

Abstract

Project Title:	Genosensor: Applications and Technology Transfer
Lead Scientist:	Chris Scholin
Lead Engineer:	Gene Massion
Project Manager:	Chris Scholin

The “genosensor” is a device designed to collect discrete water samples autonomously, concentrate microorganisms contained within those samples onto filter disks, and automate application of preservatives, DNA (or other molecular probes) to enable identification and quantification of particular species so captured. Two of these instruments are now available: one built for lab/shipboard use, the other being battery-powered for *in situ*, subsurface, autonomous operation. During August of 2000, both prototypes will be deployed and tested as part of the MUSE experiment.

This proposal will describe a one year follow on project to the genosensor development effort with three specific goals. The first goal is apply the existing genosensor units to areas and problems where existing multi-institution HAB research is focused. The second goal is transfer the existing genosensor technology to other research groups who have expressed interest in working with and further developing the system. The third goal is identify and work with a collaborator to commercialize and market the genosensor technology.

We plan on deploying an in-situ genosensor three to five times during 2001 as part of existing multi-year and multi-institute monitoring efforts. Examples include the ECOHAB project at WHOI, Tomales Bay in conjunction with the California Department of Health, Puget Sound in collaboration with NOAA, Kodiak Island in collaboration with the University of Alaska, or shell fish farms in New Zealand in collaboration with the Cawthron Institute. In addition, we would expect to use the shipboard genosensor during one or more of these deployments. In conjunction with the field deployments, we will be working with selected participants to begin transferring the genosensor technology to groups outside of MBARI. The goal is to select one (maybe more) research groups with the science and engineering resources to support applications of the genosensor without significant MBARI involvement. Examples include labs at WHOI or NOAA, Seattle. Accomplishing this technology transfer may require providing a copy of the existing genosensor hardware and software, and this effort will be included in this proposal.

Although there are a number of minor refinements that could be made to improve the performance/manufacturability of both the shipboard and in-situ units, we are not requesting resources for any additional new design. However, we do anticipate the results of field testing this year and next will dictate minor design modifications. In addition, experiment planning will require some engineering effort. We are requesting in this proposal a moderate amount of Engineering and Tech time to support these efforts although it would be perfectly reasonable to move some of this time to Support Engineering on an unallocated, as needed basis. In addition, we will request travel expenses and a small amount of time to pursue the described academic and commercial collaborations.

Continuing Projects (*Please answer the following questions*)

- 1. Do you have any significant deviations from your 1999 proposal?**
- 2. Do you have 1999 resources requested but not needed?**

3. Do you need resources not requested in 1999?
4. Do anticipate any problems?

Abstract Resource Requests

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Please check off which resources you expect to need for this project.

IAG

☐ Software Applications	☐ < 10 days	☐ > 10 days
☒ Software Engineer	☒ < 10 days	☐ > 10 days

ENGINEERING

☒ Electrical Engineer	☐ < 10 days	☒ > 10 days
☒ Mechanical Engineer	☐ < 10 days	☒ > 10 days
☒ Software Engineer	☐ < 10 days	☒ > 10 days
☐ Research Engineer	☐ < 10 days	☐ > 10 days
☐ Other:	☐ < 10 days	☐ > 10 days

ITD

☐ Video Lab Support	☐ < 10 days	☐ > 10 days
☐ Web support	☐ < 10 days	☐ > 10 days
☐ Documentation	☒ < 10 days	☐ > 10 days
☐ CTD Data Tech	☐ < 10 days	☐ > 10 days
☐ Tech Transfer	☒ < 10 days	☐ > 10 days
☐ Sample Archiving	☐ < 10 days	☐ > 10 days

DMO

☐ Director	☐ < 10 days	☐ > 10 days
☐ Deputy Director	☐ < 10 days	☐ > 10 days
☐ Ventana Pilot	☐ < 10 days	☐ > 10 days
☐ Tiburon Pilot	☐ < 10 days	☐ > 10 days
☐ Marine Ops Tech	☐ < 10 days	☐ > 10 days
☐ Ocean Observatory Support	☐ < 10 days	☐ > 10 days
☐ Ops/CTD Tech	☐ < 10 days	☐ > 10 days
☐ Model Shop	☐ < 10 days	☐ > 10 days
☐ Diver	☐ < 10 days	☐ > 10 days

TSD

☒ EE Tech	☐ < 10 days	☒ > 10 days
☒ ME Tech	☐ < 10 days	☒ > 10 days
☒ Machine Shop	☐ < 10 days	☒ > 10 days
☐ Computer Support	☐ < 10 days	☐ > 10 days