**BUDGET JUSTIFICATION**

**NEW YORK UNIVERSITY**

1. **Senior Personnel**

***PI:*** Dr. Dennis Shasha (NYU Computer Science) will be the lead PI and overall Project Manager on this grant. He will oversee the daily operations of the project and ensure that the needs and concerns of the participants are addressed. He will be responsible for planning and directing the mathematical and computational aspects in this project In particular, he will oversee both the development of the time series machine learning tools (aim 1) and the cross-species learning algorithms for network inference (aim 2) that form the core analytic portions of the grant. He will also design the interfaces of aim 3 in coordination with experimental biologists. The computer science doctoral student will primarily be involved in aim 2. Dr. Shasha will devote 1.0 summer month of effort to this project, but will be working throughout the year. Salary is calculated on a 9-month base.

***Co-PI*:** Dr. Gloria Coruzzi will be a co PI on this grant. She will oversee the overall biological applicability of the research in this project and serve as a conduit to a working lab and the wider plant community. In particular, she will be actively involved in the planning and execution of the biological aspects of the project in the synthesis aim 3. Dr. Coruzzi will devote 0.75 summer month of effort to this project, but will be working throughout the year. Salary is calculated on a 9-month base.

***Co-PI*:**Dr. Manpreet Katari will be a co PI on this grant. He will play a primary role managing the development of the overall systems and data acquisition aspects of the project (aims 1 and 3). In particular, he will oversee the incorporation of new versions of data, the tool interfaces, the web server, database server and the multinetwork database. Dr. Katari will devote 1.0 calendar months of effort to this project. Salary is calculated on a 9-month base.

***Senior Personnel:*** Dr. Arthur Goldberg will be senior personnel on this grant. He will manage the development of new software analysis tools and pipelines to enable Cross Species Network Inference (CSNI) and new pipelines for cross species analysis (aims 1 and 3) in coordination with the PI and the programmers (Rebecca Davidson & TBD). Dr. Goldberg will dedicate 12.0 calendar months effort to this project. Salary is calculated on a 12-month base.

1. **Other Personnel**

***Programmers:*** Funds are requested to support one full-time (12 calendar months, Rebecca Davidson) and one part-time (6 calendar months, TBD) professional programmer. They will be responsible for coding the algorithms of aim 1, the interface of aim 3, and the incorporation of these tools in workflow systems and as a web interface. The programmers will: also maintain the existing and new software, update the bug-tracking facilities and moderate the VirtualPlant discussion list and the VirtualPlant system web pages. Salary is calculated on a 12-month base.

***Graduate Student:*** Funds are requested to support one graduate research assistant. The graduate student will be trained by Dr. Shasha (NYU Courant) in the computational aspects of the project, especially focusing on the machine learning aspects of the project as described in Aim 2. In each year of the proposal, the graduate student will be appointed as a full-time Research Assistant for a total of 12 months: 9 months during the academic year (salary is calculated on nine-month base); plus 3 months during the summer (one summer month is equivalent to 1/6th of the academic year base).

1. **Fringe benefits**

All personnel except Graduate Students:

27.5% through 8/31/13

28.0% for the period starting 9/1/13

28.5% for the period starting 9/1/15

**D. Equipment**

**$5,000/year:** We expect our warehouse to grow as new genomic data types for Arabidopsis are made available. Funds are requested to cope with the increasing demand on data storage as well as processing power to handle this data. Proposed upgrades will include additional hard drives, processors and RAM memory for the cluster and server. This equipment will be used solely and specifically for the research outlined in this proposal.

**E. Travel**

**Foreign:** Funds are requested for the PI and/or senior personnel to attend at least one international conference related to the development of the Cross Species Network Inference (CSNI) platform or on topics in related scientific and computational disciplines.

**Domestic:** Travel budget is requested for the PI and coPIs to attend one domestic scientific meeting per year related to CSNI progress. Travel budget will cover the cost of a domestic plane ticket and hotel stay.

**G. Other Direct Costs**

**Materials and Supplies:**

Computer software 3,000

Backup Media & storage 3,000

Subscription renewals 1,000

Total $7,000

**Consultant Services:**

**Dr. Rodrigo Gutierrez**. Dr. Gutierrez, the creator of the Arabidopsis multinetwork (Gutierrez et. al., 2007), will assist in the assembly of multinetworks for under-analyzed crop species (aim 1). The consultant fee includes three months of work (includes himself and his team in Chile) at a daily rate of $250 as well as travel funds to attend the progress meetings twice a year.

**Publications:** Funds are requested for charges to publish the results of this project in scientific journals.

**Other Costs:** Tuition Remission in lieu of fringe benefits is calculated at 37.0% of graduate student salary.

**I. Indirect Costs**

**Indirect Costs**:

Overhead is calculated at a rate of 54% for the entire duration of the project per the DHHS agreement dated June 16, 2009. Overhead is not charged on the following:

* Equipment items costing $3,000 or more
* Tuition remission for Research Assistants

**INFLATORS**

The following increases are budgeted:

* Salary: Faculty and professional:
  + 2.9% as of 9/1/11 and thereafter
* Graduate Students: 4%
* Other Than Personnel Services: 4%