

# Summer Research Fellowship Proposal for 2020

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## **FACULTY INFORMATION:**

**NAME:** Roy Morello, PhD  
**DEPARTMENT:** Physiology & Biophysics

**LOCATION:** Biomed-2 building

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## **PROJECT INFORMATION:**

**TITLE:** Primary lung defects in mouse models of osteogenesis imperfecta.

**LOCATION OF THE PROJECT:** Morello's lab, room 221-2, Biomed-2

**BRIEF DESCRIPTION OF THE PROJECT:** Patients affected with osteogenesis imperfecta (OI) have severe bone fragility but also a variety of systemic issues, including respiratory complications. Lung disease can be secondary to skeletal malformations but it is also present in patients with moderate forms of OI and is a leading cause of death in the OI population. This important aspect of OI is very little studied and therefore research that address lung function in OI is needed. In this pilot project we propose the hypothesis that OI causes a primary lung defect and that some of the surfactant proteins are unidentified substrates of the prolyl 3-hydroxylation complex. We will perform relevant experiments to address these hypotheses and begin to elucidate the pathogenetic mechanisms underlying lung disease in OI.

**STUDENT'S RESPONSIBILITIES-DUTIES IN THE PROPOSED PROJECT:** the summer student will be involved in some of the aims of this project, including those listed below:  
a) To identify expression of Crtp, P3h1, and Cyclophilin B in type II pneumocytes;  
b) To determine if loss of Crtp alters post-translational modifications of the collagenous domain of SP-A and SP-D in addition to type I collagen using mass-spectrometry.  
Opportunities to learn molecular biology at the bench, including molecular cloning, plasmid DNA transformation and preparation, cell culture and transfections, some basic microscopy, and other aspects of the ongoing research in the lab. Also, opportunities to attend lab meetings, present data and also attend larger research group meetings in Endocrinology.

**ESTIMATED TIME FOR PROJECT COMPLETION:** \_\_8-10\_\_ weeks

**DOES THE WORK INVOLVE ANIMAL RESEARCH?** YES -----  
NO -----XXX-----