Biologie évolutive et écologie des algues

Rapport Hcéres

agence d'évaluation de la recherche
et de l'enseignement supérieur

Department for the evaluation of research units

AERES report on unit:

Evolutionary Biology and Ecology of Algae

EBEA

Under the supervision of the following institutions and research bodies:

Centre National de la Recherche Scientifique

Université Paris 6 - Pierre et Marie Curie

December 2012

agence d'évaluation de la recherche
et de l'enseignement supérieur

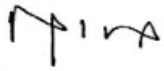
Research Units Department

President of AERES

Didier Houssin

Research Units Department

Department Head



Pierre Glaudes

The president of AERES "signs[...], the evaluation reports, [...]countersigned for each evaluation department by the relevant head of department (Article 9, paragraph 3, of french decree n°2006-1334 dated 3 november 2006, revised).

Grading

Once the visits for the 2012-2013 evaluation campaign had been completed, the chairpersons of the expert committees, who met per disciplinary group, proceeded to attribute a score to the research units in their group (and, when necessary, for these units' in-house teams).

This score (A+, A, B, C) concerned each of the six criteria defined by the AERES.

NN (not-scored) attached to a criteria indicate that this one was not applicable to the particular case of this research unit or this team.

Criterion 1 - C1: Scientific outputs and quality;
Criterion 2 - C2: Academic reputation and appeal;
Criterion 3 - C3: Interactions with the social, economic and cultural environment;
Criterion 4 - C4: Organisation and life of the institution (or of the team);
Criterion 5 - C5: Involvement in training through research;
Criterion 6 - C6: Strategy and five-year plan.

With respect to this score, the research unit concerned by this report received the following grades:

- Grading table of the unit: Evolutionary Biology and Ecology of Algae

C1	C2	C3	C4	C5	C6
A	A+	A	A	A+	A

Evaluation report

Unit name:	Evolutionary Biology and Ecology of Algae
Unit acronym:	EBEA
Label requested:	UMI (Unité Mixte Internationale)
Present no.:	
Name of Director (2012-2013):	
Name of Project Leader (2014-2018):	Ms Myriam VALERO (associated leader in Chile: Mr Sylvain FAUGERON)

Expert committee members

Chair:	Mr Dominique DE VIENNE, Université Paris Sud, Orsay
Experts :	Mr François BONHOMME, CNRS (representative of CoNRS)
	Ms Christine BRAQUART VARNIER, Université de Poitiers
	Mr Antoine GREMARE, Université Bordeaux 1
	Mr François LACAN, CNRS
	Ms Purificacion LOPEZ-GARCIA, CNRS
	Mr Chris MCKINDSEY, Pêches et Océans Canada, Ottawa, Canada
	Mr Philippe OGER, CNRS
	Ms Geneviève PREVOST, Université de Picardie Jules Verne (représentative of CNU)
	Mr Lucas STAL, Royal Netherlands Institute for Sea Research, Yerseke, Pays-Bas
	Mr Christophe THEBAUT, Université Paul Sabatier

Scientific delegate representing the AERES:

Mr Steven BALL

Representative(s) of the unit's supervising institutions and bodies:

Ms Martine HOSSAERT, CNRS

Ms Martine MAIBECHE, UPMC

1 • Introduction

History and geographical location of the unit:

The proposed UMI EBEA (Evolutionary Biology and Ecology of Algae) derives from the team BEDIM (Biologie Evolutive et DIversité Marine, headed by Ms Myriam VALÉRO), one of the teams of the UMR 7144 AD2M (headed by Mr François LALLIER), located at the Station Biologique de Roscoff. The team BEDIM co-manages the LIA DIAMS (Laboratoire International Associé Franco-Chilien "Dispersion and Adaptation in Marine Species") with the team Algal Defences of the UMR 7139 and a group of the "Pontificia Universidad Catolica de Chile" (PUCCh). The proposed UMI EBEA will be a continuation of the LIA, with some modifications of the organization chart. There will be three geographical locations, one in Roscoff (France), one in Pontificia Universidad Catolica de Chile (Chili) and one in Universidad Austral de Chile (Chili).

