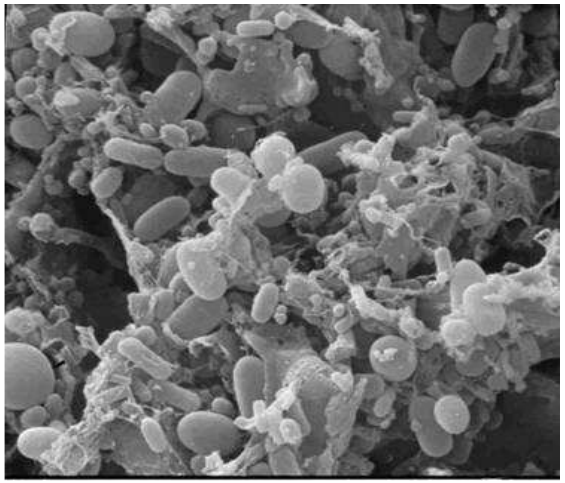
Functional diversity of marine microbial symbionts:
Exploitation of the under-utilized groups of marine microorganisms



OCKY KARNA RADJASA

DIPONEGORO UNIVERSITY

UNDIP | UNIVERSITAS DIPONEGORO
becomes an excellent research university

Diponegoro University located in Semarang , Central Java, Indonesia
Vision: To become an excellent Research University in 2020
Main Scientific Interest: Coastal region ecodevelopment
1700 staff, 43.000 student
s

Central Laboratory of Research and Services-Diponegoro University (CORES-DU)

An integrated laboratory, a home for 20 different laboratories covering medical, biological, chemical and physical fields with the state of the art equipment

"Tropical Marine Biotechnology Laboratory"

