

Methylglyoxal sensitizes *Bacillus oleronius* to topical antibiotics

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HIGH POINT
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Rosacea

- Erythematotelangiectatic
- Ocular
- Phymatous
- Papulopustular



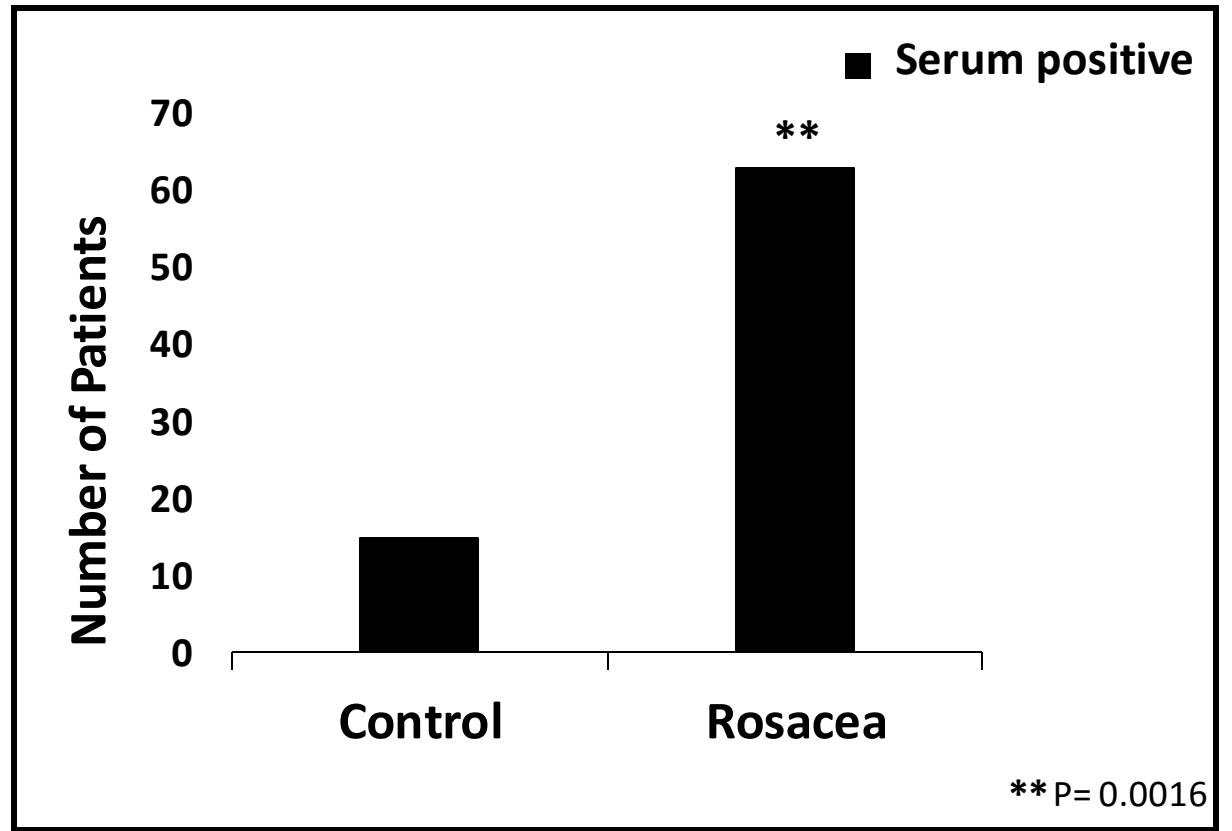
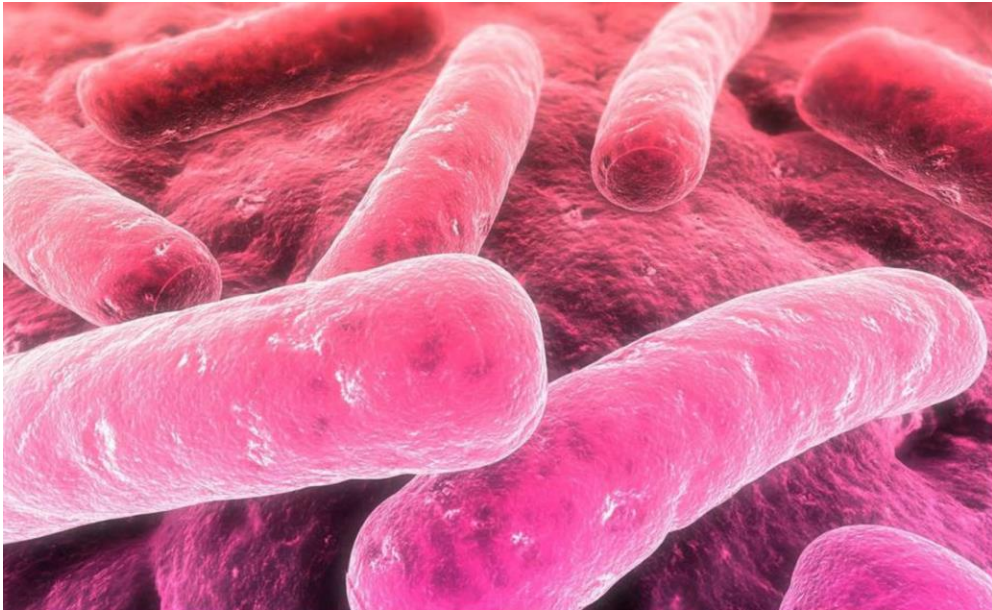
Demodex spp.

