MEASURING PHENOTYPIC AND TRANSCRIPTOMIC CHANGES OF DOLPHIN LUNG IN A COMPROMISED MARINE ENVIRONMENT: DEVELOPMENT OF A CELL SENSOR TO STUDY HUMAN LUNG HEALTH.

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A primary target organ for pathogen assault is the lung. Every breath inhaled by mammalian lungs contains not only required oxygen, but also hundreds of microbes and a multitude of airborne contaminants. On the average the lung is exposed to more pathogens and airborne toxins than any other internal organ.
Several physiological parameters of the bottlenose dolphin (*Tursiops truncatus*) lung, in comparison to those of the human lung, make them an ideal model for assessment of immunological responses to water-borne pathogens on human lung health. In contrast to the human, the dolphin lungs are exposed to marine borne pathogens to a greater degree than the human lung.

We propose to combine cell and tissue-based screening with transcriptomic analysis of dolphin lung cells to establish the effect of a compromised marine environment on mammalian lungs, based on the hypothesis that dolphins could be good predictors of what may happen to human lung health after chronic or acute exposure to airborne pathogens and contaminants.

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