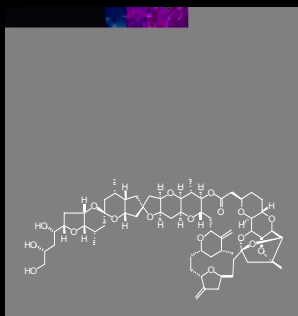


Drug Discovery from Marine Invertebrates

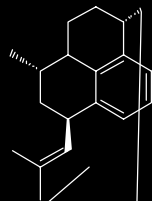
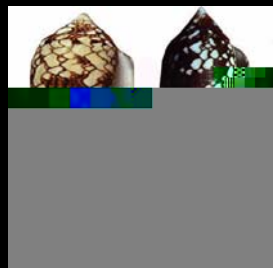


Conotoxins: Agents for Pain

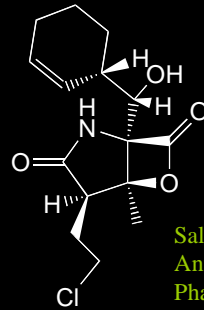


The predatory cone snail *Conus magnus* kills its prey using an array of paralyzing peptides.

ω -conotoxin MVIIA (ziconatide, Prialt) is a potent calcium channel blocker that has been developed as a treatment for intractable pain.



Marine Microorganisms: The Next Frontier



Salinosporamide A
Anticancer agent
Phase I Clinical Trials

New genera of actinomycetes are now being reported that reside exclusively in the marine environment.

These bacteria are chemically prolific and produce structurally unique molecules with significant biomedical potential.

Feling et al. (2003) *Angew. Chem.* 42:355-357.

Mincer et al. (2001) *Appl. Environ. Microbiol.* 68: 5005-5011

Examples of Marine Proteins and Biopolymers

Additional Current and Future Applications for Marine Microorganisms

Bioremediation of hazardous waste and polluted environments.

“Probiotic” agents to protect cultured finfish and shellfish against marine diseases.

Some cyanobacteria are used as nutritional supplements (e.g. spirulina).

Development of microbial fuel cells to power ocean instrumentation in remote locations.

Further Development and Understanding of Services Provided by Marine Genetic Resources

Conservation of marine ecosystems.

Access to remote environments.

Cross-disciplinary collaboration among scientists and engineers.

Knowledge sharing through open-access databases.