- Mites that live in human skin follicles



Bacillus oleronius

- Gram positive bacteria in the digestive system of *Demodex*

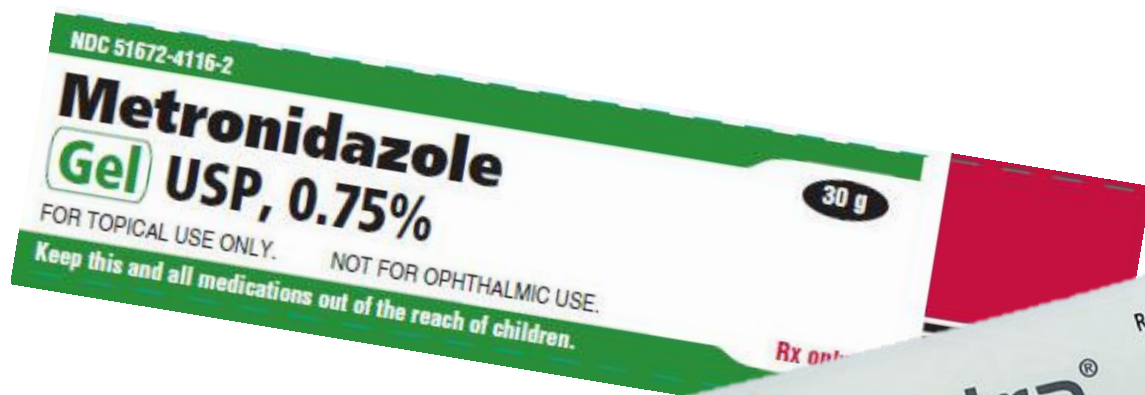


27%

83%



Rosacea Treatment



Manuka Honey

“ *I love Manuka Doctor skincare, I use it every day to enhance my natural beauty* ”

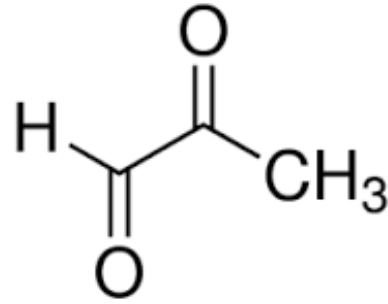
**Kourtney
Kardashian**
GLOBAL BRAND AMBASSADOR

8 ADHESIVE PADS
1.8 in x 3 in (4.5 cm x 7.5 cm)





+



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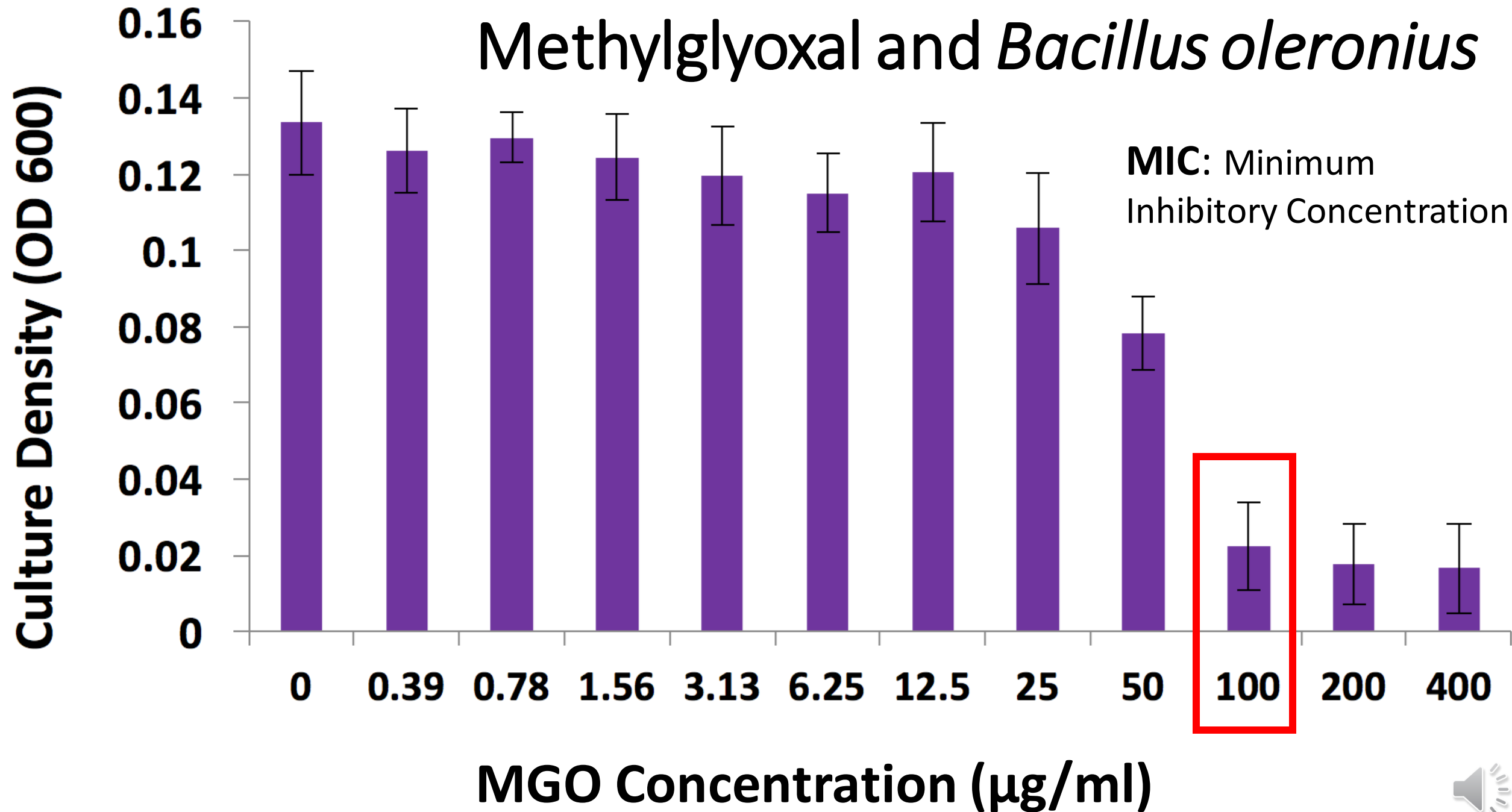
Bacillus oleronius

