

# Colony-forming *Trichodesmium* and its interactions with microorganisms and dust particles

Futing Zhang<sup>1, 2,3</sup>, Yeala Shaked<sup>2,3</sup> and Meri Eichner<sup>1</sup>

<sup>1</sup>CentreAlgatech, Institute of Microbiology of the Czech Academy of Sciences, Czech Republic

<sup>2</sup>The Fredy and Nadine Herrmann Institute of Earth Sciences, Hebrew University of Jerusalem, Israel

<sup>3</sup>The Interuniversity Institute for Marine Sciences in Eilat, Israel

The filamentous cyanobacterium *Trichodesmium* is a globally significant marine diazotroph that contributes substantially to oceanic biogeochemistry by supplying "new" nitrogen to microbial communities. *Trichodesmium* commonly forms colonies that ubiquitously contain a diverse assemblage of microorganisms and actively collect mineral particles. These multi-partner associations exert ecosystem-level influence on marine carbon and nitrogen cycling, shunting newly fixed nitrogen to low nitrogen systems, and exporting both carbon and nitrogen to the deep sea. Here, I summarize previous and ongoing research I have participated in, studying the interactions between *Trichodesmium* and its associated partners (e.g., bacteria, eukaryotes, and dust particles), and how these interactions affect *Trichodesmium's* nutrient utilization, sinking velocity, and ultimately the cycling of carbon (C), nitrogen (N), phosphorus (P), and iron (Fe) in marine environments.