Management team:

Director Ms Myriam VALÉRO (Roscoff)

AERES nomenclature:

SVE 1 and SVE 2

Unit workforce:

Unit workforce	***Number as at 30/06/2012**	***Number as at 01/01/2014**	2014-2018 **Number of project producers**
N1: Permanent professors and similar positions	1	1 + 4	5
N2: Permanent researchers from Institutions and similar positions	2	2 + 0	2
N3: Other permanent staff (without research duties)	1.5	1.5 + 1.5	2
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)			
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	1	2.5 + 3	5.5
N6: Other contractual staff (without research duties)		1 + 3	
TOTAL N1 to N6	5.5	8 +11.5	14.5

** The numbers correspond to the team BEDIM at the 30/06/2012 and the UMI which includes French + Chilean researchers at 01/01/2014*

Percentage of producers	100 %

Unit workforce	*Number as at 30/06/2012	**Number as at 01/01/2014
Doctoral students	4	2.5 + 1
Theses defended	5	3 + 0
Postdoctoral students having spent at least 12 months in the unit*	2	2.5 + 3
Number of Research Supervisor Qualifications (HDR) taken		1 + 1
Qualified research supervisors (with an HDR) or similar positions	2	2 + 4

**Numbers correspond to the past 5.5 years for the BEDIM team (i.e. 01/01/2007 to 30/06/2012)*
***Numbers correspond to the projected of French + Chilean members at 01/01/2014*

2 • Assessment of the unit

Strengths and opportunities:

- Excellent expertise in the culture and biology of macroalgae, population genetics, molecular ecology, genomics and modelling, and opportunity to compare contrasting sampling sites and algal models.

- Access to experimental facilities for cultivating macroalgae.

- Possibility of linking theoretical and experimental approaches to study the evolution of reproduction systems in macroalgae.

- Opportunity for greater exchange of expertise between France and Chile. Because of the group's international visibility, they also have collaborations beyond France and Chile (Canada, USA, Portugal, The Netherlands) and participation in national and international networks.

- Significant implication in research teaching, thanks to a "co-tutelle" agreement between French and Chilean Universities.

- Constant success in obtaining research funds from France, Chile, and Europe.

Weaknesses and threats:

The scientific objectives of the unit are interesting and relevant, but may be too ambitious given the size of the groups involved in the two countries and the skills needed in bio-mathematics, quantitative genetics, and NGS. (See also theme-by-theme reports.)

It seems that there is a severe lack of office space in the Roscoff site although there are promises that this issue will be resolved in the near future.

Recommendations:

General recommendation (detailed recommendations on the different themes are given below in the theme-by-theme reports):

- Better coupling of theoretical and experimental aspects is essential, but will require additional effort to be implemented successfully.

- The unit should be careful to avoid too much dispersion between the different models. It would be more efficient to select a few models and build on them.

3 • Detailed assessments

Assessment of scientific quality and outputs:

The scientific production of the unit is quite good, with about 50 articles published in the best journals in the fields of evolution, ecology, genetics and marine biology (average IF 3.56, and 4.37, without including the special issue of Cahiers de Biologie Marine) over the period, or about 3.5 papers/year/FTE. All the scientists are producers. (See details in the theme-by-theme reports.)

Assessment of the unit's academic reputation and appeal:

The unit has shown an excellent capacity to develop collaborative networks within France and Europe and with Canada, Chile and USA, which resulted in several co-publications. It is involved in local (Pôle de Compétitivité Mer, PRES Université de Bretagne), national (EMBRC-FR, GDR, CoNRS, CNU) and international (ASSEMBLE, EUROMARINE) networks and committees. The unit is the main coordinator of the LIA DIAMS (Laboratoire International Associé Franco-Chilien "Dispersion and Adaptation in Marine Species"), and has participated in seven ANR projects, including the project ECOKELP, which was coordinated by the unit leader. The unit has also participated in four European projects and two exchange programmes with Portugal and the USA. Members of the unit were invited for the presentation of seven seminars or symposia, in France and abroad. Two scientists of the unit are members of editorial boards of international journals, and one scientist co-organized a symposium in the 2011 international ESEB congress, and will co-organize a Jacques Monod Conference in 2013 (Recent progress on the evolution of sex and genetic systems).

Assessment of the unit's interaction with the social, economic and cultural environment:

The members of the unit have had a good level of impact with respect to social, economic, and cultural environments. They have participated in public debates, written outreach papers (*Science et Vie* and *Science Ouest*) and book chapters, given public conferences, organized exhibition stands and scientific animation (Fête de la Science, Nuit des Chercheurs, etc.), and contributed to round-table discussions about algae and biodiversity issues with a variety of stakeholders.

