2016/17 Summer Scholarship Project

**Project title:** In Vivo–In Vitro Comparison of Deposition in Three Mouth–Throat Models with Qvar® and Turbuhaler® Inhalers

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**Project type:** Laboratory-based work

**Research theme:** Respiratory Diseases

**Project description:**  
There have been a lot of published works which report the *in-vivo* and *in-vitro* correlations of aerosols depositions in human lung. *In-vitro* aerosols deposition study involves the dispersion of powders into an impactor using breathing patterns commonly generated by human. *In-vivo* study uses radioactive material as a tagging agent so that the aerosols depositions in the lung can be detected using Positron Emission Tomography. So far all the reported works employed an average value of flowrates collected from a group of subjects with a standard size adult throat. We have advancement in this field since we have collated *in-vivo* flowrates, mouth-throat dimensions and depositions data from a number of subjects when we administered drugs from Qvar® and Turbuhaler® Inhalers. However, the *in-vitro* data is still lacking. Therefore, this project aims to use those data of each individual subject with three models of mouth-throat (large, medium and small) that resembles each particular subject. We will then develop a correlation to match the *in-vivo* data. The outcome of this project will bring a significant benefit for the research and development of aerosols worldwide.