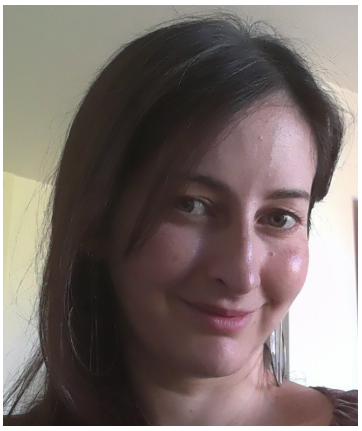
COVID-19 research seminar



Claire Deakin

OPAL Rheumatology, Australia

Talk title:
Male sex bias in severe COVID19 outcomes and sex differences in infection, immunity and autoimmunity

Jan Dumanski

Uppsala University

Talk title:
Loss of Y in leukocytes as a risk factor for critical course of COVID-19 in men

Wednesday June 8, 2022, at 14:15-15:45

Online via Zoom

Dr Claire Deakin is Director of Research and Biostatistics at OPAL Rheumatology, Australia, and part-time Senior Research Associate in the Centre for Adolescent Rheumatology Versus Arthritis at University College London. She is a biologist and biostatistician applying statistical modelling and bioinformatic analyses to understand paediatric, adolescent and adult rheumatic diseases and is interested in the role of age and sex in autoimmune disease.

Jan Dumanski is Professor at Uppsala University since 2000. The major research project in his research group since 2012 is the role of the loss of human chromosome Y (LOY) in the predisposition to various age-related diseases in males.

ABSTRACTS

SciLifeLab

Claire Deakin

Talk title:
Male sex bias in severe COVID19 outcomes and sex differences in infection, immunity and autoimmunity

Early anecdotal evidence during the COVID19 pandemic indicated a bias towards a higher risk of severe outcomes in men following infection with SARS-CoV-2. Our meta-analysis of 3,111,714 cases reported worldwide showed that while males and females are equally likely to be infected, males have almost three times the odds of requiring intensive treatment unit admission (OR = 2.84; 95% CI = 2.06, 3.92) and higher odds of death (OR = 1.39; 95% CI = 1.31, 1.47) compared to females. Importantly, we showed this to be a global phenomenon. Although this study does not directly investigate biological mechanisms that may explain this phenomenon, our findings are consistent with previous reports of sex differences in the prevalence and outcomes of infectious diseases and also in both the innate and adaptive immune system. This work may have implications for clinical management of COVID19 and highlight the importance of considering sex as a variable in basic and clinical research.

Jan Dumanski

Talk title:
Loss of Y in leukocytes as a risk factor for critical course of COVID-19 in men

COVID-19 shows a largely unexplained, strong male bias for severity and mortality. Loss of Y (LOY) in myeloid cells is a risk factor candidate in COVID-19 because of previous associations with many chronic age-related diseases and its effect on transcription of immune genes. We report the highest levels of LOY in cells that are crucial for the development of severe COVID-19, such as low-density neutrophils, and granulocytes, reaching 46%, 32%, respectively, from men with critical COVID-19 (i.e. treated at intensive care units, ICU). LOY in blood or sorted subpopulations of leukocytes correlated with increased thrombocyte count, thromboembolic events, WHO-grade, death at ICU and a history of vessel disease. In recovered patients, LOY decreased in whole blood DNA and peripheral blood mononuclear cells. The data support a link between LOY and emergency myelopoiesis as well as the role of LOY in modulation of COVID-19 severity. Our results might also be relevant for other viral infections showing similar male bias.