Program Official, in consultation with the Awardee and PI. The Awardee will submit all required reports to NSF via FastLane using the appropriate reporting category; for any type of report not specifically mentioned in FastLane, the Awardee will use the "Interim Reporting" function to submit reports. Regular reports include the Annual Progress Report containing a summary of progress as measured against goals established in the yearly work schedule related to:

   a) Scientific accomplishments;
   b) Progress on internal communication and data management systems;
   c) Progress on public access to, and distribution of, data, software tools and the like, including any web sites, databases and reagent distribution activities;
   d) Educational/training activities, including any outreach activities;
   e) Social science activities, including workshops;
   f) Any problems likely to delay accomplishment of goals established in the timetable and proposed efforts towards resolution;
   g) Reports on proactive steps taken by individuals within the project and/or the project as a whole to increase the role of members of underrepresented groups in activities of the project;
   h) Status of partnerships with other relevant CI activities;
   i) Status of partnerships with the private sector, if applicable;
   j) Status of partnerships with the international community;
   k) Feedback from the stakeholder community;
   l) A personnel and financial report as designated by the cognizant NSF Program Official;
   m) Compliance with Human Subjects Review requirements;
   n) Management of conflicts of interest; and
   o) The Annual Progress Report shall contain updated budget pages, updated current and pending support statements as well as a work plan and timetable for the following year.

5. **Intellectual Property:** An Awardee-to-Subawardee agreement on intellectual property including publication and patent rights must be negotiated. This Intellectual Property agreement shall be in place between the primary awardee, subawardee(s) and other institutional participants in the project within 60 days and a copy of the (signed and dated) intellectual property agreement shall be provided to the cognizant program official within 30 days thereafter (or ninety days from the date of approval of this award).

6. **Information Technology Systems Security:** Security for all information technology (IT) systems employed in the performance of this award, including equipment and information, is the awardee's responsibility. Within a time mutually agreed upon by the awardee and the cognizant NSF Program Official, the awardee shall provide a written Summary of the policies, procedures, and

practices employed by the awardee's organization as part of the organization's IT security program, in place or planned, to protect research and education activities in support of the award.

The Summary shall describe the information security program appropriate for the project including, but not limited to: roles and responsibilities, risk assessment, technical safeguards, administrative safeguards, physical safeguards, policies and procedures, awareness and training, and notification procedures in the event of a cyber-security breach. The Summary shall include the institution's evaluation criteria that will measure the successful implementation of the IT Security Program. In addition, the Summary shall address appropriate security measures required of all subawardees, subcontractors, researchers and others who will have access to the systems employed in support of this award.

The Summary will be the basis of a dialog which NSF will have with the awardee, directly or through community meetings. Discussions will address a number of topics, such as, but not limited to, evolving security concerns and concomitant cyber-security policy and procedures within the government and at awardees' institutions, available education and training activities in cyber-security, and coordination activities among NSF awardees.

7. **Awardee Support of Ongoing Management and Oversight:** The Awardee will work with the PI and the cognizant Program Official to facilitate the effective management and timely completion of the NSF-funded activities. The Awardee will ensure full commitment and cooperation among the governing structure components and all project staff during all ongoing NSF project management and oversight activities. The Awardee will ensure availability of all key institutional partners during any desk or on-site reviews as well as timely access to all project documentation.

During each year of the project, the Foundation will evaluate the project to determine whether the Foundation will continue to support full operations or will provide decreased funding to phase out NSF support of the Center. If a decision is made to phase-out NSF support of the Center, the Awardee will negotiate a six-month phase-out plan with NSF.

During the third year of the Agreement, NSF will conduct a site review to determine the effectiveness of the Center and its value to the scientific community. The site reviews will consider the scientific syntheses that the Center has enabled, paradigms that have been initiated or accelerated, the change in culture of the research community that the Center has stimulated, the quality of the informatics infrastructure established by the Center, and the effectiveness of the education and outreach activities. Other aspects of Center activities considered will include: administration and management, cooperation with partner organizations, and participation by minorities and members of under-represented groups.

At NSF's sole discretion and in accordance with NSF's policies and procedures, the Awardee may be invited to submit a request no later than 1 October 2011 for a renewal of the award for a period not to exceed five years. In deciding whether to invite such a request, NSF will consider Foundation priorities and the availability of funds, and will evaluate progress to date and overall impact of the project based on information from annual reports, site visit reviews, and program officer input. If a renewal request is invited, NSF will conduct a merit review and site visit to evaluate the request. Funding beyond the 5-year period will require negotiation of a new Cooperative Agreement. If NSF determines that funding shall not be continued, the Center will not receive any additional support from NSF.