

To the members of the Appropriations Committee:

My name is George Baldwin and I teach Genetics & Biotechnology at the Sound School Regional Aquaculture Center in New Haven. In our classes, we learn about subjects such as genetics, microbiology, DNA and protein synthesis, and recombinant DNA technology. Students in my labs perform skills such as electrophoretic analysis (DNA fingerprinting), aseptic technique and pure culture of bacteria, gram staining, micropipetting, measurement, microbiology media preparation, plate streaking, lab reports, autoclaving and genetic transformation of bacteria.

I've placed students into internships at Yale University, working on genetic causes of congenital heart defects, hormonal influence on obesity and the role of Hox genes in embryonic development. I've placed student interns with the National Marine Fisheries Service with research with disease-resistant shellfish and oyster spawning. Others work with the Connecticut Agriculture Experiment station on the role of Fusarium fungus on marsh grass dieback. We've done collaborative projects with the University of New Haven on the use of bacteriophage viruses to combat tuberculosis, and with using bacteria to control Lyme disease-bearing ticks. We've collaborated with Keck Laboratories on comparative oyster genetics in Long Island Sound.

In the last few years, I've had students go on to higher education and careers in aquaculture, oncology, neurology, evolutionary biology, forensics and genetics. These students were better prepared than most in laboratory techniques and lab reports, and many have already obtained experience working in some of the best research laboratories while still attending high school.

We would like to expand into areas such as gene sequencing and polymerase chain reaction (gene cloning), expanding our abilities to collaborate with local universities and industries, and have been talking with consultants on doing so. The biotechnology industry is making great inroads into agriculture. We'll need to feed a projected 9 billion people on this earth by the year 2050, with shrinking water supplies and arable land. We need to reduce the need for chemical fertilizers and toxic pesticides. We need more effective ways to combat infectious disease and genetic maladies. We need to strengthen our industry with biomimicry and proteomics. The science of biotechnology is growing and splitting into more and more specialized branches. We need to teach students the basics at an earlier age, to prepare them for the growing intricacies of the present science and the future.

Connecticut has a great chance to expand its economy into biotechnology and compete with other states and countries (Germany, Singapore, South Korea). We have many great local universities many biotech companies we can work with to prepare students for jobs ranging from lab techs to PhDs in research. The industry is currently top-heavy with PhDs, without enough experienced lab techs to support it. We can also provide this labor force, providing jobs for those who choose not to pursue a four-year degree as well as contribute future leaders in the industry.

We have some equipment from initial grants but need to update and expand our repertoire. Consumable materials and equipment maintenance is costly, and our budget is minimal. We often rely on simulations because of lack of funding for supplies.

Biotechnology is a perfect way to expand Connecticut's economy and capitalize on our

local universities and labor force. Please consider expanding our funding and expanding Connecticut's opportunities.

