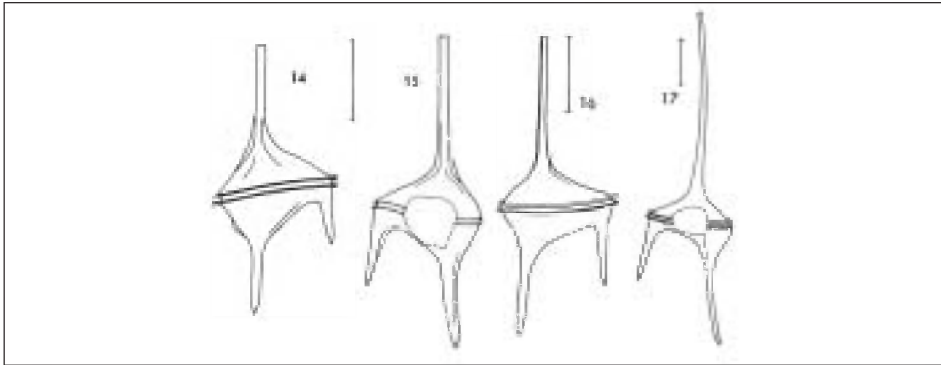


**Figure 1.** Sample of *Ceratium* species from the Villefranche bay (cells were stained in Lugol's acid solution).



**Figure 2.** Varieties and intermediate taxa of *Ceratium candelabrum* from the unofficial para-systematic designation of Sournia (1967). Illustrations from Sournia (1967).

(Fig. 2) may have a psychrophilous variety named *C. candelabrum* var. *candelabrum* and a thermophilous variety named *C. candelabrum* var. *depressum*. When a morph between these two varieties was observed, it was named *C. candelabrum* "candelabrum-depressum." When the morph was nearer to the second variety, it was called *C. candelabrum* "candelabrum >depressum."

Whether those morphological infraspecific variations really reflect thermal preferences or correspond to pseudo-cryptic species is unknown. To answer this question, our Villefranche team contacted another MarPLAN member, Dr Nathalie Simon, from Observatoire de Roscoff, France. Rodolphe Lemée, one of my PhD advisors and associate professor at University of Paris VI (Observatoire de

Villefranche), spent three sabbaticals (autumn 2005 & 2006 and spring 2007) at Roscoff to study molecular techniques and to work on *Ceratium* phylogeny. Studies were initially made on LSU rDNA and then on the Intergenic Transcribed Spacer (ITS), which was considered as more accurate for reconstructing phylogenetic trees, in order to evaluate the intraspecific genetic diversity in *Ceratium* genus. A Master's student, Anne-Lise Cras, worked on this subject during the first semester of 2007 and has obtained more than a hundred sequences of *Ceratium*'s ITS, using the single-cell method. This method allowed her to clearly relate molecular diversity to morphological diversity. The preliminary results suggest (1) the presence of both cryptic species and ecomorphs in *Ceratium* taxa and (2) the need for a complete review of the subgenus definition. These hypotheses will be confirmed using other molecular markers. Anne-Lise Cras has just received financial support from the University of Paris VI to carry out a PhD on the "Relationship between morphological diversity, molecular diversity and biogeography of marine microplankton."

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# Infra-specific genetic variability within *Micromonas pusilla*, a green picoplanktonic alga

By Rodolphe Lemée

As part of the MarPLAN project, our team also participated in the study of infra-specific genetic variability within *Micromonas pusilla*, a green picoplanktonic alga (*Prasinophyceae*), through a second sabbatical, where Elodie Foulon (PhD student) travelled to Villefranche. *Micromonas pusilla* is cosmopolitan and widespread in marine systems and has been proved to dominate the picoplanktonic assemblages in coastal systems such as the English Channel. The *Micromonas* taxon is genetically diverse and includes several genetically distant clades.

Elodie Foulon is working on the infra-specific ecological, morphological and physiological diversity of *Micromonas pusilla* in the frame of her PhD thesis, directed by Nathalie Simon and Frédéric Partensky at the Station Biologique de Roscoff (SBR). Wiebe Kooistra (Stazione Zoologica di Napoli) is an advisor on this project and visited the SBR in December 2006 and July 2007 to share his expertise on cryptic species in phytoplankton.

In order to identify potential separate niches for these genetic clades, Elodie Foulon monitored the densities of three genetic clades in different water masses, including the waters of the Villefranche bay. She was able to sample in the Villefranche bay in the frame of the MarPLAN collaboration with Rodolphe Lemée (one week in spring 2006). Our Villefranche team also sent further samples to be analysed in Roscoff.

It appeared that *M. pusilla*'s densities decreased during the stratification event and that all the genetic clades were present in the Villefranche bay, but one clade was dominant and another clade was only detected at depth. The results obtained, together with other results obtained in other biogeographical regions, will be published soon (Foulon *et al.*, in prep.).

## Rodolphe Lemée

Université Pierre et Marie Curie,  
Observatoire Océanologique de  
Villefranche/mer Laboratoire  
d'Océanographie de Villefranche,  
CNRS UMR 7093 Équipe Écologie  
Microbienne et Biogéochimie  
06234 Villefranche/mer  
Email: lemee@obs-vlr.fr