



As the Universe ages, quiescent (not star-forming) galaxies grow more rapidly in size than stellar mass (see second result for more info). Observations have shown that **if we compare the sizes of cluster and field quiescent galaxies in the present-day Universe, they are the same or very similar**. This is different from the result we found when the Universe was approximately 6 billion years old: quiescent cluster galaxies were found to be noticeably *smaller* than their field counterparts.

To explain the results in the present-day Universe, **cluster quiescent galaxies need to grow in size via some other route than minor mergers** (since these are rare in clusters — see second result for more info), **such that they can “catch up” with their field counterparts by the present day**. In Matharu et al., (2019), we presented a toy model which showed that **quiescent cluster galaxies could catch up with their field counterparts due to cluster-specific physical processes**. These physical processes would need to 1) destroy ~60% of the smallest, most compact galaxies in the cluster and 2) merge the remaining ~40% of compact galaxies with the galaxy at the centre of the cluster. Combined with the infall of younger, more larger galaxies from the field into the cluster over time, these processes could help explain why we observe no difference in the quiescent mass—size relation with environment in the present day Universe. To understand more about the plot to the left, go to the website below.