



Universiteit  
Leiden  
The Netherlands

## Volatile compounds from Actinobacteria as mediators of microbial interactions

Avalos Garcia, M.

### Citation

Avalos Garcia, M. (2019, September 24). *Volatile compounds from Actinobacteria as mediators of microbial interactions*. Retrieved from <https://hdl.handle.net/1887/78556>

Version: Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/78556>

**Note:** To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/78556> holds various files of this Leiden University dissertation.

**Author:** Avalos Garcia, M.

**Title:** Volatile compounds from Actinobacteria as mediators of microbial interactions

**Issue Date:** 2019-09-24

# **Volatile compounds from Actinobacteria as mediators of microbial interactions**

Proefschrift

ter verkrijging van  
de graad van Doctor aan de Universiteit Leiden,  
op gezag van Rector Magnificus prof.mr. C.J.J.M. Stolker,  
volgens besluit van het College voor Promoties  
te verdedigen op  
Dinsdag 24 September 2019  
klokke 15:00 uur

door

Mariana Avalos Garcia  
geboren te Cuautla Morelos, Mexico  
26 mei, 1986

Promotor: Prof. dr. G.P. van Wezel  
Copromotor: Dr. Paolina Garbeva

Overige leden: Prof. dr. A.H. Meijer  
Prof. dr. J.H. de Winde  
Prof. dr. J. S. Dickschat  
Prof. dr. P. Hoskisson



**CONACYT**

*Consejo Nacional de Ciencia y Tecnología*

This work was supported by grant No. 313599 from CONACyT to Mariana Avalos Garcia.

**Tell me and I will listen,  
Teach me and I will remember,  
Involve me, and I will learn.**

From a collection of Chinese writings attributed to Xungzi.



# Contents

<b>Chapter 1</b>	General introduction and thesis outline	7
<b>Chapter 2</b>	Healthy scents: microbial volatiles as new frontier in antibiotic research?	11
<b>Chapter 3</b>	<i>Streptomyces</i> low-cost volatile ammonia as antibiotic and modulator of antibiotic sensitivity	25
<b>Chapter 4</b>	<i>Escherichia coli</i> mediates resistance to volatiles from <i>Streptomyces</i> in an OmpR-dependent manner	55
<b>Chapter 5</b>	Exploring the function of volatile terpene compounds in <i>Streptomyces griseus</i> DSM40236	71
<b>Chapter 6</b>	<i>Streptomyces</i> volatiles as an air defense system against protist predators	101
<b>Chapter 7</b>	General discussion	121
<b>Summary / Nederlandse Samenvatting/Resumen</b>		131
<b>References</b>		143
<b>Curriculum Vitae</b>		166
<b>Publications</b>		167

