The effect of environmental history and genotype on thermal stress tolerance in Acropora cervicornis corals

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BACKGROUND
This study examined how environmental history, the conditions in which corals are raised, influences bleaching when exposed to short term heat stress. With warming oceans, corals need to adapt to resist heat induced bleaching. The results of this study can be translated to better inform restoration efforts on how to evaluate coral stress tolerance using low-cost and accessible field equipment.

METHODS
1. Collected Acropora cervicornis (staghorn) corals of three genotypes (AC8, AC10, AC12) from two sites (KL & SS) on Bonaire Caribbean Netherlands.
2. Exposed fragments to short term heat trials.
3. Color Score: Photographed fragments and analyzed pixel averages for Red, Green, and Blue profiles compared to standards.
4. Chlorophyll Concentration: Isolated symbionts from coral tissue and analyzed spectrophotometrically for relative concentration based on surface area.

RESULTS
- Environmental history influences bleaching from thermal stress.
- Genotypes differ in bleaching responses.
- Image analysis and chlorophyll retention had similar patterns as stress response metrics.

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