# Conservation Impacts of Coral-Symbiont Communication

**Aaron D. Rose, Florida International University**
Research Mentor: Jose M. Eirin-Lopez

## Background

- Coral reefs are critically threatened by changing global conditions, which cause the breakdown of the symbiotic relationship between the corals and their photosynthetic algal symbionts, also known as **coral bleaching.**

- We hypothesize that corals and their symbionts may influence each other through **epigenetic mechanisms** which cause changes in gene expression without affecting the DNA sequence.

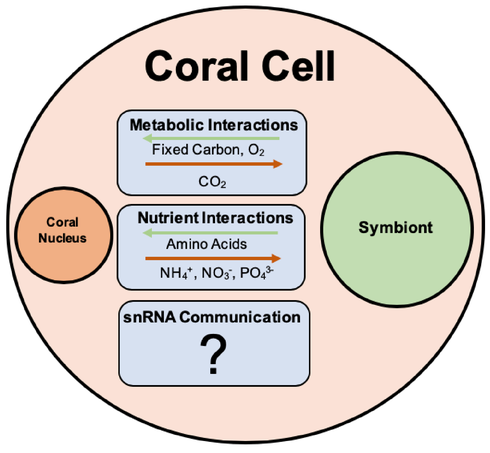


**Figure 1** Diagram of coral host-symbiont interactions showing snRNA exchange as a potential factor

- One potential mechanism is the exchange of small noncoding RNAs (snRNAs), which is involved in regulating symbiosis in other taxa.

## Current Work

- Using transcriptomics, we will look for evidence of **snRNA exchange** by identifying snRNAs and mapping them to the genomes of both partners.

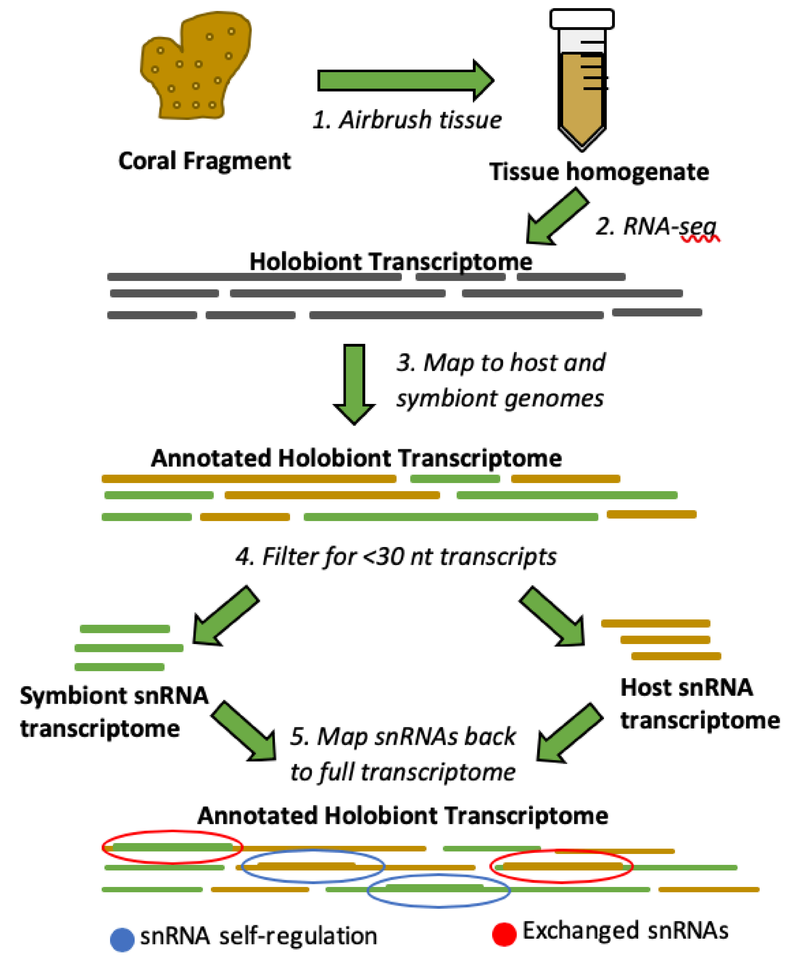


**Figure 2** Diagram showing experiments to evaluate snRNA exchange in corals using bioinformatics

## Future Directions

- In the future, we plan to extend this work with samples from our work in Puerto Rico, French Polynesia, and South Florida.

- By looking for changes in the snRNA transcriptomes of corals and their symbionts, we may be able to better **predict** the onset of events such as disease outbreaks and mass bleaching.

- This will help **conservation** and management professionals to better coordinate and focus their efforts to prevent further reef loss.

**Figure 3** Coral Reef in Mo'orea, French Polynesia

arose161@fiu.edu
@Aaron_D_Rose
Environmental Epigenetics Lab

FIU Center for Aquatic Chemistry and Environment
NSF Center of Research Excellence in Science and Technology
http://crestcache.fiu.edu

*This material is based upon work supported by the National Science Foundation under Grant No. HRD-1547798. This NSF Grant was awarded to Florida International University as part of the Centers of Research Excellence in Science and Technology (CREST) Program. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.*