

Tara Oceans: Eco-Systems Biology at Planetary Scale

言語 / 英語 Language/English

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東京農工大学 小金井キャンパス 11 号館 L1153 教室
Lecture Room L1153, Building 11, Koganei Campus, TUAT



Prof. Chris Bowler

Ecology and Evolutionary Biology Section
Institut de Biologie de l'Ecole Normale Supérieure (IBENS)
France

The ocean is the largest ecosystem on Earth and yet we know very little about it. This is particularly true for the plankton that drift within, even though they form the base of marine food webs and are key players in Earth's biogeochemical cycles. Ocean plankton are at least as important for the Earth system as the forests on land, but most of them are invisible to the naked eye and thus are largely uncharacterized. To increase our understanding of this underexplored world, a multidisciplinary consortium, Tara Oceans, was formed around the 36m research schooner Tara, which sampled plankton at more than 210 sites and multiple depth layers in all the major oceanic regions during expeditions from 2009-2013 (Karsenti et al. Plos Biol., 2011). This talk will summarize the first foundational resources from the project, which collectively represent the largest DNA sequencing effort for the oceans (see Science special issue May 22, 2015 and Nature 28 April, 2016), and their initial analyses, illustrating several aspects of the Tara Oceans' eco-systems biology approach to address microbial contributions to macro-ecological processes. The project provides unique resources for several scientific disciplines that are foundational for mapping ocean biodiversity of a wide range of organisms that are rarely studied together, exploring their interactions, and integrating biology into our physico-chemical understanding of the ocean. These resources, and the scientific innovations emerging to understand them, are critical towards developing baseline ecological context and predictive power needed to track the impact of climate change on the oceans.

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■お問合せ先 / Contact
グローバルイノベーション研究院 工学研究院 田中 剛
Institute of Global Innovation Research, Institute of Engineering
Prof. Tsuyoshi Tanaka
e-mail: tsuyo (ここに @ を入れてください) cc.tuat.ac.jp



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