Assessment of the unit's organisation and life:

The staff members seem happy to work in the BEDIM group, with good relationships between members. Regarding the work on both sides of the ocean, limited information was provided as to how this will be done, other than by encouraging exchanges and holding regular video conferencing between France and Chile. That being said, it is clear that the groups in the two countries have worked well together in the past and will likely be able to continue to do so in the future. In fact, links between and within the groups seem stronger now than they were in the past with plans to co-supervise students in three universities. In addition, frank discussions with current graduate students and postdoctoral fellows clearly showed that they were very happy with the high level of interactions fostered by the unit.

Assessment of the unit's involvement in training through research:

The unit welcomed 3 post-doctoral fellows and supervised 9 PhD students during the period. In 6 cases, the theses were co-supervised with Chile or Portugal. The unit has teaching activities in France and Chile (e.g. Summer Schools in Roscoff and Chile), and organized 5 teaching units in Licence Biomaths and Master EBE/OEM, and participates to the course entitled "Modélisation Mathématique et Biodiversité" of the MNHN (Muséum National d'Histoire Naturelle).

Assessment of the five-year plan and strategy:

The three research themes of the UMI project are clearly built on the successes of LIA DIAMS, and are fully supported by their respective parent institutions, CNRS and UPMC. In the past, LIA has achieved major accomplishments (63 articles and more than 70 presentations in congresses, common national and international grants and many exchanges between France and Chile), showing that the staff members have a real common experience of working across multiple sites. The committee is confident about the success of this new unit.

Detailed scientific comments about the different projects of the UMI are given below in the theme-by-theme reports.

4 • Theme-by-theme analysis

Theme 1: Evolution of sexual reproduction and its consequences

Manager's name: Mr Denis ROZE (co-manager: Ms Marie-Laure GUILLEMIN)

Workforce

Percentage of research time for permanent researchers involved (note that to fill the table we considered that FTE for professors is 0.5 compared to researchers).

UMI is a new proposed research unit. Although the three research themes are continuing and building on those previously developed by the Valéro group in AD2M, it was not possible to complete the column for the previous period (As of 30/06/2012).

Theme workforce in Full Time Equivalents	As at 30/06/2012	*As at 01/01/2014
FTE for permanent professors		0.15 + 0.475
FTE for permanent EPST or EPIC researchers		1.03 + 0
FTE of other permanent staff without research duties (IR, IE, PRAG, etc.)		0.83 + 0.33
FTE for other professors (PREM, ECC, etc.)		
FTE for postdoctoral students having spent at least 12 months in the unit		1.45 + 0.15
FTE for other EPST or EPIC researchers (DREM, etc.) excluding postdoctoral students		
FTE for other contractual staff without research duties		0.17 + 0.75
FTE for doctoral students		1 + 0
TOTAL		4.63 + 1.705

*Numbers correspond to projections of French + Chilean members at 01/01/2014

• Detailed assessments

Assessment of scientific quality and outputs:

The group involved in theme 1 consists of one CR1 and one MCF. The general topic studied is the evolution of sexual reproduction and its consequences. During the period 2007-2012, the manager and co-manager of this team had an excellent output in terms of publications (22 articles rank A). The production is regular and of very good to excellent quality, with some papers published in high profile journals [Evolution (IF = 5,14), Molecular Ecology (IF = 5,52), Journal of Applied Phycology (IF = 2,42), BMC Evolutionary Biology (IF = 3,52), Journal of Phycology (IF = 2,07), Heredity (IF = 4,59), PLoS Biology (IF = 11,45), Ecology (IF = 4,84), Genetics (IF = 4), The American Naturalist (IF = 4,72), Journal of Evolutionary Biology ((IF = 3,26), Trends in Ecology and Evolution (IF = 15,74), Theoretical Population Biology (IF = 1,65), Gene (IF = 2,34), and PNAS (IF = 9,68)].

Assessment of the five-year plan and strategy:

The project continues ongoing research that has been undertaken using both theoretical and empirical approaches to study (1) the evolution and the maintenance of haploid-diploid lifecycles and (2) the evolution of mating systems. Emphasis will be placed on the acquisition of robust results by using these 2 combined approaches. These results may permit experimental evolution to occur, allowing evolutionary responses at different ploidy levels to be explored.

Conclusion:

- Overall opinion of the theme:

There is a strong focus on the central research project on "the evolution and plasticity of algal reproduction". The solid experience of the group will allow it to successfully conduct theoretical and empirical research on sex evolution and on the impact of global changes on model species.

- Strengths and opportunities:

Both theoretical and empirical aspects are developed using population genetics and experimental ecology (for instance, cultures in the field), permitting the effects and consequences of different reproduction systems on organisms to populations to be evaluated.

