



***In situ* localization of sulfur in the thioautotrophic symbiotic model *Lucina pectinata* by cryo-EFTEM microanalysis.**

G. Frébourg (1), J.-P. Lechaire (2), F. Gaill (1) and O. Gros (3).

1. UMR 7138 SAE CNRS. Université Pierre et Marie Curie, Bât A, 4^{ème} étage. 7, Quai Saint Bernard. 75005 Paris (France).
2. Service de Cryo-Microscopie Électronique IFR 83 CNRS Biologie Intégrative. Université Pierre et Marie Curie, Bât A, 4^{ème} étage. 7, Quai Saint Bernard. 75005 Paris (France).
3. UMR 7138 SAE CNRS, Département de Biologie. Université des Antilles et de la Guyane

B.P. 592. 97159 Pointe-à-Pître Cedex, Guadeloupe (France).

Lucina pectinata is a large tropical lucinid known to harbor sulphide-oxidizing bacteria in specialized gill cells. Conventional TEM has shown that bacteriocytes harbor also apparently “empty” vesicles whose chemical content remains roughly determined.

In this study, gill-tissues were cryo-fixed as fast as possible by using high-pressure freezing before a freeze substitution process followed by a cryo-embedding in Lowicryl. Ultrathin sections were then used for a cryo-EFTEM microanalysis which has shown that bacteriocytes contained elemental sulfur in small vesicles produced by the host itself. Such structures may act as energy sources for the endosymbionts in case of sporadic depletions of sulfur in the environment.

Such cryo-techniques represent (i) the only way to locate and preserve sulfur at the cellular level and (ii) a powerful tool for sulfur metabolism analysis in thio-autotrophic symbiosis relationships.

Lechaire J-P., Frébourg G., Gaill F. and Gros O., Biol. Cell., 2005 ; Submitted