Neomycin
Polymixin B
Bacitracin
Clindamycin



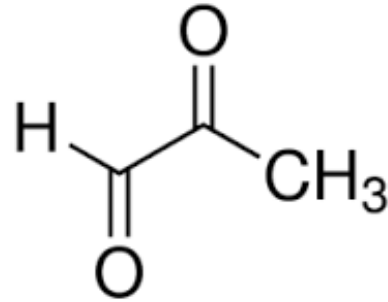
Methylglyoxal and *Bacillus oleronius*

MIC: Minimum Inhibitory Concentration





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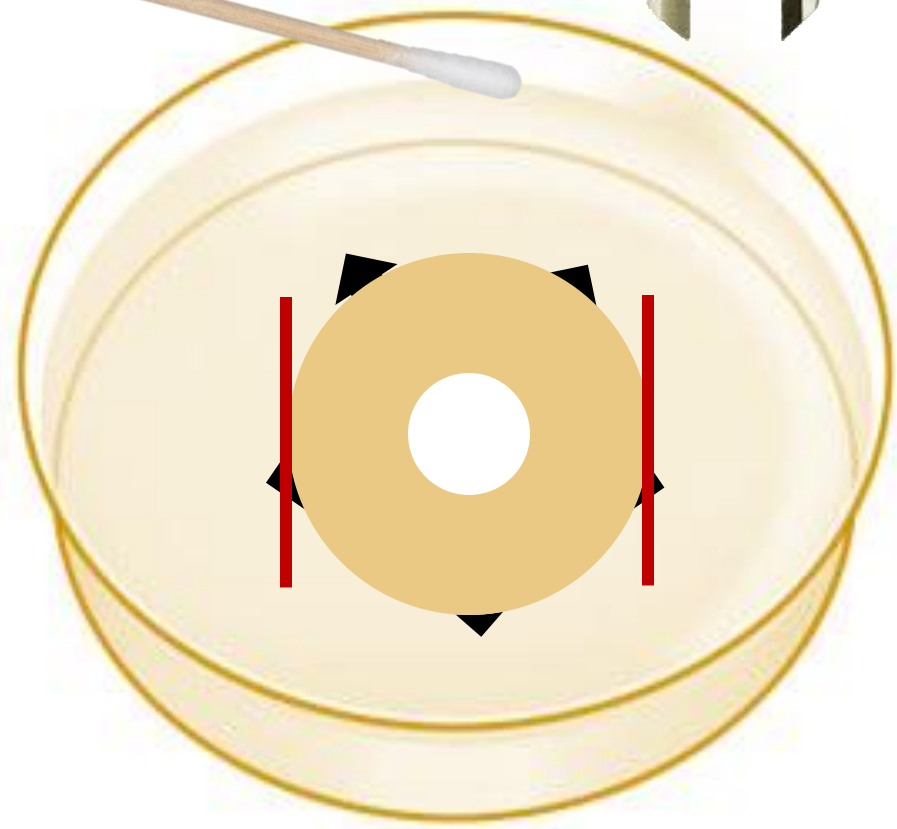
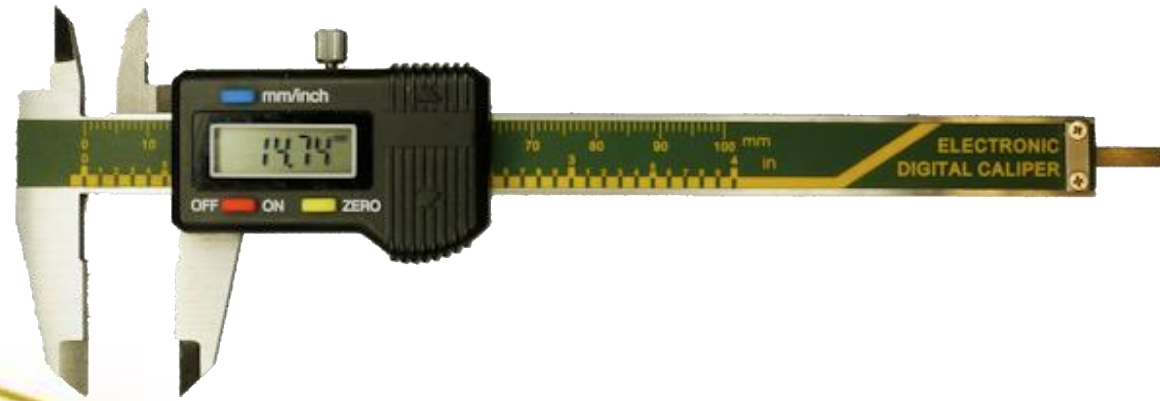
Bacillus oleronius