- Weaknesses and threats:

The convergence between theoretical and empirical approaches is just starting in the group, and must be improved in the future. The expertise in experimental approaches in evolution is not well described.

- Recommendations:

The theme 1 is well integrated in the UMI EBEA project. Although the group has an excellent expertise in the fields of theoretical modelling of the evolution of reproductive systems, molecular ecology, population genetics of marine algae, and experimental and reproductive ecology in marine environments, the integration of the different aspects remains to be worked out. It is not always very clear "who is doing what" and on which subject, in particular between the French and Chilean teams. One recommendation would be to not to get too dispersed between different models.

Theme 2: Understanding speciation processes and the ecological and evolutionary limits to adaptation

Manager's name: Mr Christophe DESTOMBE (co-manager: Mr Sylvain FAUGERON)

Workforce

Percentage of research time for permanent researchers involved (note that to fill the table we considered that FTE for professors is 0.5 compared to researchers).

Theme workforce in Full Time Equivalents	As at 30/06/2012	*As at 01/01/2014
FTE for permanent professors		0.225 + 0.875
FTE for permanent EPST or EPIC researchers		0.63 + 0
FTE of other permanent staff without research duties (IR, IE, PRAG, etc.)		0.53 + 0.33
FTE for other professors (PREM, ECC, etc.)		
FTE for postdoctoral students having spent at least 12 months in the unit		0.4 + 1.75
FTE for other EPST or EPIC researchers (DREM, etc.) excluding postdoctoral students		
FTE for other contractual staff without research duties		0.17 + 0.75
FTE for doctoral students		0.5 + 0.75
TOTAL		2.455 +4.455

*Numbers correspond to projections of French + Chilean members at 01/01/2014

• Detailed assessments

Assessment of scientific quality and outputs:

This theme corresponds to a reshuffling of scientific questions within theme 2 of the former team BEDIM. BEDIM was a very active group and already had collaborations with Chile. There is a single publication record for the whole group, which is very good (average IF is 3.9, with about 3 pub/year/FTE), so it is difficult and somewhat artificial to disentangle what pertains to each theme.

Assessment of the five-year plan and strategy:

The long-term objectives of the theme, understanding speciation processes and the ecological and evolutionary limits to adaptation, are at the forefront in the field of evolutionary genetics. Their application to macroalgal models (red and brown algae, basically), which constitutes the real speciality of the UMI team, is novel, and will have a theoretical impact on evolutionary biology and potentially useful applications for aquaculture. Particular attention will be brought on transition zones where sibling species meet. In some cases, hybridization occurs frequently whereas in other species hybrids are not detected and strong ecological differentiation occurs between haploid and diploid stages. Exploring the role of speciation in the specific adaptations of diploid and haploid phases to environmental conditions is made possible by using certain algal models. Over the next five years, attention will largely focus on the exploration of transition zones and the production of genetic marker data (microsatellites but also NGS markers) to detect cryptic species and hybrids, and to potentially identify genetic bases of speciation. While this approach will certainly provide data, a large number of different algal models will be employed, each being presented independently to answer specific questions. The section on the study of the effect of environmental heterogeneities on adaptation, both at the level of biotic and abiotic interactions, is particularly poorly detailed and hypothetical. The nature of biotic and abiotic factors to be analysed is not explained. This section appears premature and/or written in a hurry.

Conclusion:

- Overall opinion of the theme:

The proposed research is the continuation of previous studies, in which members of the future UMI have studied phylogeographic patterns of several red and brown algal species along the Atlantic European coast and the South Pacific Chilean coast and wish to build on the acquired knowledge and models to go one step further to better understand speciation and adaptation processes.

- Strengths and opportunities:

- The proposed theme is the continuation of previous work for which the proponents have most of the expertise required and a good international visibility.

- An exceptional possibility to foster the exchange of expertise (respectively, culture and biology of macroalgae, modelling, population genetics and genomics of red and brown algae) via students and researchers between France and Chile.

- The possibility to compare very different sampling sites and algal models, and to test the effects of high disturbance events (e.g. tsunamis and earthquakes) that have affected the Chilean coast.

- Access to major experimental facilities for cultivating macroalgae.

- Privileged access to seldom explored regions (Antarctica).

- Weaknesses and threats:

- Overall, the objectives appear extremely ambitious relative to the modest size of the teams involved on both sides of the ocean.

- The theoretical aspects of theme 2 appear somewhat decoupled from the empirical aspects dealt with in the team (to the point that it is proposed that data from invertebrate marine species – and not algal models, the basic study object of this UMI – will be used to test the theoretical predictions). Algal models are only suggested in a very hypothetical tone, and they might not behave the same as invertebrate models because of marked differences in propagule dispersion.

