# 3. Isolation of actinomycetes from deep seawater of Toyama Bay using large-scale filtration method and screening of novel compounds

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## 1. Introduction

Many useful natural products such as streptomycin and avermectin were isolated from terrestrial actinomycetes. However, the number of novel compounds from terrestrial actinomycetes is decreasing considerably. For this reason, we focused on deep-sea water (DSW) in Toyama Bay as a new alternative source of isolation and drug discovery of actinomycetes. However, it failed to find strains characteristic to the DSW of Toyama Bay. It is possible that the amount of DSW filtered was not enough to obtain the rare actinomycetes in DSW.

In this study, we investigated the taxonomy and secondary metabolites from Nyuzen DSW by using a large-scale filtration method.

## 2. Material and Methods

The cylindrical fiber filter was obtained from the Nyuzen DSW facility. Actiomycetes were isolated from the filtrate suspended solids in the form of sludge. The solid was spread onto ISP 4 agar supplemented with nalidixic acid and cycloheximide. After incubation at 22 °C for 7 to 60 days, a single colony was repeatedly transferred onto the same agar medium to obtain the pure isolates. After isolation, genus level identification and metabolite analysis were performed.

## 3. Results and discussion

A total of 138 strains were isolated from the filter. Currently, 62 strains have been identified to belong to the *Streptomyces* (43 strains), *Micromonospora* (18 strains), and *Actinomadura* (1 strain). Genus *Actinomadura* is one of rare actinomycetes in the marine environment. In the previous study it was not isolated from DSW. Most of the isolates were *Streptomyces* and the secondary metabolites were clearly different from the previous results. These results indicated that the isolates were quite different from previous strains and it is possible to obtain rare actinomycetes using large-scale filtration.