Neomycin
Polymixin B
Bacitracin
Clindamycin

Methylglyoxal
(MGO)



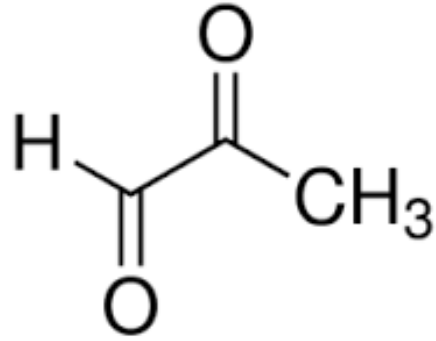
Disc Diffusion Method



Zone of Inhibition



Initial Screen for Interactions



MGO



No MGO

0 $\mu\text{g/mL}$ MGO



MGO

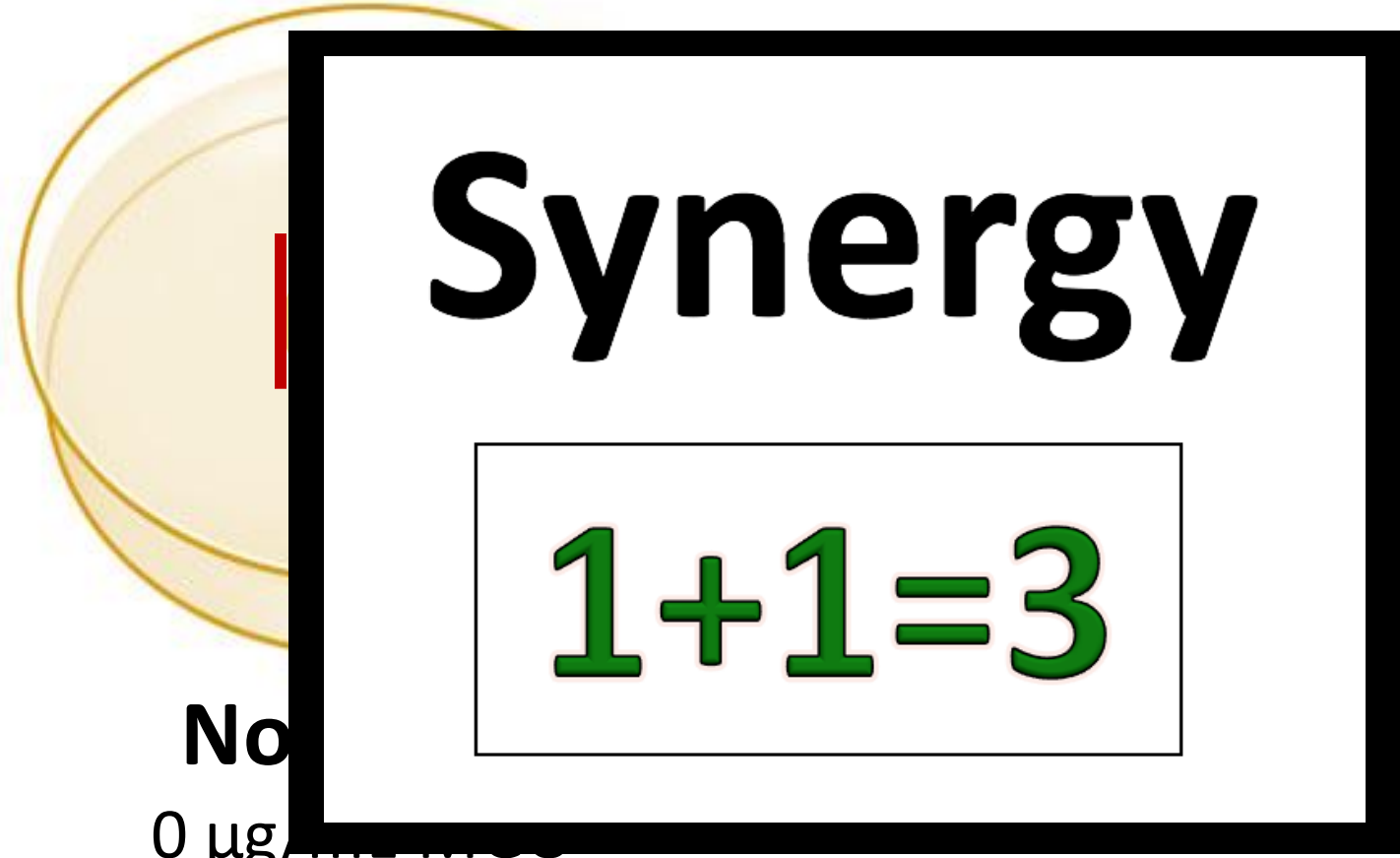
25 $\mu\text{g/mL}$ MGO



Bacillus oleronius



Zone of Inhibition

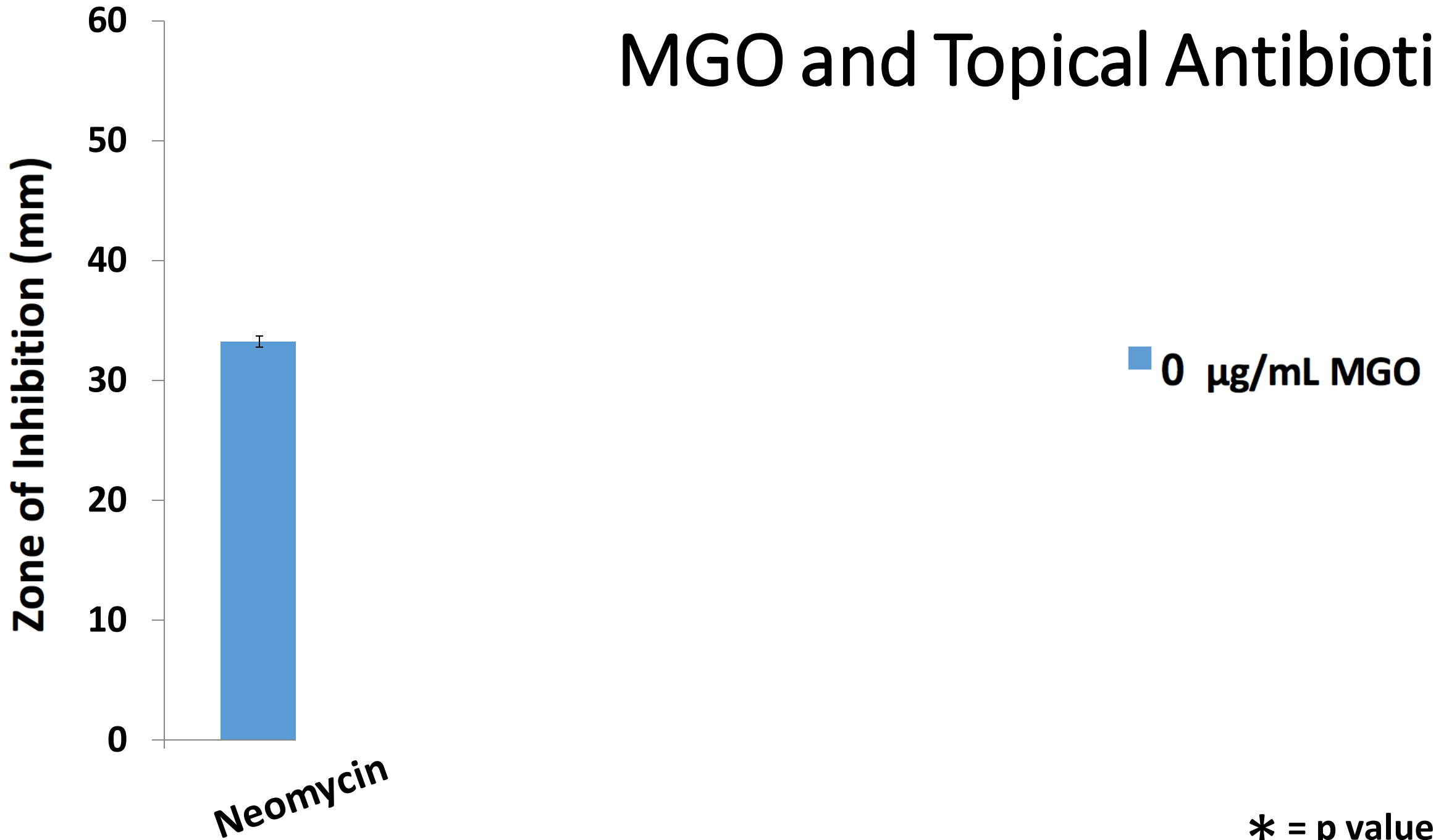


No
0 µg/ml

10mm

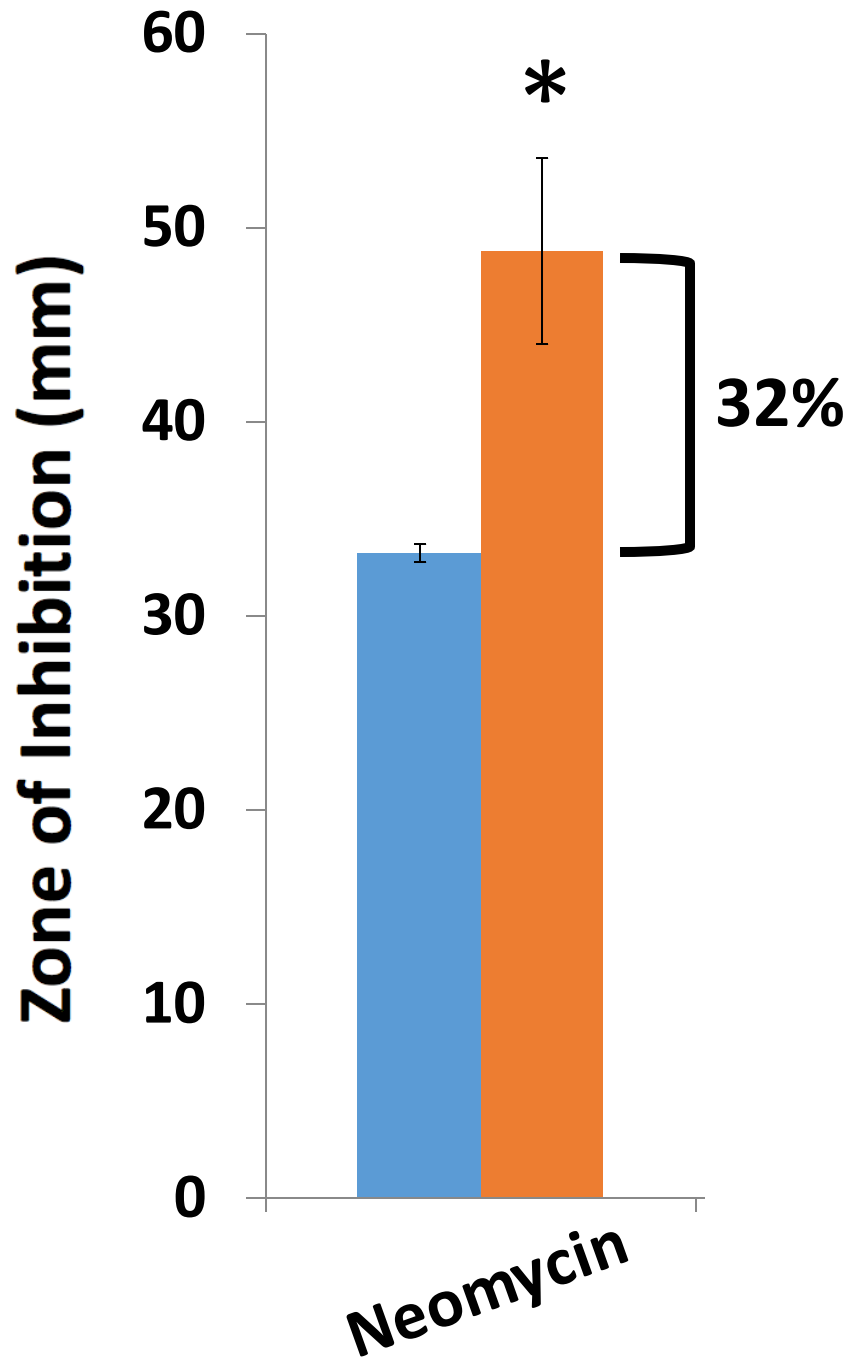


MGO and Topical Antibiotics



* = p value < 0.05

