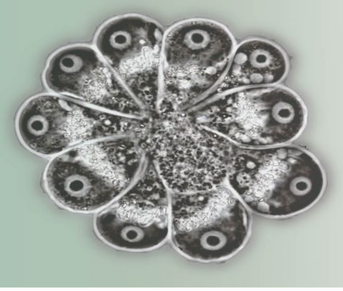
Microbial Life
Educational Resources



A Digital Library Exploring the Ecology, Evolution, and Diversity of Microbes

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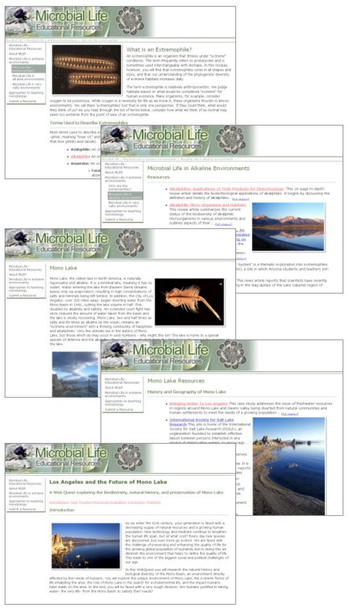


Thematic drill-down approach (*top to bottom*) guides users to specialized resource collections and educational applications.

About MLER

Introduction

Microbial Life Educational Resources (MLER) is a new digital library of resources dedicated to promoting information on the diversity, ecology, and evolution of the microbial world. The primary goal of MLER is to provide an extensive resource of expert information about microorganisms for students, researchers, K-12 teachers, university faculty, and the general public. MLER is currently dedicated to compiling materials relating to "microbes of extreme environments." This will be followed by "microbes of marine environments."

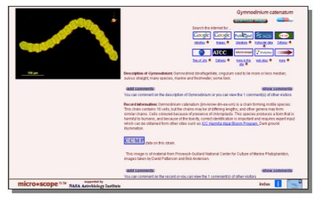
Project Approach

Technology

MLER currently uses the SERC CMS system for cataloging and delivery (refer to the SERC poster for more information). We collaborate with the STAR and uBio projects to integrate the content of MLER with other biological resources on the internet - especially the **micro*scope** project.

micro*scope

(http://microscope.mbl.edu) is a knowledge environment that links local and distributed information on microbes using taxonomy. It provides educators and students with images, text, talks, identification guides, and a classification structure. Images and taxa in MLER are linked to appropriate resources in **micro*scope** using automated metadata application tools – such as link*in.



micro*scope Asset Page

name*finder

link*in

link*out

Biological Metadata

Driven by the momentum of uBio (http://www.ubio.org), the Universal Biological Indexer and Organizer, MLER contributes to and exploits biological metadata terms (names). Over 250 years of organized biological studies have resulted in approximately 10 million metadata terms for 1.7 million existing taxa. uBio provides a management system for names and biological classifications that is appropriate to the needs of contemporary cyber-infrastructure. MLER contributes by reporting all taxa names found within its collected resources.

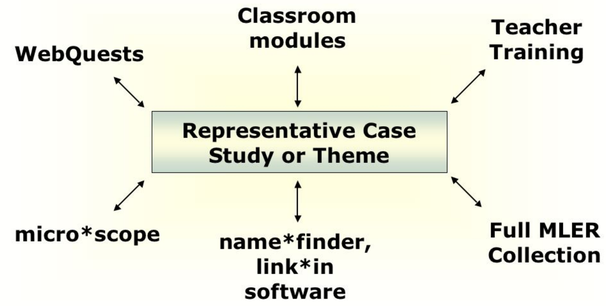
name*finder is a cross-indexing software that identifies biological names (metadata) mentioned in documents to automate biological indexing.

link*in is the first tool to exploit uBio biological metadata terms. MLER will use link*in to link names of taxa within resources to a correlating asset page in **micro*scope**.

link*out magnifies the amount of information available to **micro*scope** users by linking local information to other information on the same organism by initiating searches into "outside" databases and web sites.

Education & Outreach

In order to facilitate the transfer of cutting edge science from researchers to the classroom, many MLER resources are integrated into educational modules structured to meet *National Science Education Standards.* Representative case studies encourage inquiry-based learning and include activities such as WebQuests, hands-on laboratory activities, games and puzzles, and literature assessment. MLER will feature an *Approaches to Teaching* module that introduces various methods of teaching microbiology and demonstrates how to incorporate the MLER collection into classroom teaching practices.



MLER's Integrated Education & Outreach Components

Impact on the overall NSDL

Benefits of MLER to the NSDL Community

- **Visibility** MLER is dedicated to education and public awareness. We are active in promoting NSDL by establishing a presence at national conferences (scientific and educational), professional development workshops, local communities, and teacher networks.
- **Innovation** MLER brings innovative ideas and software for management of biological information to the NSDL community. The MLER collection is supplemented with original network services and educational applications for visitors.
- **Content** MLER addresses the need for resources pertaining to the ecology, evolution, and diversity of microbes. It offers content for those interested in biological sciences.

Opportunities for NSDL Grantees

- MLER is working with innovators for biological informatics (star*central http://starcentral.mbl.edu) and uBio, offering opportunities to other projects handling biological metadata.

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http://mler.mbl.edu

Science Education Resource Center @ Carleton College