

Corals and humans have much in common, researchers find

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(PhysOrg.com) -- An international team of Australian and Israeli coral geneticists, including scientists from University of Queensland, has found that corals, among the simplest of Earth's creatures, have some curiously human-like attributes, thanks to shared genes.

Based at the ARC Centre of Excellence for <u>Coral</u> Reef Studies, the team found that both corals and people had circadian rhythms that governed their body functions according to changes in day and night or season.

Professor David Miller of CoECRS and James Cook University said corals used these rhythms to dictate their feeding and breeding and to manage their <u>symbiotic relationship</u> with <u>algae</u>.

"This ability to tell the time appears hard-wired into corals," Professor Miller said.

"What they do is automatically make a whole swag of "emergency response" proteins known as chaperones – molecules that mop up the damage that corals sustain every day when their symbiotic algae carry out photosynthesis.

"It is something they have learned to do automatically – probably because it was a matter of life or death."

The research team found that during hours of darkness corals' symbiotic algae begin to rob the coral of precious oxygen in order to survive until



daylight.

To prevent suffocation during this dark period, the corals respond by making more of the same enzymes that help a sprinter's muscles deal with a lack of oxygen.

Study co-author Professor Ove Hoegh-Guldberg of CoECRS and The University of Queensland said the study was a fresh model of the complexity that takes place in symbiosis.

"Like any marriage, symbiosis is demanding and one partner often has to make big changes to accommodate the other," Professor Ove Hoegh-Guldberg said.

"We think this new insight will help further our understanding of how other symbiotic partnerships work, in clams for example."

Experts in coral biology, Oren Levy of Bar-Ilan University and Paulina Kaniewska of The University of Queensland, conducted the majority of the project's laboratory and field work, and developed the model coral for molecular analysis, Acropora millepora.

The study involved taking samples every four hours under conditions of normal light, dark light, and total darkness to determine the corals' <u>circadian rhythms</u>.

Provided by University of Queensland

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