琉球大学学術リポジトリ

海洋酸性化と温度ストレスに対する造礁サンゴ類の群体特異的応答

メタデータ	言語: English
	出版者: 琉球大学
	公開日: 2015-12-02
	キーワード (Ja):
	キーワード (En):
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URL	http://hdl.handle.net/20.500.12000/32707

（様式第５－２号）課程博士

2015 年 8 月 11 日

琉球大学大学院
理工学研究科長　殿

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学位（博士）論文審査及び最終試験の終了報告書

学位（博士）の申請に対し，学位論文の審査及び最終試験を終了したので，下記のとおり報告します。

記

申　請　者	専攻名　海洋環境学　　氏名　Kavousi, Javid　学籍番号　118613C		
指導教員名	James Davis REIMER		
成績評価	学位論文　合格　不合格	最終試験　合格　不合格	
論文題目	Colony-specific responses of scleractinian corals to ocean acidification and temperature stress (海洋酸性化と温度ストレスに対する造礁サンゴ類の群体特異的応答)		

審査要旨（２０００字以内）

The candidate investigated the responses of hard corals to global warming and ocean acidification impacts with particular focus on genet-by-genet variations. In his doctoral dissertation, while acknowledging the importance of pooling data as replicates to produce a generalized understanding of population/species-dependent responses, the candidate pursued investigations on how individual coral genets and their endosymbiont *Symbiodinium* spp. respond to acidified conditions, anomalously high temperatures, low temperatures, and their combinations. The main findings of the study include the following: regardless of the type of stress there are significant inter-genet differences within a population.

審査要旨

Although a few coral genets of *Montipora digitata* died in 1-3 months after being exposed to high thermal stress (31°C-31.6°C for 41 days), the remainder showed variable responses. Genets of *Montipora digitata*, exposed to acidified conditions under natural light and temperature conditions for 110 days, show declined calcification rates, and stable calcification rate decalcification. Combination of anomalous high temperature and acidification confirms high inter-genet variations and reveals that tolerance to either OA or T is not synonymous with tolerance to the other parameter. Furthermore, the tolerance to both OA and T does not necessarily lead to tolerance of OA and T combined. From the results of these studies, the candidate argued that pooled data may obscure actual responses of individual genets or present a response that is not observed in any individual of a given population. As his recommendation for future research, the candidate explained the importance of incorporating genet-specific experimental designs to be considered to investigate coral physiological responses to climate change.

The candidate's publication history related to this thesis more than meets graduation requirements, with 2 first author papers, both in respected international journals. The candidate gave a final thesis presentation (=final examination) on August 7, 2015, in the Science Collaborative Building Room 102, from 15:15 to 16:15 in front of all three members of the Committee. This presentation was open to the public, and attended by many people from both inside and outside the university. In his presentation the candidate discussed his major results, and the implications for future coral research. Overall, the candidate talked for 40 minutes, and then appropriately answered numerous questions related to his thesis and research field for 20 minutes. The Committee then met on August 7, 2015, at 16:20, and discussed and judged the candidate's thesis, and his final presentation as well as answers to questions, as demonstrating his hard work, results, and knowledge. Thus, based on the above results, for these reasons, the Committee unanimously recommended "Pass" for the candidate.