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6. AUTHOR(S): Margo G. Haygood

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13. ABSTRACT (Maximum 200 words) The objectives of this grant were to determine the basis of control of growth of bacterial light organ symbionts and the mechanisms of control of bacterial bioluminescence. During the eight month duration of this grant we have initiated, but not completed, the above studies, and brought to completion additional efforts from the previous grant (reprints enclosed). Publications: Wolfe, C.J. and M.G. Haygood. 1991. Restriction fragment length polymorphism analysis reveals high levels of genetic divergence among the light organ symbionts of flash-light fishes. Biol. Bull. 181:135-143. Haygood, M.G., D.L. Distel, and P.J. Herring. 1992. Polymerase chain reaction and 16S rRNA gene sequences from the luminous bacterial symbionts of two deep sea angler fishes. J. Mar. Biol. Assoc. UK in press.

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FINAL REPORT

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New efforts:

During the eight month duration of this grant research directed toward understanding growth control of light organ symbionts and control of bacterial bioluminescence has been initiated. University approval was obtained to recruit a postdoctoral fellow and an ad was published in ASM News. Several promising candidates have been identified. Due to termination of this grant, other funds will be sought to complete the recruitment. A specialized aquarium facility was designed, space in the Experimental Aquarium facility assigned and components purchased. Construction has been suspended until other funds can be obtained for completion. We have obtained five fresh isolates of *Monocentris japonicus* symbionts and >25 fresh seawater isolates of luminous bacteria. These have been immediately stored at -80° to ensure that they remain as close as possible to naturally occurring strains. Some preliminary results have been obtained in the area of iron physiology of luminous bacteria.

Availability codes

Availability codes

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Wrap up of previous efforts:

We are nearing completion of efforts from the previous grant. Publication #1 appeared in August 1991. Publication #2 and an additional paper in preparation were largely supported by the University of California with some additional support from this grant. Graduate student Connie Wolfe is completing her thesis work on evolution and genome structure in the flashlight fish symbiosis. She has verified by several independent methods that the copy number of the rRNA operon is reduced in the anomalopid symbionts. She will present this work at the American Society for Microbiology Annual meeting in May, if travel funds can be obtained. This work will be written up in the next couple of months. She has also had good success in obtaining mitochondrial sequence from the anomalopids. This work will form the final chapter of her thesis.

Presentations:

Wolfe, C. and M. G. Haygood. Reduced copy number of ribosomal RNA genes in the luminous bacterial symbiont of *Kryptophanaron alfredi* relative to culturable luminous bacteria. Annual Meeting of the American Society for Microbiology, New Orleans, LA, May 1992

Publications:

1. Wolfe, C.J. and M.G. Haygood 1991 Restriction fragment length polymorphism analysis reveals high levels of genetic divergence among the light organ symbionts of flashlight fishes. *Biol. Bull* 181:135-143.
2. Haygood, M.G., D.L. Distal, and P.J. Herring. 1992 Polymerase chain reaction and 16S rRNA gene sequences from the luminous bacterial symbionts of two deep sea angler fishes. *J. Mar. Biol. Assoc. UK* in press.

Manuscripts in preparation:

Haygood, M.G. and D.L. Distal. Phylogenetic analysis of 16S rRNA genes of unculturable luminous bacterial symbionts from the light organs of anomalopid and ceratioid fishes.