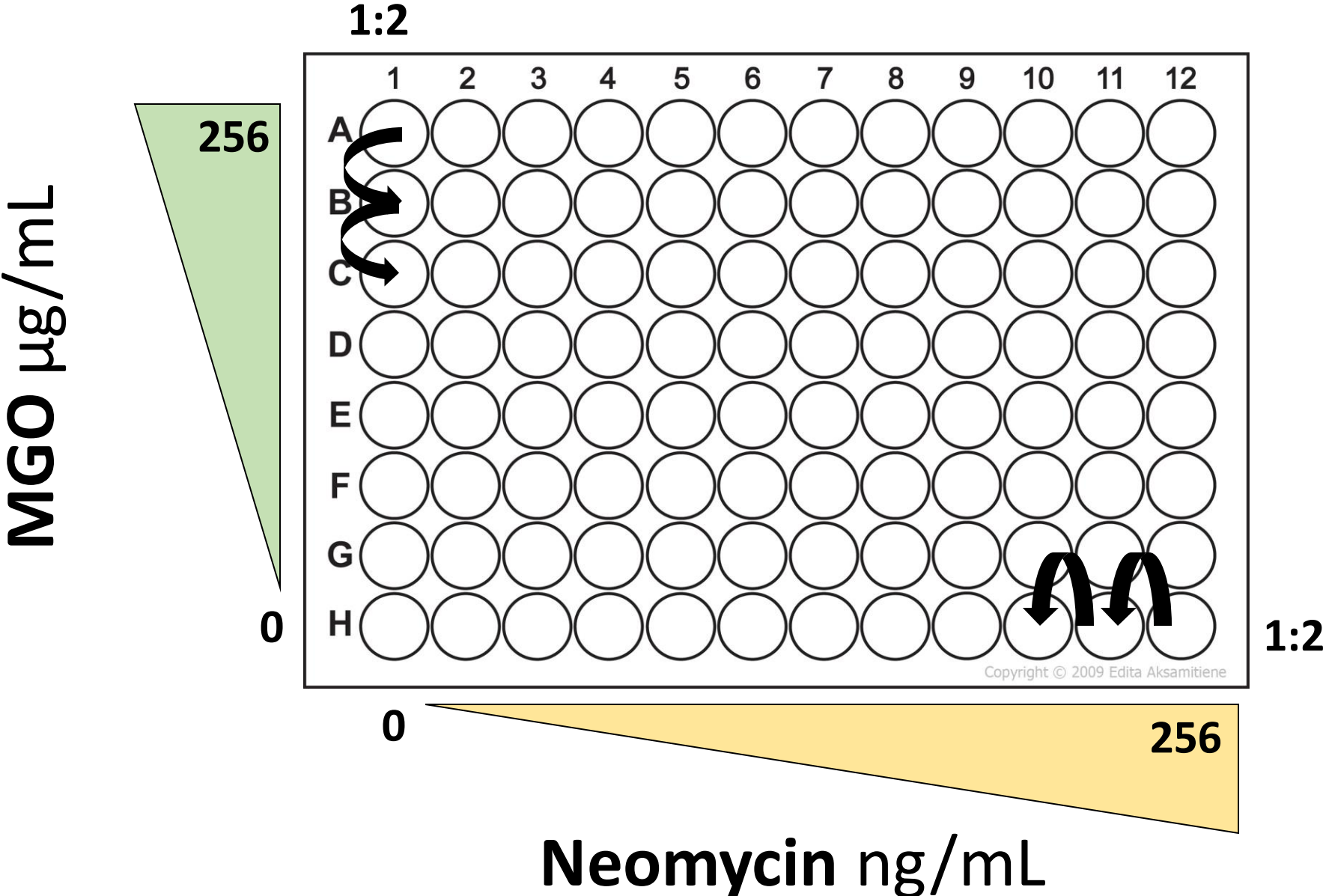
MGO and Topical Antibiotics



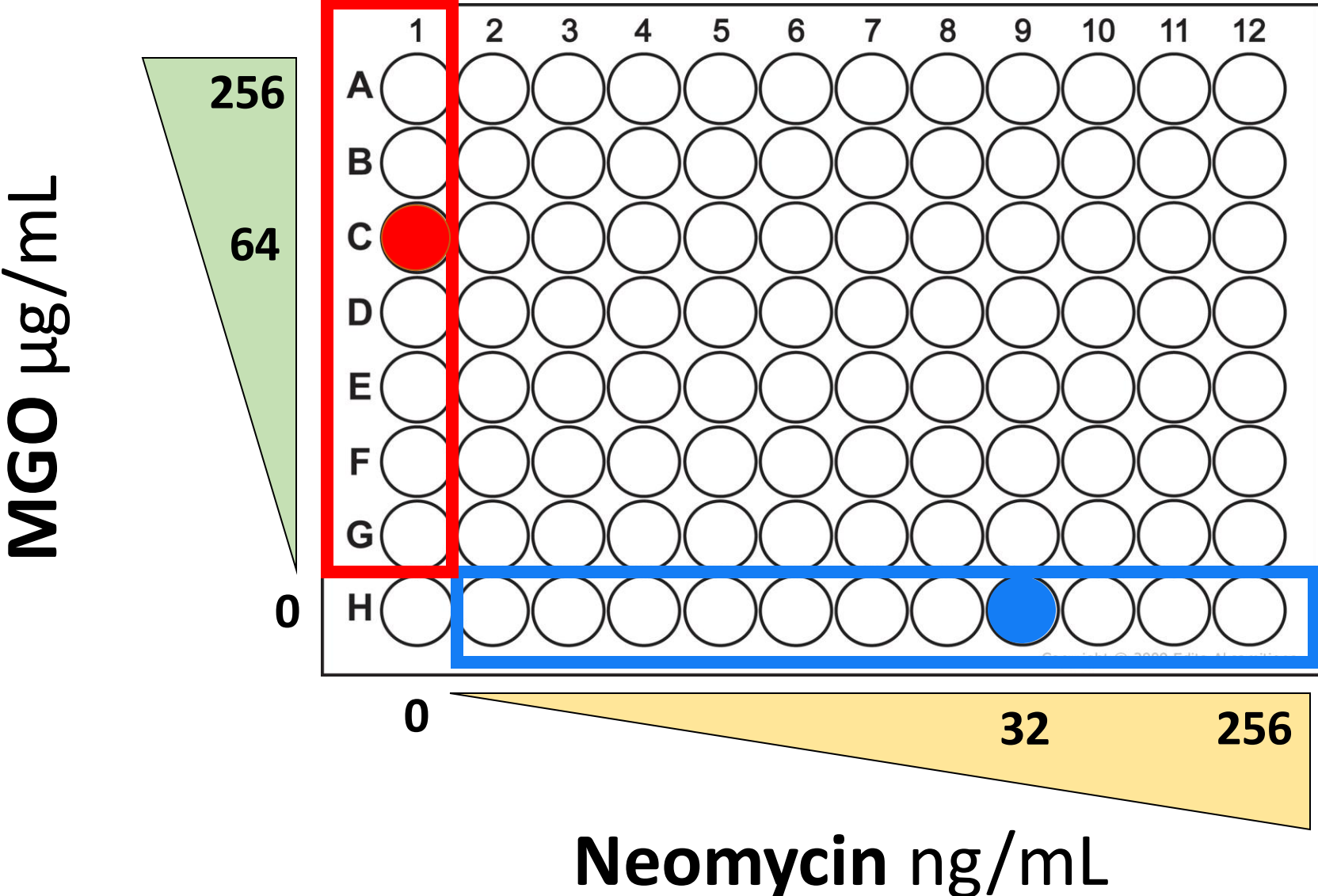
- 0 µg/mL MGO
- 25 µg/mL MGO

* = p value < 0.05

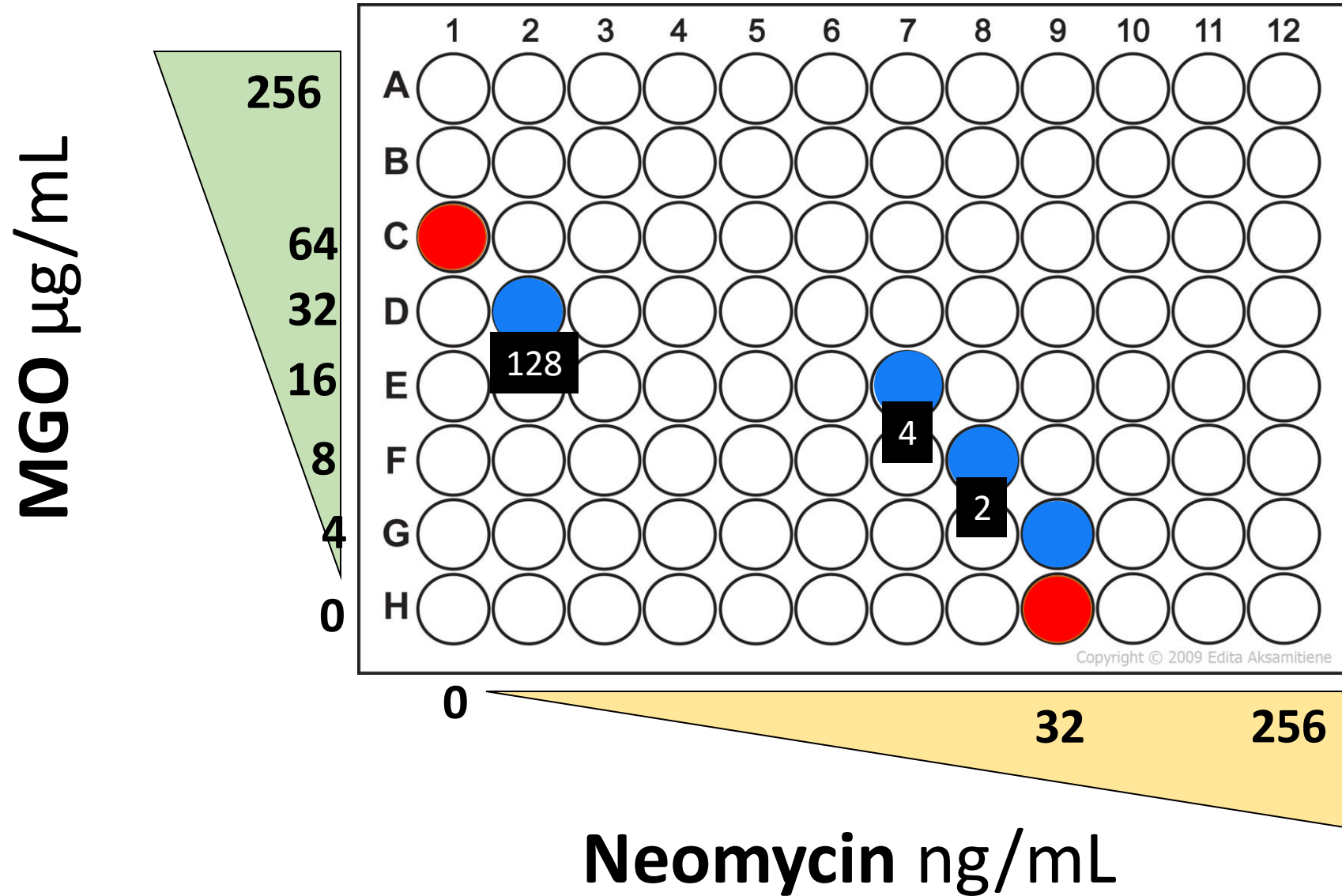
MGO decreases the MIC of Neomycin



MGO decreases the MIC of Neomycin



MGO decreases the MIC of Neomycin



Fractional Inhibitory Concentration Index

FICI Score < 0.5 Indicates Synergy

Bacillus oleronius FICI Score:

Neomycin 0.63

Bacitracin 0.35

Polymixin B 0.75

Clindamycin 0.06



Broader Impact



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- HPU Department of Biology
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Patrick Vigueira



Lovely Lexi Lambros



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