

## ESR24-018 - Biopatinas on buildings in urban environments: biofilters, CO2 sinks and cooling systems with an aesthetic-architectural effect

### Zusammenfassung

In recent years, growing social awareness on the adverse effects of climate change and high pollution levels, has raised the need to adopt sustainable practices and promote greener, healthier environments, particularly in the inner cities. In this project, we propose to utilize (rather than remove) the biopatinas naturally occurring on urban architectural surfaces, as a low-maintenance method of urban greening. The main hypothesis is that biopatinas can absorb atmospheric pollutants and act as valuable carbon sinks, can be natural biofilters and bioremediation systems, trapping particulate matter and dust, but could also have cooling effects on the buildings microclimate. Therefore, the main objective of this project is to investigate these aspects of biopatinas in urban areas, to fully explore their potential to contribute to a better environment. To achieve this, a highly interdisciplinary endeavour is required, hence our project brings together geomicrobiology, material ecology, environmental physics and art-based methods. Through a quantitative scientific methodology (gas and dust exchange measurements, molecular biology, physico-chemical techniques), data from biopatinas of representative surfaces in Vienna will be obtained and be at the base to upscale local measurements to a larger scale, developing predictive modelling. The scientific approach will be supported by the use of participatory art-based practices to achieve greater public awareness and acceptance of biopatina on monuments and in architecture in the city.

Wissenschaftliche Disziplinen:

Geomicrobiology (60%) | Environmental research (30%) | Architectural design (10%)

Keywords:

biopatinabiodeterioration of monuments bioremediationfunctional biodiversity

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Status: Vertrag in Vorbereitung

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Weiterführende Links zu den beteiligten Personen und zum Projekt finden Sie unter

<https://wwtf.at/funding/programmes/esr/ESR24-018/>