

How 3-billion year old blue green algae found in hot springs could help treat cancer and Alzheimer's disease

While cyanobacteria can also produce certain toxins that can [pose direct threats to humans and animals](#), there is also a new possibility that the bacteria could treat human disease, according to Nicole Avalon, a NIH National Research Service Award postdoctoral fellow at the Gerwick lab.

"It's those same chemicals that we're looking at for their potential utility in such diverse areas as [anticancer treatments, antiparasitic and anti-inflammatory](#) agents," says [William] Gerwick.

Avalon hopes to discover new drugs from cyanobacteria to treat cancer and other conditions such as traumatic brain injury, Parkinson's and Alzheimer's disease.

Cyanobacteria is currently used in one type of drug called an [antibody-drug conjugate](#) (ADC). Clinics use this for treating cancer, but it can also potentially be used for other conditions like parasitic or bacterial infections. The drug is a "so-called warhead molecule" that connects to an antibody and the warhead is directed to cancerous cells, malaria parasites or whatever needs to be killed, Gerwick explains.

"The main warhead molecule that's used in five drugs in the clinic today are coming from cyanobacteria," Gerwick says.

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Despite this potential, Avalon stresses her research surrounding cyanobacteria is just at the beginning. It can take decades of work to isolate the structure of a molecule, fully characterize the structure and then identify a bioactivity worth pursuing.

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