

## Ageing and body clock rhythms: The importance of a social network

### Supervisory team:

**Main supervisor:** Prof Hugh Piggins (University of Bristol)

**Second supervisor:** Prof Emma Robinson (University of Bristol)

Prof Krasi Tsaneva-Atanasova (University of Exeter)

**Collaborators:** Dr Lukasz Chrobok (University of Bristol), Dr Pi-Shan Chang (University of Bristol)

**Host institution:** University of Bristol

### Project description:

It is popularly accepted that maintaining an active social life is paramount for good health and longevity. In its absence, social isolation and loneliness can elevate risk of disease and shorten lifespan. Regular social interactions synchronize the body clock and its 24h rhythms to the external world and social community. This is beneficial as it organizes meal and sleep times, improves problem solving abilities, and general well-being.

Unfortunately, as we age, both our body clock and our synchronization to the external world can weaken, resulting in disruptions in the sleep-wake cycle, eating and impaired problem-solving abilities. Further, these disruptions worsen as people become socially isolated with the ageing process sped up, leading to premature death. This is called 'unhealthy ageing'. Mice also show unhealthy ageing, but it is unclear if and how regular social activity affects the trajectory of ageing in these animals. Further, it is not known if male and female mice are equally affected by social interactions. In this project, the student will study how providing mice with the opportunity to engage in social interactions at different stages of life thwarts the ageing process. It is anticipated that the younger the animals are when they begin socializing, the more effectively the abnormal ageing process will be lessened. It is possible that even after spending half their life in a solitary state that animals will show a significant improvement in their brain and body functions following the opportunity to socialize. Animals with weakened or completely dysfunctional body clocks are potentially prone to accelerated ageing and whether socializing is an effective intervention in these animals will be explored. It is also possible that regular socializing will promote communication in brain pathways involved in learning and memory. Through this research project, the student will investigate new ways of restoring brain and body rhythms to promote good health and longevity.

**Our aim as the SWBio DTP is to support students from a range of backgrounds and circumstances. Where needed, we will work with you to take into consideration reasonable project adaptations (for example to support caring responsibilities, disabilities, other significant personal circumstances) as well as flexible working and part-time study requests, to enable greater access to a PhD. All our supervisors support us with this aim, so please feel comfortable in discussing further with the listed PhD project supervisor to see what is feasible.**