MURC | MULTIDISCIPLINARY UNDERGRADUATE RESEARCH CONFERENCE

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Presentation ID: 261
Presentation Format: 10-Minute Oral Presentation
Presentation Title: A teeny-tiny story of evolution, cooperation and enslavement

Endosymbiosis refers to a relationship between two organisms, where one organism lives inside the other. A vast diversity of familiar organisms such as soybeans, corals, worms and insects, upon inspection at the cellular level, can be found to be hosting microbial endosymbionts. In fact, molecular evidence indicates that mitochondria, present in every cell of the human body (barring red blood cells) originate from an ancient endosymbiotic event where a bacterium entered inside another cell. Many of these symbiotic partnerships are essential, meaning that the host and symbiont depend on each other for survival.
Euplotes is a genus of microbe which hosts essential bacterial endosymbionts. The longstanding perception of Euplotes was that it had acquired and maintained a single endosymbiont, Polynucleobacter, through evolutionary time, although recent advances in understanding have changed the narrative from a harmonious coexistence to that of microbial enslavement. Rather than having picked up Polynucleobacter once, it has been shown that bacteria are repeatedly taken up from the environment and the old symbionts discarded. Additionally, symbionts other than Polynucleobacter have recently been observed in Euplotes, which add to the complex evolutionary narrative.
Here we use state-of-the-art genome sequencing technology and various computational analyses to characterize and make evolutionary inferences about two newly described Euplotes symbionts. Genomic analyses reveal the evolutionary time-frame of these endosymbiotic events, helping to clarify our understanding of the origin and dynamics of symbiosis in Euplotes.

Themes:

Check (highlight) the most applicable theme according to the abstract.

☐ Innovation and Technology	☐ Health and Wellness	☐ Culture and Society	☐ Sustainability and Conservation

Comments:

A lot of great material here, some rewording has been suggested to increase its impact.
Would recommend amending the title to clarify the presentation theme.

Commented [SN1]: Consider rewording: It's not clear that microbiology is the topic, here.

Commented [SN2]: Consider deletion: Last sentence includes more-readily available images for the reader.

Commented [SN3]: Consider adding after "symbiont": (the hosted)

Commented [SN4]: Consider introducing your research question here. That is: Our research focused on Euplotes. Euplotes is a…

Commented [SN5]: Perhaps use a more familiar word, e.g. strain or type

Commented [SN6]: Consider rewording: Run-on sentence.
Perhaps: The longstanding view of Euplotes was that it acquired, then maintained only a single endosymbiont, Polynucleobacter. However, recent scientific evidence suggests it was not a relationship of harmonious coexistence, but one of microbial enslavement. That is: rather than having picked up Polynucleobacter once, Euplotes has repeatedly taken up many different bacteria from the environment, only to discard the old symbionts when they are of less value or use.

Commented [SN7]: Our project used

Commented [SN8]: Consider deletion

Commented [SN9]: Consider rewording as this is the final punch of your abstract:
Our analyses revealed the evolutionary-time frame of these endosymbiotic events – when they were acquired and why – helping to clarify our understanding of the Euplotes and dynamics with its symbionts.