

Van Baalen C. Studies on marine blue-green algae. *Bot. Mar.* 4:129-39, 1962.
[Kitchawan Research Laboratory, Brooklyn Botanic Garden, Ossining, NY]

This paper emphasized the ease of establishing enrichment cultures of blue-green algae from sand, mud, or seawater samples collected from shallow marine environments and the facile isolation of pure cultures of blue-green algae. [The SCI® indicates that this paper has been cited in over 120 publications, making it the most-cited paper published in this journal to date.]

Chase Van Baalen
Port Aransas Marine Laboratory
Marine Science Institute
University of Texas
Port Aransas, TX 78373

February 7, 1984

"This was my first effort on my own and there were several reasons for an early interest in the blue-green algae (nowadays, the appellation cyanobacteria is popular). I had just finished graduate work at the University of Texas under Jack Myers on the Hill reaction in the then recently isolated coccoid blue-green alga, *Anacystis nidulans* strain Tx20.¹ It was destined to become a much used experimental tool in studies of photosynthesis. Secondly, my new boss was Paul R. Burkholder, who prodded me to get on with the isolation and culture of blue-green algae from marine environments. On his numerous excursions collecting soil samples, searching for organisms producing new antibiotics or anti-cancer agents, he collected and regularly passed on to me most of the marine mud and seawater samples that were used for the enrichment cultures.

"There had also been published five years before recipes for synthetic media for the cultivation of marine algae.² One of the basic recipes, for medium ASP-2, modified in many ways, has

served us well through the years. There was only one hurdle, a rather widespread belief that pure cultures of blue-green algae were very hard to come by. The types of methods suggested to rid algal cultures of contaminants, e.g., antibiotic mixes, brief exposure to Clorox, physical separation using a micromanipulator, or ultraviolet light, had not been notably successful. My approach followed general methods of microbiology. Algal cell material repeatedly transferred under conditions conducive to photosynthetic growth was well dispersed and tiny amounts were used to make pour plates. In stubborn cases, the dispersed cell material was briefly treated with ultraviolet light (254 nm) just before the pour plates were made. We have used this basic methodology over and over again. Recently, a new and significant group of nitrogen-fixing blue-green algae from shallow marine environments was found.^{3,4} A further spin-off has been the enrichment and isolation of pure cultures of psychrophilic diatoms.⁵

"If there was merit in this work, it lay in the demonstration of the ease of enrichment and isolation of pure cultures of blue-green algae from the marine environment. These cultures, together with already extant forms, and other isolates over the years, have led to an ever increasing study, and understanding, of the basic biology of the blue-green algae. For the younger generation, the take-home information perhaps is that Mother Nature has been at genetic engineering for more than three billion years, and that it has been, and will continue to be, fruitful to ask questions of her via the endless approach of enrichment culture."

1. Kratz W A & Myers J. Nutrition and growth of several blue-green algae. *Amer. J. Bot.* 42:282-7, 1955. (Cited 630 times since 1955.)
2. Provasoli L, McLaughlin J J A & Droop M R. The development of artificial media for marine algae. *Arch. Mikrobiol.* 25:392-428, 1957. (Cited 390 times since 1957.)
3. Stacey G, Van Baalen C & Tabita F R. Isolation and characterization of a marine *Anabaena* sp. capable of rapid growth on molecular nitrogen. *Arch. Microbiol.* 114:197-201, 1977.
4. Gotto J W, Tabita F R & Van Baalen C. Isolation and characterization of rapidly-growing, marine, nitrogen-fixing strains of blue-green algae. *Arch. Microbiol.* 121:155-9, 1979.
5. Van Baalen C & O'Donnell R. Isolation and growth of psychrophilic diatoms from the ice-edge in the Bering Sea. *J. Gen. Microbiol.* 129:1019-23, 1983.