- NGS expertise needs to be acquired. This is by far not impossible given the local context in Roscoff, but it will require some efforts to gain it through already trained postdocs.

- There is a recognized need for expertise in statistical modelling and quantitative genetics.

- There is a strong need to place the work in a meaningful phylogenetic framework. The term "algae" corresponds to a polyphyletic group (it includes all photosynthetic eukaryotes except plants). However, in this project the term is used ambiguously to refer to all algae, sometimes to all macroalgae, sometimes to brown (Phaeophyta) and red (Rhodophyta) algae or even to red and brown macroalgae. Correlating life history traits (e.g. life cycles) to "algae", as is repeatedly described, as if they had a phylogenetic cohesion, is not possible because they encompass many different phyla. This is especially important when trying to use phylogenomic data and having to account that the study of microalgae (e.g. photosynthetic dinoflagellates) is also mentioned in the project (collaboration with another team in Roscoff).

● Recommendations:

- Place the proposed research in a comprehensive phylogenetic framework, removing the ambiguity introduced by the use in the project of the term "algae" as a phylogenetic category.

- Focus on a few select models and build from them. Otherwise, there is a risk for excessive dispersal.

- Better coupling of theoretical and empirical analyses.

Theme 3:

Domestication, management of genetic resources, and environmental impacts

Manager's name:

Mr Sylvain FAUGERON (co-manager: Ms Myriam VALERO)

Workforce

Percentage of research time for permanent researchers involved (note that to fill the table we considered that FTE for professors is 0.5 compared to researchers).

Theme workforce in Full Time Equivalents	As at 30/06/2012	*As at 01/01/2014
FTE for permanent professors		0.125 + 0.55
FTE for permanent EPST or EPIC researchers		0.33 + 0
FTE of other permanent staff without research duties (IR, IE, PRAG, etc.)		0.63 + 0.33
FTE for other professors (PREM, ECC, etc.)		
FTE for postdoctoral students having spent at least 12 months in the unit		0.65 + 1.1
FTE for other EPST or EPIC researchers (DREM, etc.) excluding postdoctoral students		
FTE for other contractual staff without research duties		0.66 + 1.5
FTE for doctoral students		1 + 0.25
TOTAL		3.395 + 3.73

*Numbers correspond to projections of French + Chilean members at 01/01/2014

- ## Detailed assessments

Assessment of scientific quality and outputs:

Assessing the scientific quality and outputs of this theme independently of the other themes is difficult as the supplied documentation was not presented in this format. Notwithstanding this, the theme and individual theme members clearly have, within BEDIM - the precursor of the proposed UMI, an excellent track record with respect to the quality and quantity of their scientific outputs. They had a total of 30 publications, including 11 in journals with an impact factor > 3 (Molecular Ecology-IF=5.52; Evolution-IF=5.15; Journal of Biogeography-IF=4.54; Plos One-IF=4.09; Molecular Phylogenetics and Evolution-IF=3.61; BMC Evolutionary Biology-IF=3.52; Molecular Ecology Resources-IF=3.06). Members have contributed many oral and poster presentations at regional, national, and international conferences and have been active on editorial committees of international journals and symposia and conference steering committees. Although not clearly shown, the theme's contributions to various international projects (e.g. LIA DIAMS, EcoKelp) have clearly also contributed to the production of these groups by fostering intellectual cross-pollination.

This theme explores how natural and anthropogenic stress factors ("environmental impacts") influence or are related to the genetic and community diversity of macroalgae. The proposed research uses coupled quantitative genetic/demographic approaches and takes the opportunistic advantage of natural and anthropogenic events occurring along the coastlines of France and Chile to answer questions about their impact on algal diversity at the individual, population, and community levels. There are three major lines of research:

Line of Research 1: Domestication processes: Research will continue genetic with population surveys of *Macrocystis pyrifera* and *Gracilaria chilensis* to assess how domestication affects life cycle genetic diversity dynamics. The role of mating systems in the domestication process will be examined by studying clonal and partially clonal populations of *G. chilensis*. Integrated molecular and quantitative genetics approaches will be developed to better understand life history constraints on trait expression and their response to selection by focusing on how selection acts in each phase and how phases are related to predict how domestication leads to adaptation to cultivation conditions.

