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## Postdoctoral Fellow Research Opening -- Development of Biomimetic at Muséum National d'Histoire Naturelle (Paris, France)

### Study of bio-based gluing systems adapted to humid environments

#### **Description:**

##### *Context*

Sources of inspiration to produce natural or synthetic bio-adhesives are currently available. Indeed, bio-adhesives can be found in bacteria, fungus, protistes (unicellular), metazoans. They are generally composite materials with both proteins/glycoproteins and polysaccharides, but are variable in composition and function of the chemical components. Bio-adhesives are also able to interact within different types of biotic and abiotic surfaces, and various types of adhesion can be found: permanent or temporary, wet or dry, static and dynamic environments. Glue and adhesive inspired by Nature have great biomimetic potential, in particular we are interested to improve adhesive deliverability and performance in the presence of water.

##### *Objectives:*

Among the various marine and fresh water organisms that are being studied in the laboratory, we are particularly interested by polychaetes, which are marine worms, with species that are capable of building tubes that serve as protective houses. Several species of polychaetes build tubes by assembling and gluing sand grains and clasts. In addition, some isolated species are able to produce flexible or rigid tubes, but some gregarious others, are able to create vast reefs. We wish to develop comparative genomic studies to better understand the adhesive process used by polychaetes, and also to compare the bio-adhesive systems used in by the same species from different ecosystems (i.e. tropical vs temperate environments). At first, the project will focus on general approaches to identify and characterize organic compounds and molecular patterns used by polychaetes for adhesion. In collaboration with our industrial partner (Saint-Gobain Isover), the project will focus in biomimetic approaches to adapt and transfer the molecules and functions identified to certain industrial processes.

#### **Proposed position:**

Our team « Evolution of Biomineralization and Adaptation to Environmental Constraints » (UMR BOREA MNHN/CNRS-7208/IRD-207/UPMC/UCBN/UAG) is looking for a post-doc candidate interested in biomimetics and competent in bioinformatics and biology, to identify and characterize the adhesive molecules of marine worms with the aim of transferring such knowledge to industrial processes.

**Duration:** 12 months (possibility to renew 1 year) to start in September 1st, 2015.

**Competencies required:** The ideal candidate would bring expertise in life science and/or chemistry with strong competences in bioinformatics. Knowledge on adhesion mechanisms will be nice to have. Interest for the fundamental research and transfer actions. Good written and communication skills are required.



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**Salary:** The salary will depend experience and should be on the around 2000€/month.

**Location:** The position at UMR BOREA, Muséum National d'Historie Naturelle (Paris, France) with missions at Saint-Gobain Isover (Rantigny, France).

**Contacts:**

Candidates can send CV and Motivation letter with 3 referent names and emails (expected to provide letters of recommendation) to Dr. Pascal Jean LOPEZ, UMR BOREA, CNRS-7208/MNHN/UPMC/IRD-201/UCBN, 43 rue Cuvier, 75005 Paris, France. Email: [pjlopez@mnhn.fr](mailto:pjlopez@mnhn.fr). Phone: +33 1 40 79 37 02