Light4Lungs, a four-year H2020 FET Open project led by Prof. Santi Nonell at IQS School of Engineering, was launched in Barcelona last December 2019.

Light4Lungs addresses the problem of **antimicrobial resistance in the treatment of chronic lung infections**, the leading cause of morbidity and mortality in patients with diseases such as cystic fibrosis and hospital-acquired lung infections. The 4-years project aims to develop an alternative therapeutic scheme for the treatment of these infections: a **novel inhalable photodynamic therapy**.

Light4Lungs departs from current paradigms as bacterial infections will be treated by a breathable light source, thus:

1. without including any externally added drug it overcomes the multidrug resistance profile;
2. with eliciting the therapeutic action by a breathable light source it avoids the use of invasive physical tethers.

The FET Open project funded by the European Commission encompasses the development of particles with persistent luminescence, the aerosol technology for activation and delivery to the lungs, and the definition of the treatment parameters through toxicity and efficacy tests in clinically relevant models of respiratory infections. Its results have the potential to go beyond treatment of recalcitrant respiratory tract bacterial infections to other lung diseases and to other organs, enriching fields of healthcare, nanomedicine, materials science and nanotechnology.

The Consortium with 8 partners from 4 countries, led by IQS School of Engineering, combines all the relevant scientific expertise; from photonics to chemistry, to physics, to medicine.

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The Department of Biology (DiBio) of the University of Padova is Partner number 5 of the Light4Lungs Consortium and Work Package Leader (In vitro studies of aerosol efficacy and biocompatibility).

The major task of DiBio is to assess the biocompatibility of the luminescent particles on in vitro cellular models of increasing complexities for mimicking the respiratory tract where particles are delivered for killing bacteria causing the lung infections.

**DiBio People involved in Light4Lungs:**

**Elena Reddi** (Local Coordinator)

![Elena Reddi](image1)

**Francesca Moret**

![Francesca Moret](image2)

**Maddalena Mognato**

![Maddalena Mognato](image3)

**Stefano Cagnin**

![Stefano Cagnin](image4)