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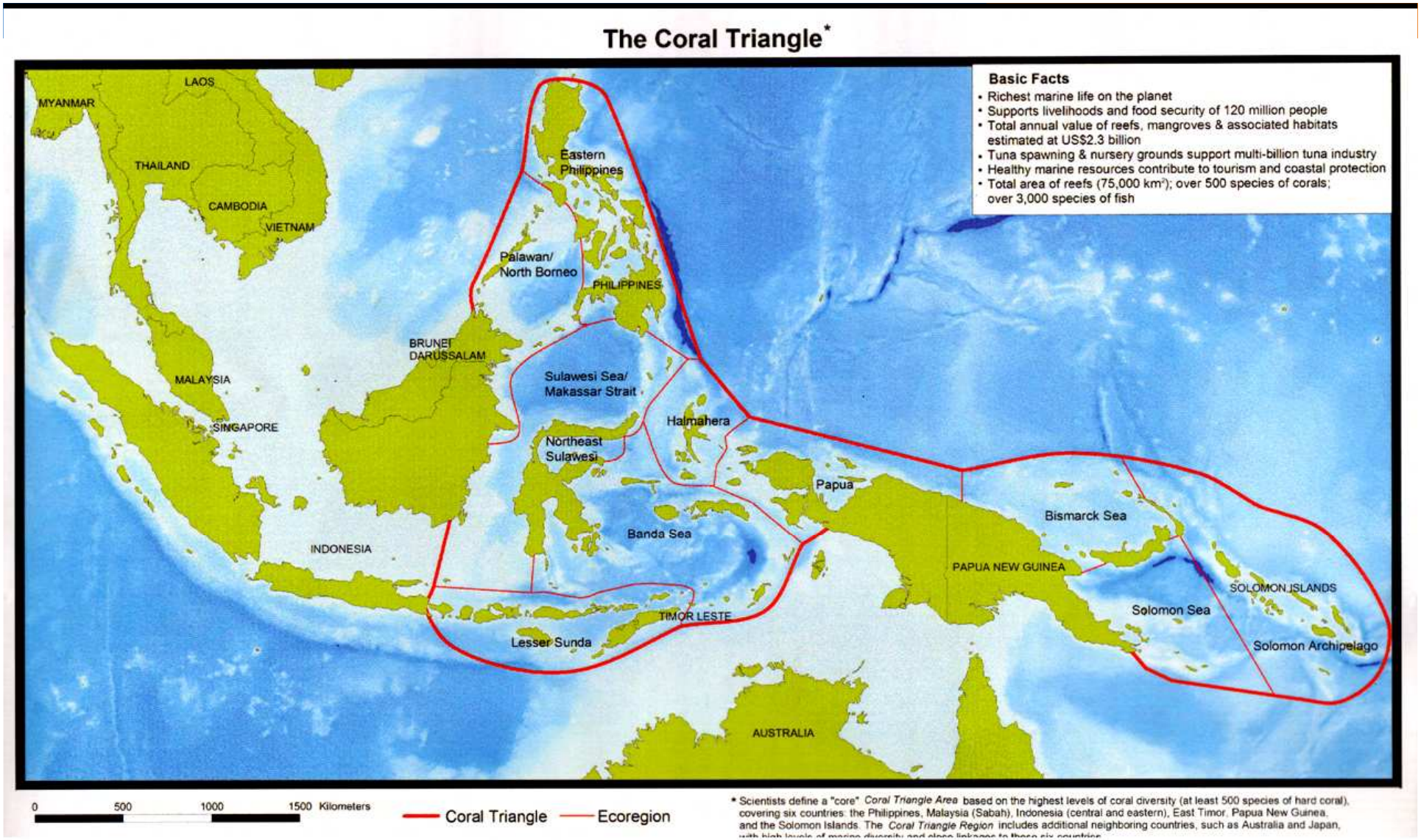
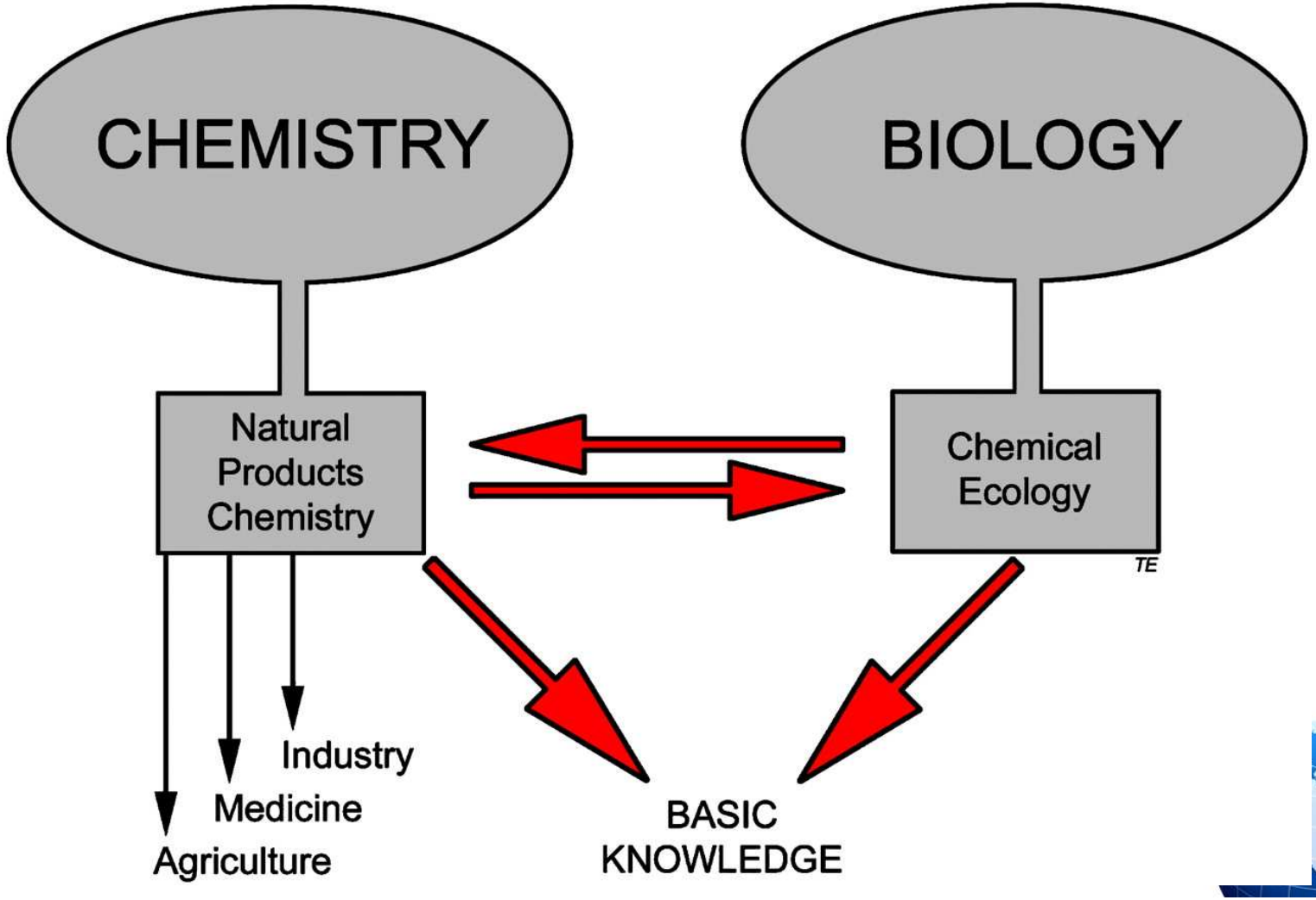


