

Assessing Historical DNA from *Pocillopora* museum specimens



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ATENEIO

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Background

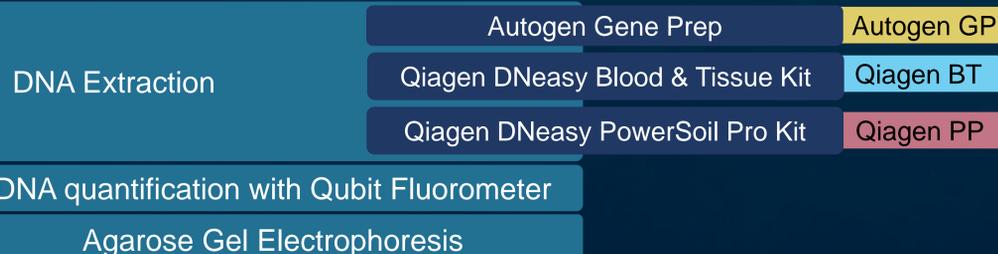
Pocillopora is a diverse genus of stony corals used as model organism in biological studies and restoration efforts. However, they face a classification issue due to extensive morphological variation. It is problematic because accurate taxonomy is the foundation of further studies. Molecular genetic tools help solve this problem. Meanwhile, large museum collections are a valuable yet widely untapped resource for genetic data. However, no literature on coral historical DNA extraction methods from old museum specimens (aged <200) has been published so far.

- Compare the performance of different methods for the extraction of *Pocillopora* historical DNA.
- Assess the pattern of DNA degradation across specimen age.

Objectives

Methods

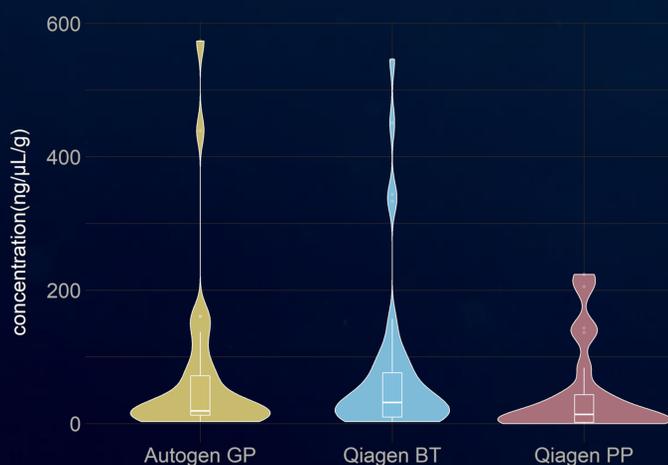
Sampling (0.1-1g coral fragments)



Results

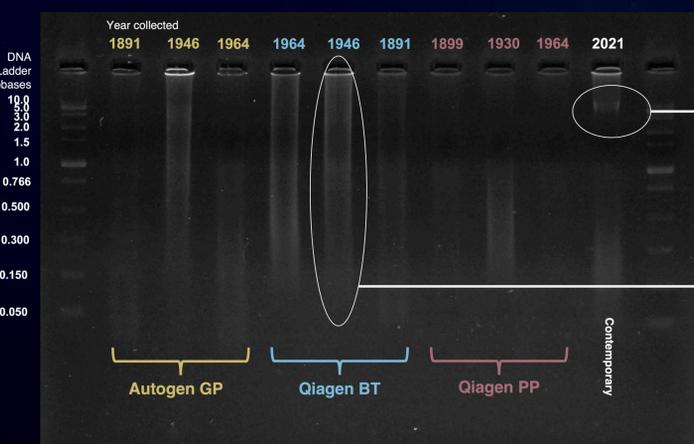
DNA concentration by extraction method

2



While the t-test showed no statistically significant difference between methods, Qiagen PP generally has lower concentration with out-of-range values even in the Qubit High Sensitivity Kit.

Agarose Gel Electrophoresis image



High molecular weight DNA in contemporary sample

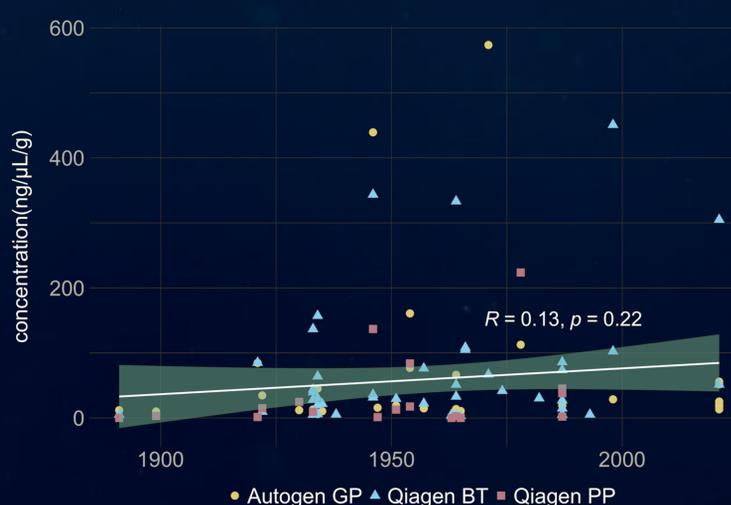
Visible DNA degradation in historical samples with the long smears of DNA bands. This is expected given the age of the samples.

Country locations of specimens



DNA concentration across specimen age

4



No strong correlation with specimen age and DNA concentration. DNA quality depends not on archival storage time but likely on storage factors after collection.

Conclusion

- Qiagen PP is not recommended for historical samples given the generally low DNA yield. Autogen GP and Qiagen BT may be more reliable for historical DNA extraction.
- Next steps for more insightful results:
 - Compare more DNA extraction methods specialized for dry coral/museum specimens.
 - Sequence DNA or barcoding genes through target capture.

Acknowledgments

- Kennington Endowment for funding this project
- NHRE Co-Directors: Dr. Vanessa González, Dr. Ioan Lascu
- NHRE Administrator: Virginia Power
- Nor Faridah Dahlan and Carrie Craig for their assistance in using the Autogen Gene Prep



Want to dive deeper? bit.ly/CoralHDNA

Visit this page for the list of references and more information about the research project.

Pocillopora damicornis, USNM 1131887