Comments/Conclusions: The text outlined in the proposal is unclear and somewhat circular. Details of the research to be done and the methods to be used are lacking. Although it is suggested that work will be done on both *G. chilensis* and *M. pyrifera*, studies to be done on the latter species are not described.

*Line of Research 2: Environmental risk assessment***:** This research will evaluate how a seismic event (earthquake, tsunami and subsequent 1.8 m coastal uplift in 2010) impacted the genetic diversity and resilience of *Gracilaria chilensis* and *Lessonia spicata* in both natural (sexually producing, both species) and farmed (clonally propagated, *G. chilensis* only) populations using genetics and demographic approaches. Algae from historic collections will be compared to contemporary samples at various spatial scales and in sites that experienced differing levels of impact.

Comments/Conclusions: This is a rather unique event and great opportunity to study such effects. Preliminary results provided in their presentation suggest that the seismic event had a clear effect on genetic diversity. Will populations in other areas that have experienced similar seismic events also be compared to evaluate the generality of the effect (and to avoid confounding with El Niño effects)? Funding has been sought (FONDECYT) to examine this issue.

*Line of Research 3: Genetic resources and environmental impacts***:** This research will evaluate the genetic diversity of the kelp *Laminaria digitata*, the diversity of the algal community associated with the kelp, the relationships between these two variables, and how harvesting and climate change affect these relationships. Multiple sites around Brittany will be sampled to this end. In addition, ecological niche modelling will be used to predict the impact of climate change on the distribution of the species and the proponents seem to also be contributing to a database to catalogue the status of kelp forests throughout Europe.

Comments/Conclusions: This section is short on details. Why are relations between genetic diversity and community diversity interesting? What hypotheses are actually being tested? How will ecological niche modelling be done (model type, factors included, spatial and temporal scale, climate change model to be used, etc.)?

Conclusion:

- Overall opinion of the theme:

The provided text for this theme's 5-year plan was somewhat convoluted and short on details. The theme leaders did a much better job of presenting their vision for the theme in the face-to-face meeting in Roscoff. Clearly, most of the theme members have already worked together successfully on multiple projects with good scientific production and impacts with respect to training and collaborations, and fostering other and interesting partnerships.

- Strengths and opportunities:

The proposed opportunistic research will provide informative insights into the impacts of natural (e.g., earthquakes) and anthropogenic (e.g., aquaculture) disturbance on various levels of algal diversity. These are rather unique opportunities to explore fundamental ecological questions in temperate coastal zones. There is a very clear and close partnership between France and Chile that has been developed over the past 15 years and some excellent collaborative work has resulted and should continue into the future. Algal populations in areas that have experienced seismic events may be compared to evaluate the generality of observed effects.

- Weaknesses and threats:

The description of this theme is somewhat convoluted and the main uniting factor among projects is the opportunistic nature of the proposed research to evaluate the impact of different types of disturbance on various levels of algal diversity. There is little background (scientific theory) to explain why specific approaches will be undertaken. It is clear that interesting results will be obtained through the proposed work but the value of this is not always placed in context. It is also not clear which researcher will be responsible for which aspect of the proposed research.

- Recommendations:

Notwithstanding the lack of clarity in the proposed research, the assembled group has clearly been able to operate at a high level of academic excellence and the strengthened team should continue to perform at the same level. Much of the proposed research is opportunistic in nature, concentrating on the impact of both anthropogenic and natural stressors on the genetic and specific diversity of algal populations and the organisms that may be associated with them. The proposed work should be better placed in context to show how it will contribute to conceptual and theoretical advances.

5 • Conduct of the visit

Visit dates:

Start: Thursday December 20 at 8:30 am

End: Friday December 21 at 2:30 pm

Visit site:

Institution: Station Biologique de Roscoff

Address: Place Georges Tessier, 29680 Roscoff

Conduct or programme of visit:

The organization of the AERES panel visit was optimal. Sufficient time was allowed for general and specific scientific presentations followed by scientific debates and discussion with the UMI members. The visit was coupled to that of the AD2M research unit and benefited from the expertise of the same committee.