The Coral Triangle, cover around 75,000 sq.km. areas of six countries: Indonesia, the Philippines, Malaysia, PNG, Solomon Islands, and Timor Leste, as home more than 500 coral species, 3000 fish, support about 120 million coastal communities. The Coral Triangle Initiative was declared during the APEC meeting in Sydney, September 9,

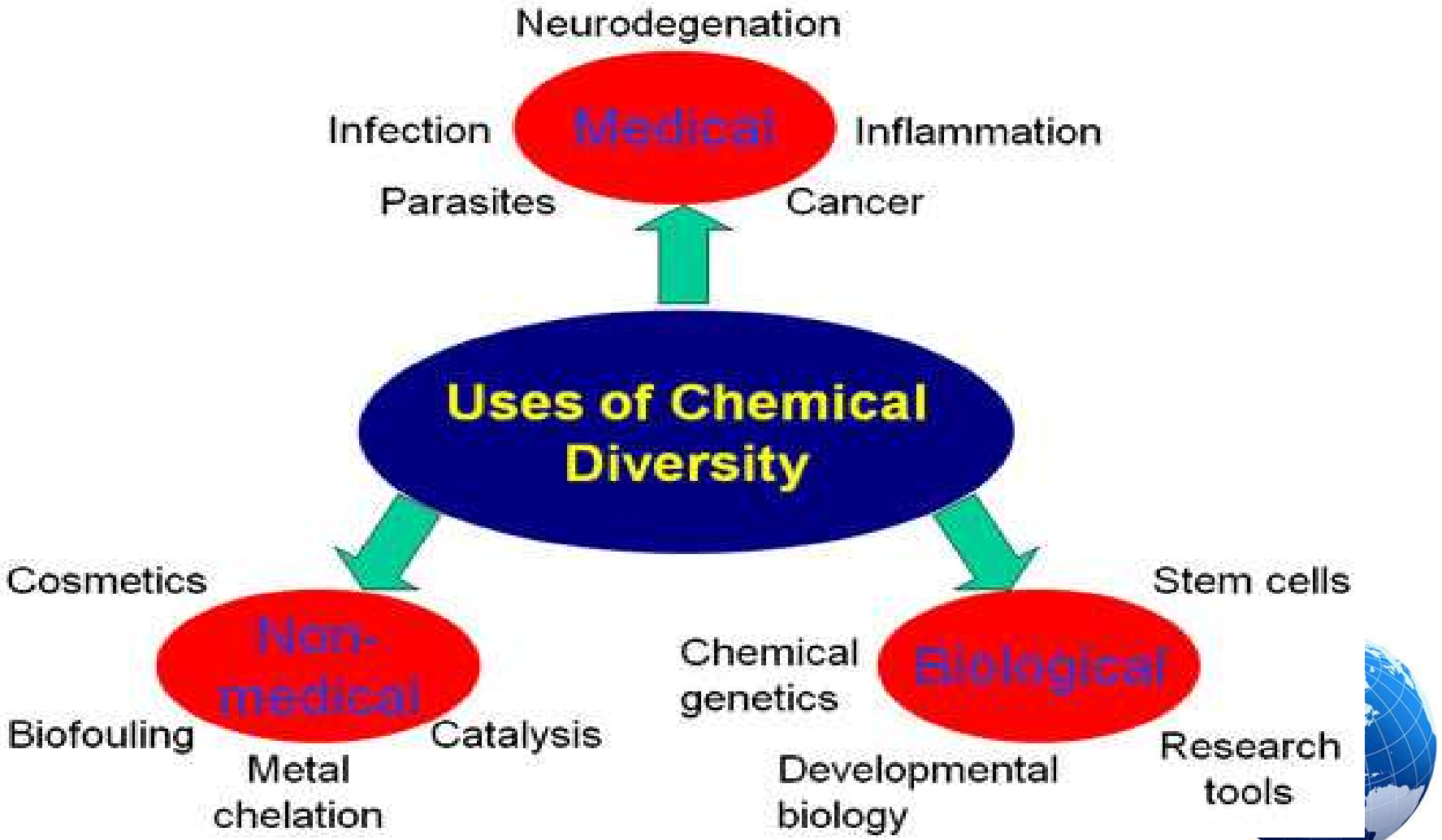
Biological Diversity = Chemical Diversity

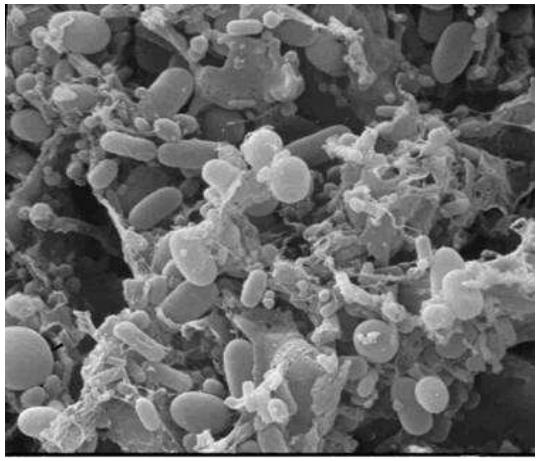
Chemical ecology and natural products chemistry are linked in a productive partnership aimed at clarifying the chemical basis of ecological and behavioral interactions in nature.

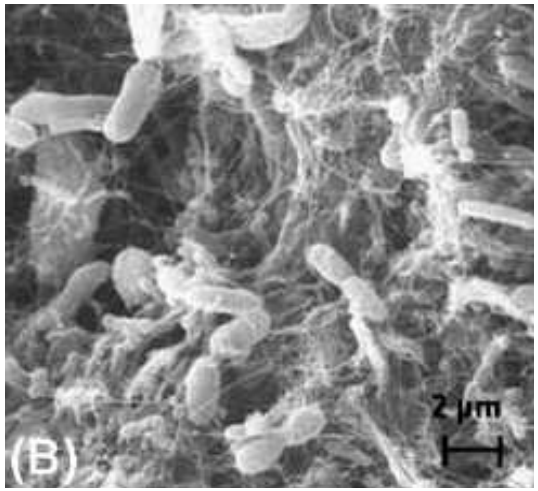


Eisner T PNAS 2003;100:14517-14518

Uses of Chemical Diversity







High-microbial-abudance (HMA) invertebrates

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Threat from pathogenic "Multi-drugs Resistant"

