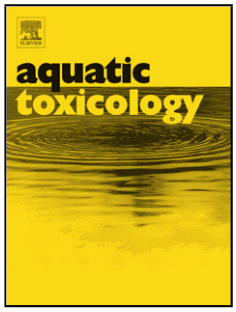

Title: A novel transcription factor Rwdd1 and its SUMOylation inhibit the expression of *sqr*, a key gene of mitochondrial sulfide metabolism in *Urechis unicinctus*

Authors: Xueyu Li, Xiaolong Liu, Zhenkui Qin, Maokai Wei, Xitan Hou, Tingting Zhang, Zhifeng Zhang

PII: S0166-445X(18)30587-3
DOI: https://doi.org/10.1016/j.aquatox.2018.09.012
Reference: AQTOX 5028

To appear in: *Aquatic Toxicology*

Received date: 30-6-2018
Revised date: 17-9-2018
Accepted date: 18-9-2018

Please cite this article as: Li X, Liu X, Qin Z, Wei M, Hou X, Zhang T, Zhang Z, A novel transcription factor Rwdd1 and its SUMOylation inhibit the expression of *sqr*, a key gene of mitochondrial sulfide metabolism in *Urechis unicinctus*, *Aquatic Toxicology* (2018), https://doi.org/10.1016/j.aquatox.2018.09.012

A novel transcription factor Rwdd1 and its SUMOylation inhibit the expression of *sqr*, a key gene of mitochondrial sulfide metabolism in *Urechis unicinctus*

Xueyu Li [a, #], Xiaolong Liu [a, b, #], Zhenkui Qin [a], Maokai Wei [a], Xitan Hou [a], Tingting Zhang [a], Zhifeng Zhang [a, *]

[a] *Ministry of Education Key Laboratory of Marine Genetics and Breeding, College of Marine Life Sciences, Ocean University of China, Qingdao 266003, China*

[b] *CAS Key Laboratory of Separation Science for Analytical Chemistry, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian 116023, China*

[#] First authorship is shared by Xueyu Li and Xiaolong Liu who made equal contributions to the manuscript.

***** Corresponding author. Tel. /Fax: +86-532-82031647; E-mail addresses: zzfp107@ouc.edu.cn.

Highlights

- Rwdd1 can bind directly to the promoter (+18/+36) of *U. unicinctus sqr*.
- TACG was the key binding sequence of Rwdd1.
- Rwdd1 is a transcriptional repressor of the *sqr*.
- Rwdd1 can be SUMOylated at the lysine of 90th.
- SUMOylation of Rwdd1 enhances its transcriptional inhibitory effect on *sqr*.

Abstract

Sulfide-quinone oxidoreductase (SQR) is a key enzyme of sulfide metabolism in metazoans, and responsible for oxidizing sulfide into thiosulfate and transmitting the