



## Plenary session

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## Tara Ocean : ecosystem biology at planetary scale

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.

## Keynote's short bio

Chris Bowler is Director of Research at CNRS and head of the Laboratory of Plant and Algal Genomics at the Institut de Biologie de l'École Normale Supérieure in Paris. He graduated from the University of Warwick, UK, with a degree in Microbiology and Microbial Technology, completed his PhD at the University of Ghent in Belgium, and followed with postdoctoral studies with Nam-Hai Chua at The Rockefeller University in New York. In 1994 he established his own research group at the Stazione Zoologica in Naples Italy and in 2002 he took up his current position in Paris. He is EMBO member since 1995, recipient of the CNRS Silver Medal in 2010, ERC Advanced Awards in 2012 and 2018, the Louis D Foundation's 'Grand Prix Scientifique' from the Institut de France in 2015, and was elected into the Academie d'Agriculture de France in 2018.

## References

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