Harding Midterm update

In the past year we have established murine models for radiotherapy treatment within the brain. We have achieved proficiency in harvesting tissues and coordinated immunohistochemistry processing of these specimens in our local core. We have banked multiple replicates of experiments and are now poised to begin on the proposed experiments in the grant. We will now test two methods for spatial profiling of tissue instead of the single method proposed in the grant. We will continue to pursue imaging mass cytometry but will also initiate studies using single-cell RNA sequencing (scRNA-seq). scRNA-seq is now established in our lab and will provide us with complementary information to imaging mass cytometry. Together these assays will provide important insights into changes within the brain during radiotherapy setting the stage for introducing mitigation strategies for treatment side effects.

The COVID-19 pandemic has slowed our progress on this work. Our lab was shut down for approximately 2 full months. We continued to pay all staff but had to sideline experiments and dramatically reduce the number of animals including those for this project. These necessities have had monetary costs but have also delayed the work by at least six months while we ramp back up to (partial) capacity. We are now on track to perform these experiments within the next 1-1.5 years.

Bibliography

MacDonald KM, Benguerfi S, **Harding SM**. Alerting the immune system to DNA damage: Micronuclei as mediators. Essays in Biochemistry, 2020, 64(5):753-764

Invited speaker

European Society for Radiotherapy & Oncology (ESTRO) 39, “Innate immune responses caused by radiation induced micronuclei” Vienna, Austria, April 2020 (postponed due to COVID-19)