No	MDR strain	Antibiotika Komersial								
		AM	OX	CRO	SXT	C	P	AMX	AM	CTX
1	*E.coli*	R	R	R	R	R	R	R	R	R
2	*Staphylococcus sp.*	R	R	R	R	R	R	R	R	R
3	*Enterobacter sp.*	R	R	R	R	R	R	R	R	R
4	*Proteus sp.*	R	R	R	R	R	R	R	R	R

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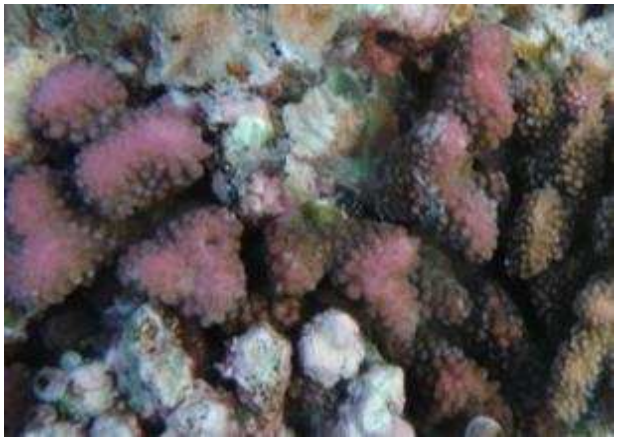
Samples of hard corals

Hard Coral 1

Hard Coral 2



Hard Coral 3

Hard coral 4

Hard Coral 5

Hard Coral 6

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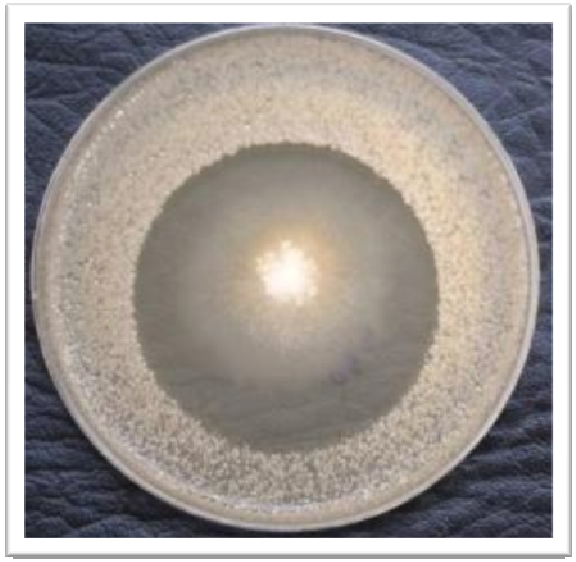
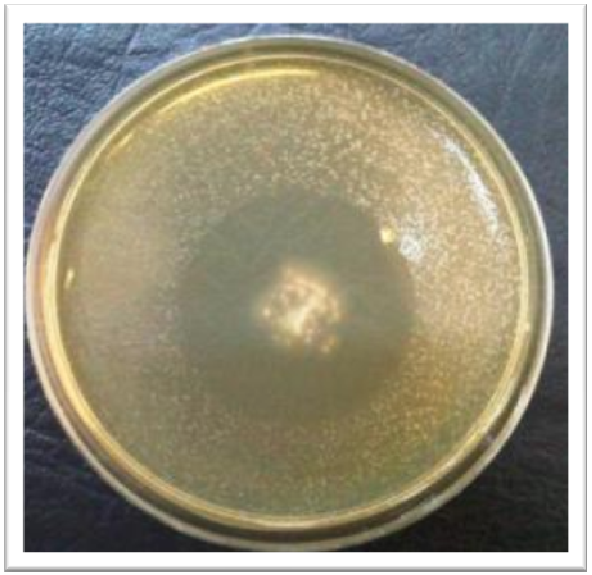
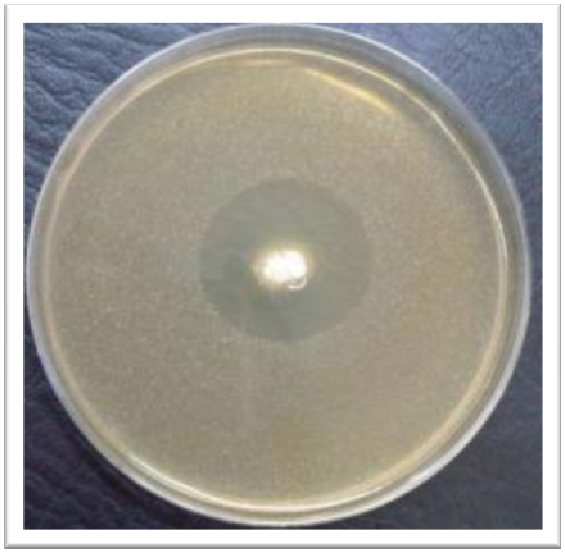
Activity of anti MDR of fungal symbiont







