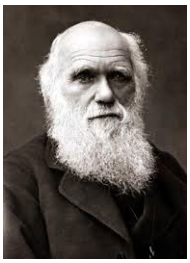
50th Anniversary of the first meeting of the Scandinavian Society for Immunology



Online event featuring a talk by Professor Philip Goulder

Thursday October 15th, 13:00 (Copenhagen time)

"Sex-specific adaptation: Birds, butterflies, COVID-19 and HIV Cure"

"Just the sight of a peacock's feather makes me sick," wrote Charles Darwin in 1860, a year after he had published his treatise *On the Origin of Species by Means of Natural Selection*. The problem for Darwin was that the magnificent tail feathers of the male peacock decrease survival chances, apparently contradicting the concept of 'Survival of the fittest'. Darwin provided a solution to the conundrum in his next book, *The Descent of Man and Selection in Relation to Sex.* To maximise reproductive success, distinct approaches/adaptations have evolved in males and females because the evolution of the sexes is differentially shaped by sexual selection. For this reason, males and females of the same species differ in appearance and behaviour - and, as is becoming increasingly apparent, in the immune system. In general, females make more vigorous immune responses to infections and vaccines, with superior outcomes than in males. Examples are COVID-19 and elite control of HIV infection among adults. However, females are also at greater risk of immunopathology, autoimmune disease and immunization adverse events. The double-edged sword of the stronger innate immune response to HIV is illustrated in our study of a cohort of *in utero* HIV-infected infants. Female fetuses are 2-3-fold more susceptible to mother-to-child transmission when the mother herself becomes infected during pregnancy. Viruses transmitted to females have lower viral replicative capacity and are more type I interferon resistant than those transmitted to males. Following infection, maintenance of aviraemia despite antiretroviral therapy (ART) non-adherence is superior among males. These data demonstrating increased female susceptibility to *in utero* infection and enhanced functional cure potential among infected males, suggest that the same innate immune responses that facilitate control of HIV replication in ART-naïve individuals may increase susceptibility to infection and reduce potential for cure following early initiation of ART.

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