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Conference Abstract

RPA-based point-of-need detection assay for the invasive Mediterranean fanworm *Sabella spallanzanii*

Martin Zirngibl[‡], Ulla von Ammon[‡], Xavier Pochon[‡,§], Anastasija Zaiko[‡,§]

‡ Cawthron Institute, Nelson, New Zealand
§ The University of Auckland, Auckland, New Zealand

Corresponding author: Martin Zirngibl (m.zirngibl1@gmx.net)

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Abstract

The Mediterranean fanworm *Sabella spallanzanii* was first sighted in New Zealand in 2009 (most likely introduced via hull fouling) and has spread across multiple coastal locations. The species presents significant risks to ecological, economic, and societal values, and therefore is subject to targeted surveillance in 11 major ports and marinas, that were identified as high-risk marine biosecurity sites. Great effort and financial resources are put into bi-annual diving surveys that include removal of individuals to contain population growth and spread. In that context, sensitive molecular detection techniques gain great interest and are being increasingly tested for the fanworm detection in New Zealand and Australia. However, conventional molecular detection via PCR assays from environmental DNA (eDNA) samples requires specific laboratory resources and scientific expertise, which restricts the applicability of this approach by biosecurity practitioners or citizen scientists. In order to provide end-users with a fast, easy, and highly specific way to detect *S. spallanzanii* at the site of interest, a recombinase polymerase amplification assay (RPA) was designed for read-out with lateral flow detection. RPA generates amplification within 20 minutes at 39°C, which makes it possible to run assays hand-held. Because of this, RPA presents an excellent tool for the point-of-need application in targeted biosecurity

surveillance. Here we present the results of the successful *in silico* and *in vitro* validation of the newly designed RPA assay for *S. spallanzanii*.

Keywords

RPA, eDNA, point of need, Later flow detection, *Sabella spallanzanii*

Presenting author

Martin Zirngibl

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