Systematics of the Verrucariales
(lichenized and non-lichenized fungi, ascomycetes)

Verrucariales (Hawksworth & Eriksson, 1986) is an important order in the ascomycete classification, with 2 current families (Adelococcaceae and Verrucariaceae), 47 genera (Eriksson *et al.*, 2001) and about 720 species (Hawksworth *et al.*, 1995). This order is characterized by its large ecological range: species of Verrucariales can be found on rocks, either in dry or in aquatic (marine or fresh water) habitats, on trees, on the ground, parasites on lichens, in the mountains as well as along the coast, from temperate to tropical areas. They are also diverse in morphology: the largest species have a squamulous thallus up to five inches and the smallest one have a granulose thallus barely visible without a hand lens. An important number of species grows on limestone, with a thallus developing under a thin layer of rocks and fruiting bodies emerging from this layer. Collecting and studying these endolithic species is particularly difficult and may be the reason why they are so poorly known.

Some taxonomic studies have been carried out on this order in Europe. The lichen flora from Clauzade and Roux (1985) gives a well-documented overview of the European Verrucariales. Some of these species have also been studied by different other authors: Keller (1995, 2000) studied the aquatic species of the genus *Verrucaria*, Triebel (1993) the lichenicolous genus *Sagediopsis*, Breuss (1985, 1990a, 1990b, 1996) the squamulous genera *Catapyrenium*, *Placidiopsis* and *Placocarpus*, and Heidmarsson (1996, 1998) the genus *Dermatocarpon*. Some taxonomic studies are also available for Japan (Harada, 1992, 1993a, 1993b) and Australia (McCarthy, 1995a, 1995b, 1995c). In North America, on the other hand, few taxonomic studies have been carried out. Only three genera (*Placidiopsis*, *Catapyrenium* and *Staurothele*) have been studied (Thomson, 1987, 1989, 1991). Almost no data are available for the other genera. As a result, the North-American diversity for the order Verrucariales is highly underestimated and the majority of species regularly found during collecting trips are still not described.

One part of my Ph.D. project will be to write a monograph for one subset of these North-American species of Verrucariales. Nevertheless, because these species are so poorly known, I will have to work first in Europe, where the identification keys and floras are numerous, and where a knowledgeable taxonomist, Othmar Breuss, from the Museum of Natural History of Vienna (Austria), can teach me how to identify these species and understand his genus concept. Moreover, before studying the diversity of this order in North America, it is important to have a good understanding of the taxonomy of this group. A good knowledge of the known species will be extremely helpful to identify North-American specimens and to describe new species without creating synonyms.

Othmar Breuss is one of the world experts of the taxonomy of Verrucariales. Since 1983, he has regularly published articles on the taxonomy of this order. He studied mainly the squamulous genera, but also the poorly known endolithic species. Recently, after a collecting trip in the United-States, he started to work on North-American species (Breuss & Bratt, 2000; Breuss & Spribille, 2001). He is willing to pass on his experience and knowledge in taxonomy, so this collaboration would be greatly beneficial for my Ph.D. project, which will bridge molecular systematics with traditional taxonomy to study one of the most difficult group of lichen-forming fungi.

SCHEDULE

A Mini-PEET award would allow me to organize a trip in Austria in order to meet Othmar Breuss and to work with him on the taxonomy of Verrucariales.

May 1- June 1, 2003	Visit Othmar Breuss at the Museum of Natural History of Vienna, Austria.
June 2-30, 2003	Collecting trip in the Austrian and French Alps.

BUDGET

Accommodation	Lodging, (31 days, $40/day)	$1,240
	Camp in Alps, (30 days, $20/day)	$600
Costs of travel	Round-trip (USA-Austria)	$800
	Car rental (4 weeks)	$1,000
Total		$3,640

Amount requested from the mini-PEET Award: **$3,640**

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EDUCATION

2002 - present First year PhD student in Systematic Biology, **Duke University**, Durham NC, USA
2001 - 2002 Graduate studies in Lichen Systematics, **St-Jérôme University**, Marseilles, France.
1998 - 2000 Certificate of Extensive Studies in Animal and Plant Systematics, **National Museum of Natural History**, Paris, France.
1997 - 1998 Masters degree in Biology, **Louis Pasteur University**, Strasbourg, France.
1995 - 1997 Bachelors degree in Biology, **Louis Pasteur University**, Strasbourg, France.
1992 - 1994 Diploma of General Studies in Biology, **Louis Pasteur University**, Strasbourg, France.

PROFESSIONAL AND RESEARCH EXPERIENCE

2001 - 2002 Study of the lichen flora of the Mediterranean area, **St-Jérome University**, Marseilles.
2000 *Transmission Electron Microscopy (cryotechniques)*, **Pasteur Institute**, Paris.
1999 - 2001 *Ultrastructural Study of Ostropales (fungi)*, **National Museum of Natural History**, Paris.
1999 - 2001 Supervisor of environmental studies (**Observatoire Mycologique**): lichen biomonitoring of air pollution in the departments of Yonne, Saône-et-Loire, Côte d'Or and Nièvre (France).
June 1998 Supervisor of environmental studies **(Observatoire Mycologique)**: lichen biomonitoring of air pollution in Gueugnon and Digoin (France).
Summer 1996 Supervisor of environmental studies (**Écodève**): produced a list of lichen species for the RENECOFOR network (European network of forest monitoring).
1994 - 1995 Supervisor of environmental studies (**Écodève**): lichen biomonitoring of air pollution in Autun and Le Creusot (France).

PUBLICATIONS

GUEIDAN, C. & ROUX, C., 2002. Liste provisoire des lichens et des champignons lichénicoles récoltés lors de l'excursion de l'AFL en Haute-Savoie en 2001. *Bulletin d'informations de l'AFL* **27(2)**: 33-38.

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POSTERS

2000 *Ultrastructural study of Graphis scripta (L.) Ach. (Ascomycetes)*, GUEIDAN, C. and DENNETIÈRE, B.
The fourth congress of the International Association of Lichenology: Progress and Problems in Lichenology at the Turn of the Millenium, Barcelona (Spain).
2000 *Lead accumulation by lichens in Seurre (France)*, GUEIDAN, C. and DAILLANT, O.
Third Advanced Research Workshop on Pathways and Consequences of Dissemination of Pollutants in the Biosphere, Nyiregyhaza (Hungary).
1999 *Bioaccumulation of heavy metals in lichens*, GUEIDAN, C., DAILLANT, O. and TILLIER, C.
Second Advanced Research Workshop on Pathways and Consequences of the Dissemination of Pollutants in the Biosphere, Prague (Czech Republic).

SCHOLARSHIPS

2002 Scholarship from the Duke University Mellon Program in Plant Systematics ($1,000).
1999 Scholarship from the Department of Education and Science for the Certificate of Extensive Studies (DEA), National Museum of Natural History, Paris ($3,200).

PROFESSIONAL AFFILIATIONS

American Society of Plant Taxonomists – Association Française de Lichénologie – International Association of Lichenology – Mycological Society of America – Society of Systematic Biologists.