

TCS/18/22 – Investigating the epidemiology of endemic *Giardia* in Scotland using a whole genome sequencing approach

The Scottish Parasite Diagnostic and Reference Laboratory and Health Protection Scotland have established that the majority of Scottish cases of the gastrointestinal parasite *Giardia duodenalis* are acquired locally rather than being travel-related; the source of infection in most cases is unknown. We will investigate molecular diversity and epidemiology of *Giardia* in Scotland using whole genome sequencing (WGS). We will develop a novel WGS-based parasite genotyping system, applying it to a large collection of human isolates collected in Scotland, to determine molecular types and to identify genetically-linked clusters of cases. Information will be integrated with metadata from Health Protection Scotland to improve understanding of *Giardia* epidemiology. We intend to improve healthcare in Scotland through (a) increasing capacity to characterise parasites at a molecular level, (b) determining the presence and distribution of zoonotic strains and (c) developing molecular/bioinformatic tools to underpin disease surveillance and control, allowing evidence led changes to laboratory testing policies. The tools developed in this project will permit the identification of genetically-linked clusters of cases, allowing for the detection and management of outbreaks. These tools can also be used to trace transmission routes in order to provide evidence for risk assessment.