6 • Statistics by field: SVE on 10/06/2013

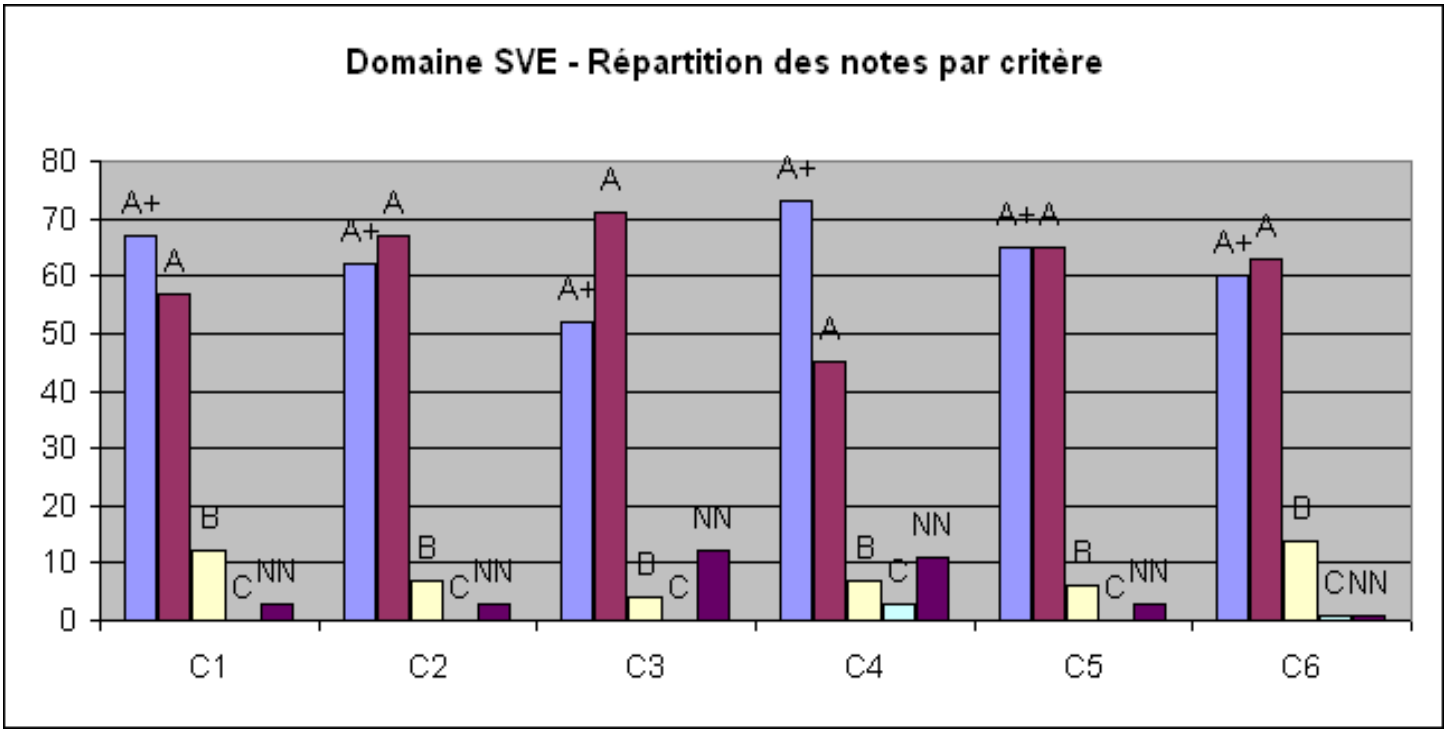
Grades

Critères	C1 Qualité scientifique et production	C2 Rayonnement et attractivité académiques	C3 Relations avec l'environnement social, économique et culturel	C4 Organisation et vie de l'entité	C5 Implication dans la formation par la recherche	C6 Stratégie et projet à cinq ans
A+	67	62	52	73	65	60
A	57	67	71	45	65	63
B	12	7	4	7	6	14
C	0	0	0	3	0	1
Non Noté	3	3	12	11	3	1

Percentages

Critères	C1 Qualité scientifique et production	C2 Rayonnement et attractivité académiques	C3 Relations avec l'environnement social, économique et culturel	C4 Organisation et vie de l'entité	C5 Implication dans la formation par la recherche	C6 Stratégie et projet à cinq ans
A+	48%	45%	37%	53%	47%	43%
A	41%	48%	51%	32%	47%	45%
B	9%	5%	3%	5%	4%	10%
C	0%	0%	0%	2%	0%	1%
Non Noté	2%	2%	9%	8%	2%	1%

Histogram



7 • Supervising bodies' general comments

Affaire suivie par :
Thomas JEAN-JOSEPH
Tel : 01 44 96 42 36
Fax : 01 44 96 45 11
Mail : thomas.jean-joseph@cnrs-dir.fr
Ref : INEE-2013-D-133

M. Pierre GLAUDES
Directeur de la section des unités de recherche
AERES
20, rue Vivienne
75002 PARIS

Paris, le 3 mai 2013

Objet : Réponse à l'évaluation du projet d'UMI EBEA
D2014-EV-0753639Y-S2PUR140005296-002030-RT

www.cnrs.fr

Campus Gérard-Mégie
3, rue Michel-Ange
75794 Paris cedex 16

T. 01 44 96 40 00
F. 01 44 96 53 90

Monsieur le Directeur, Cher collègue,

Nous nous associons aux remerciements émis par la direction du projet d'UMI *Evolutionary Biology and Ecology of Algae* (EBEA) aux membres du comité d'évaluation pour la qualité de leur travail. Vous trouverez ci-jointe la réponse de l'équipe de direction du projet.

