Cnidarians are often perceived as simple animals yet display some of the most remarkable regenerative capabilities across the entire animal kingdom. Regeneration model organisms, *Hydra sp.* and *Nematostella vectensis* are capable of whole-body regeneration which is defined as the replacement of body parts lost though injury. Less studied are colonial cnidarians, specifically of the order Scleractinia (stony corals), who display an incredible prowess for tissue regeneration following mechanical damage. (provide example demonstrating regenerative capacity). Despite great capacity to regenerate from damage, there is evidence that regeneration can come at an energetic cost (cite). Previous studies have associated the energetic cost of regenerating lost tissue to negatively impact coral growth and fecundity, resulting in physiological tradeoffs.

Maintaining an energetic budget which can amend tradeoffs with regeneration may be feasible by acquiring new energy through food intake or leveraging stored resources. Indeed, it is habitual for corals to routinely heal from sublethal predation by corallivores without succumbing to death. However, under stressful environmental conditions where energy acquisition is inefficient and stored resources are exhausted is when physiological tradeoffs will be most acute. For tropical corals, which exist in a narrow range of seawater temperature, anthropogenic ocean warming threatens to reduce the energetic capacity for tissue regeneration.

Corals are unlikely to meet temperature driven increases in energetic demand through heterotrophy because they rely heavily on photosynthate derived from their endosymbionts (Symbiodinaceae) as their primary energy source. Furthermore, the impact of elevated temperature on coral can be detrimental as it results in the breakdown of the coral-algal symbiosis and is a leading cause of coral mortality worldwide (cite). While there is substantial literature documenting the effects of temperature on coral physiology, examining the interaction of tissue regeneration and elevated temperature is lacking.

\*paragraph on what we know about wounding x temperature interaction on da corals\*

\*paragraph describing study + main question, hypothesis, and alternative hypothesis\*

It is well documented that corals are unlikely to meet increases in metabolic demand because

overhaul coral homeostasis exacerbate energetic demands of where small increases in temperature are known to increase coral metabolism and compromise symbiosis with the photosynthetic algae (Symbiodinaceae) that live within their tissues. it is well documented corals primarily meet their energetic requirements For stony corals, slight increases in sea water temperature may compromise their

energetic trade off physiological functions an energetic tradeoff have howen haveThis is particularly concerning for stony corals, who