



Contribution ID: 44

Type: Poster

Imaging the motion of the lung in 3D to assess the effectiveness of a bacteriophage therapy for lung infection

X-ray imaging is a useful investigative and diagnostic technique. Recent technological advancements in x-ray imaging have led to the development of Phase Contrast X-ray Imaging (PCXI) techniques which can revolutionise current medical research as well as have future use in clinical imaging. Paired with 4D X-ray Velocimetry (4DXV) it allows for non-invasive assessment of regional lung function, not currently possible with other forms of medical imaging and can be used to non-invasively assess the efficacy of emerging therapeutics. Bacteriophage therapy is a novel antimicrobial treatment which is clinically important due to increasing rate of multi-drug resistant bacterial infections. Bacteriophages are a promising alternative therapy, however current assessment of efficacy is highly invasive and, in many cases, requires the infected animals to be terminally anaesthetised. Our aim is to use 4DXV techniques as a viable, non-invasive alternative to demonstrate the efficacy of bacteriophage therapy in treating *Pseudomonas aeruginosa* pneumonia by measuring changes in lung function following treatment. Here we present the velocimetry analysis on the time resolved CT images we acquired at the Imaging and Medical Beamline (IMBL) in December 2021. This process will measure lung expansion throughout the breath cycle generating a vector field and measuring the difference in lung expansion between sick, treated, and healthy mice.

Level of Expertise

Student

Presenter Gender

Woman

Pronouns

She/Her

Do you intend to attend UM2022

In person - Melbourne

Students Only - if available would you be interested in student travel funding

No

Students Only –Do you wish to take part in the Student Poster Slam

No

Terms and conditions (Please confirm that you have read all the requirements and agree to the conditions)

Yes

Primary author: HARKER, Stephanie (Monash University)

Co-authors: CHANG, Yoon (University of Sydney); TREVASCUS, David (Monash University); LIU, Chengxi (University of Sydney); WANG, Yuncheng (University of Sydney); CHOW, Yee (University of Sydney); CMIELEWSKI, Patricia (University of Adelaide); REYNE, Nicole (University of Adelaide); HOW, Ying Ying; KLEIN, Mitzi (Australian Synchrotron); Prof. WRIGHT, Christopher (Monash University); PREISSNER, Melissa (Monash University); DUBSKY, Stephen (Monash University); DONNELLEY, Martin (University of Adelaide); CHAN, Kim (University of Sydney); MORGAN, Kaye (Monash University)

Presenter: HARKER, Stephanie (Monash University)

Session Classification: Poster

Track Classification: Biomedicine & Health