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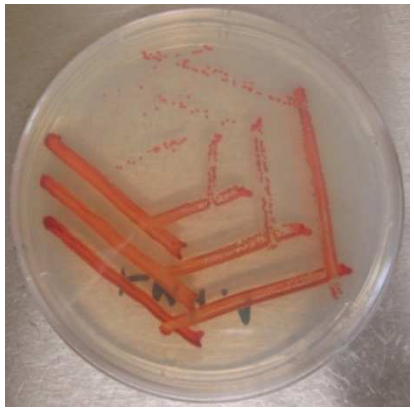
Novel pigments from microbial symbionts

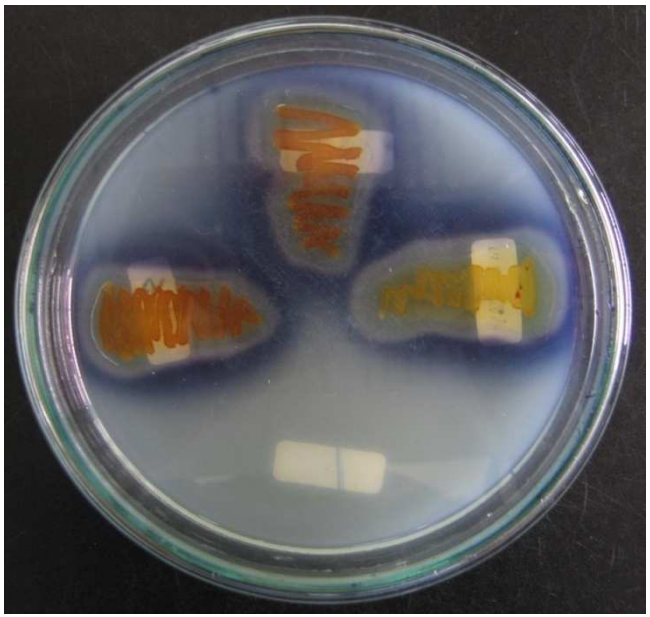
- Cleaner
- Regulator
- Regeneration

Carotenoid:

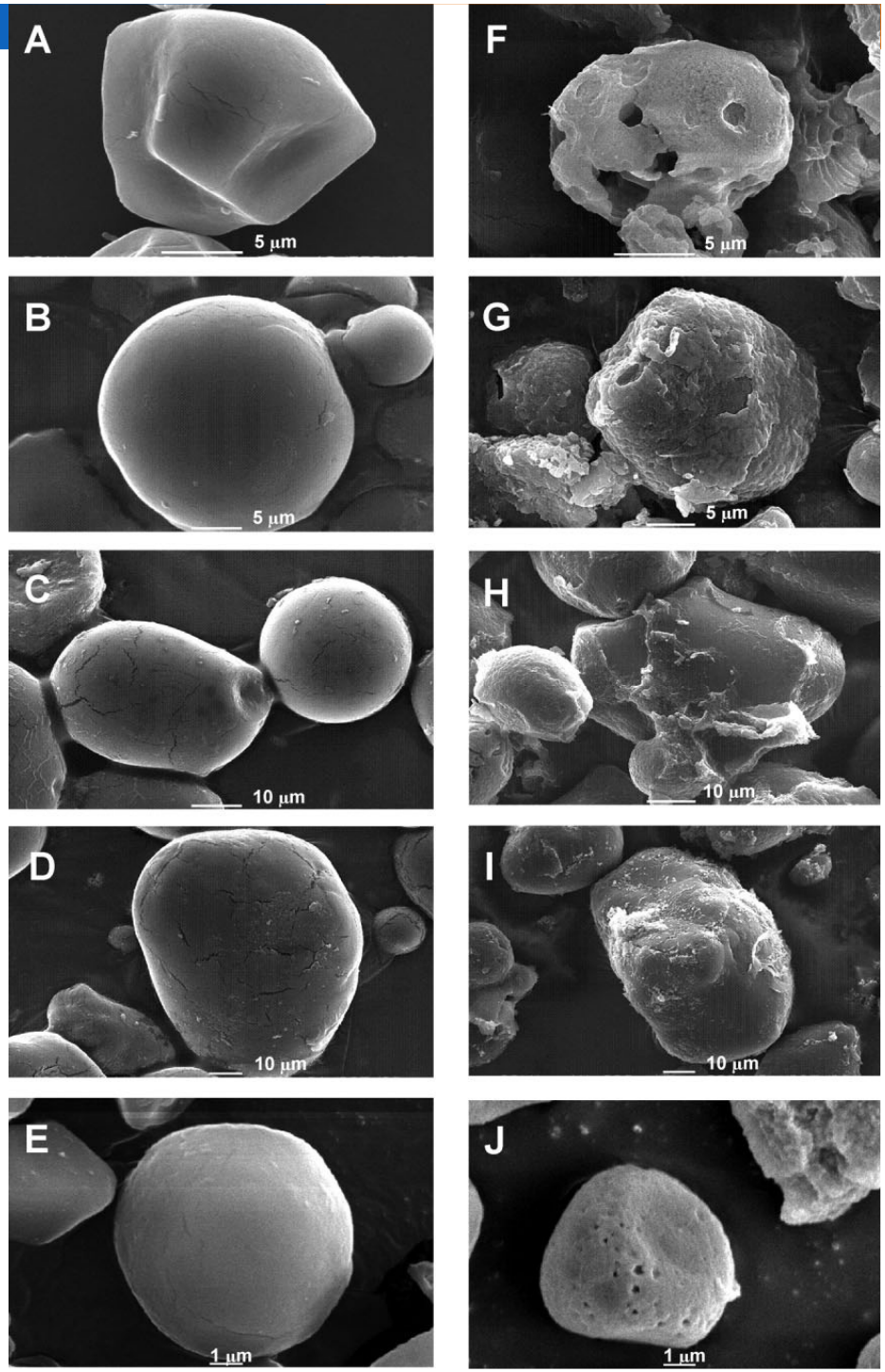
- Provitamin A
- Antioxidant
- Anticancer
- Immunity



Enzymes from symbionts with application in Industry



SEM of untreated (A–E) and
treated (F–J) raw starch granules by
B. aquimaris MKSC 6.2 alpha-amylase.
Starch granules of corn (A and F), cassava (B and G),
sago (C and H), potato(D and I), and rice (E and J).




Thank you for your attention