Ce projet d'UMI a été construit en étroite collaboration avec le CNRS-INEE et la Direction Europe de la recherche et coopération internationale (DERCI) qui souhaitaient concrétiser, par la création de cette unité, les échanges scientifiques de longue date entre la station biologique de Roscoff, l'UPMC et les universités chiliennes (Pontificia Universidad Catolica de Chile et Universidad Austral de Chile). Les thématiques proposées sur la biologie évolutive des algues brunes et rouges, leurs traits d'histoire de vie, l'évaluation des ressources génétiques, des effets de la domestication et des impacts environnementaux sont en complète adéquation avec les thématiques de la Station Biologique de Roscoff et de celles soutenues par l'Institut Ecologie et Environnement.

Je vous prie de croire, Monsieur le Directeur, Cher collègue, en l'expression de mes sentiments distingués.

s/Thiebault

Stéphanie Thiébault
Directrice
Institut écologie et environnement

STATION BIOLOGIQUE DE ROSCOFF
EQUIPE : "BIOLOGIE EVOLUTIVE
ET DIVERSITE MARINE"
UMR-CNRS-UPMC 7144

Roscoff, 11 April 2013

Au président du comité d'experts de l'AERES,

Objet : observations de portée générale sur le rapport d'évaluation de l'UMI EBEA

Our Unit has read with attention the assessment report of the UMI project based on the AERES committee visit which took place on December 20th and 21st, 2012. We appreciate the positive points underlined in the report, concerning in particular the expertise and international visibility of our laboratory in the biology of seaweeds, in population genetics, in molecular ecology and in theoretical modeling. This positive report is a great satisfaction for all the staff of the Unit. It is a strong encouragement to pursue our research following the strategy proposed in our project built on the collaboration between France and Chile. We also have noted carefully the weak points related to the fact that our scientific objectives may be too ambitious given the size of the groups and the risk of over-dispersion between the different biological models. We are aware of these potential problems; however our objective for the first phase of the project is to explore a large panel of questions that require different biological models, in order to encourage the collaboration between both countries. In a second phase, we will focus on chosen questions and select fewer models in order to build on them. Moreover, in response to the specific recommendation made about "the strong need to place the work in a meaningful phylogenetic framework", we would like to stress that we did not select our models because of their phylogenetic relationships: these models do indeed belong to very distant phylogenetic groups, but were chosen because of their convergence in terms of life cycle and habitat.

We have also noted the two main recommendations of the report and will take them into account as far as possible during the next contract. Firstly, the convergence between theoretical and empirical approaches will be strengthened via the new lines of research in experimental evolution aimed at testing theoretical predictions on the evolution of life cycles and reproductive systems. Secondly, we will make any possible effort so that our group acquires new expertise in biostatistics, quantitative genetics and NGS that are essential for several of the research lines of the Unit project. In the short term, these needs will be fulfilled through postdoctoral fellows recruited in the unit and/or through ongoing collaborations with other units in Roscoff and in Chile having already acquired this expertise. These different postdoc positions are already planned/financed within the framework of current ANR projects (IDEALG, TRANS, CLONIX). In a longer term, our objective is to maintain these skills within the Unit through permanent positions. In addition, the diversity of the questions, biological models and approaches will be supported thanks to the implementation of a GDRI "DEBMA" which will enlarge and complete the skills of the Unit.

In agreement with the staff of the Unit, I would like to thank the whole committee for its constructive and globally very positive conclusions.

Yours sincerely,

Myriam Valero

Myriam VALERO, STATION BIOLOGIQUE DE ROSCOFF, Equipe BEDIM,
CS 90074, Place Georges Teissier
29688 ROSCOFF cedex- FRANCE
Téléphone: Int + 33+ (0)2 98 29 23 28 ; Fax: Int +33 (0)2 98 29 23 36
E-mail: valero@sb-roscoff.fr