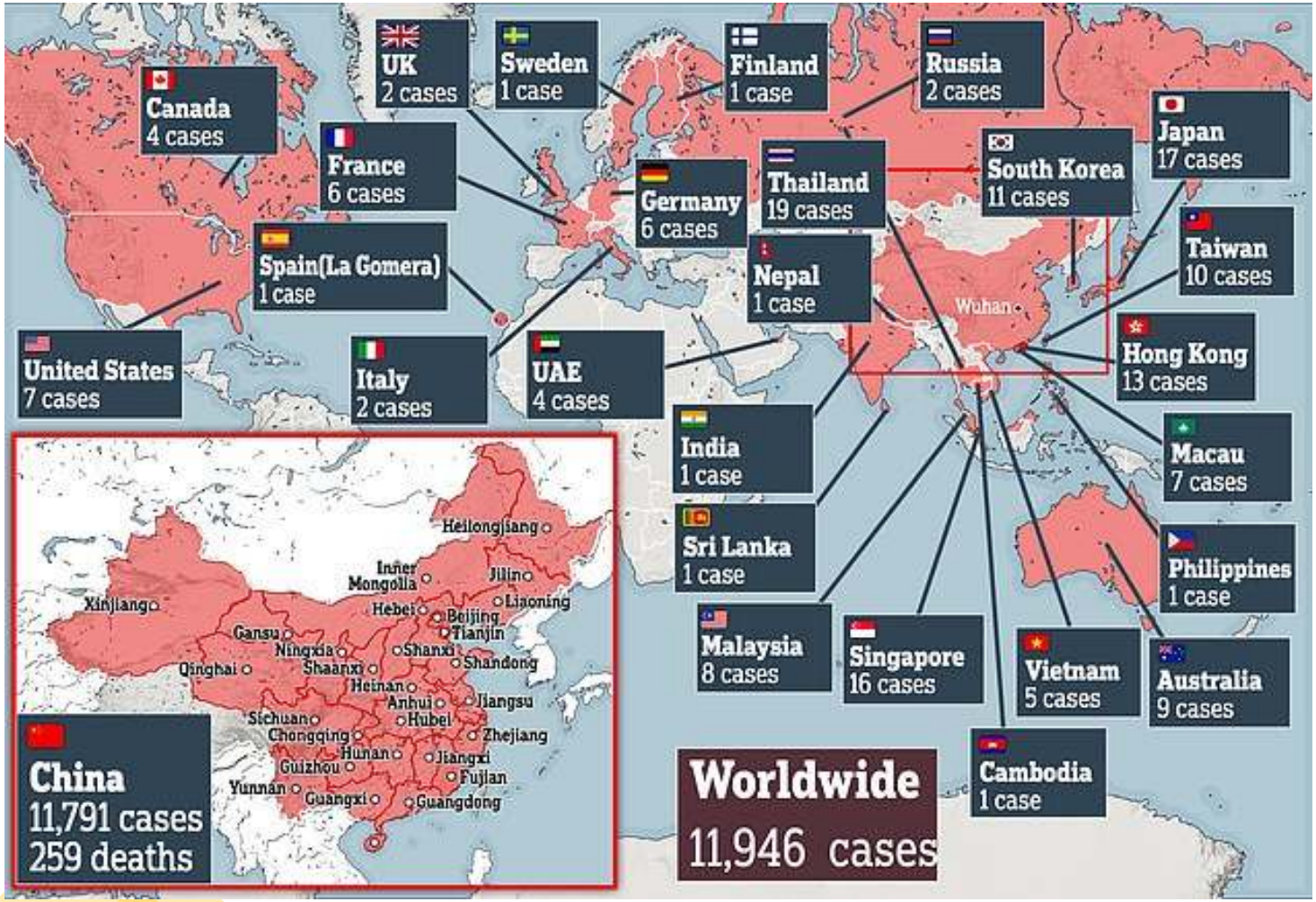
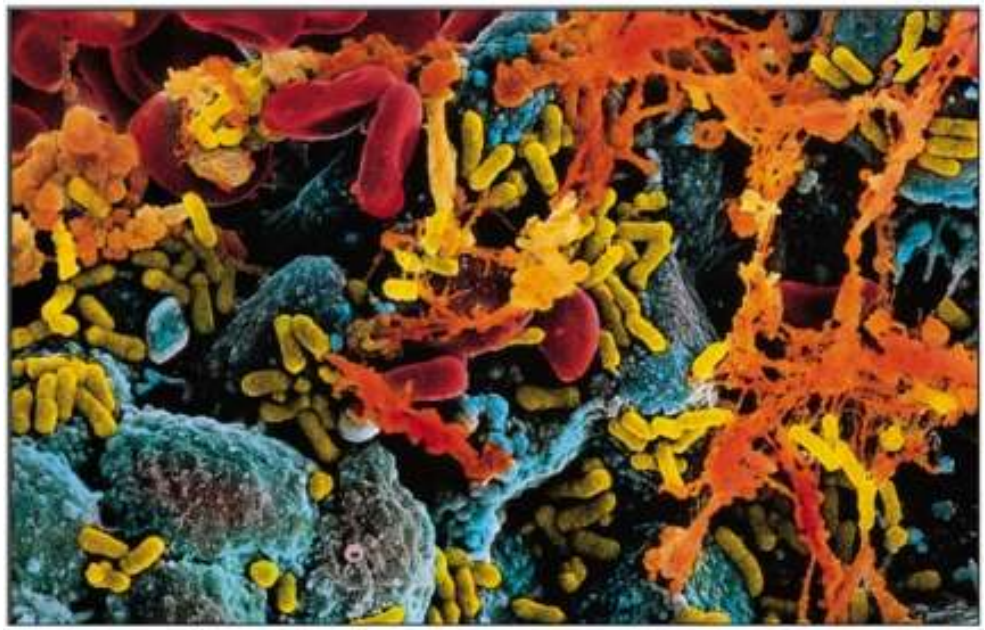
Batteri promotori della crescita come biostimolanti

Prof. Maurizio Ruzzi
ruzzi@unitus.it

Bari, 11 febbraio 2020


Canada
4 cases
UK
2 cases
Sweden
1 case
Finland
1 case
Russia
2 cases
Japan
17 cases
France
6 cases
Germany
6 cases
Thailand
19 cases
South Korea
11 cases
Taiwan
10 cases
Spain(La Gomera)
1 case
Nepal
1 case
Wuhan
United States
7 cases
Italy
2 cases
UAE
4 cases
Hong Kong
13 cases
India
1 case
Macau
7 cases
Sri Lanka
1 case
Philippines
1 case
Malaysia
8 cases
Singapore
16 cases
Vietnam
5 cases
Australia
9 cases
Cambodia
1 case
Worldwide
11,946 cases
Heilongjiang
Inner Mongolia
Jilin
Liaoning
Xinjiang
Hebei
Beijing
Tianjin
Gansu
Ningxia
Shanxi
Shandong
Qinghai
Shaanxi
Henan
Anhui
Jiangsu
Sichuan
Hubei
Chongqing
Zhejiang
Hunan
Jiangxi
Guizhou
Fujian
Yunnan
Guangxi
Guangdong
China
11,791 cases
259 deaths



Bacterial cells adhering to a body surface

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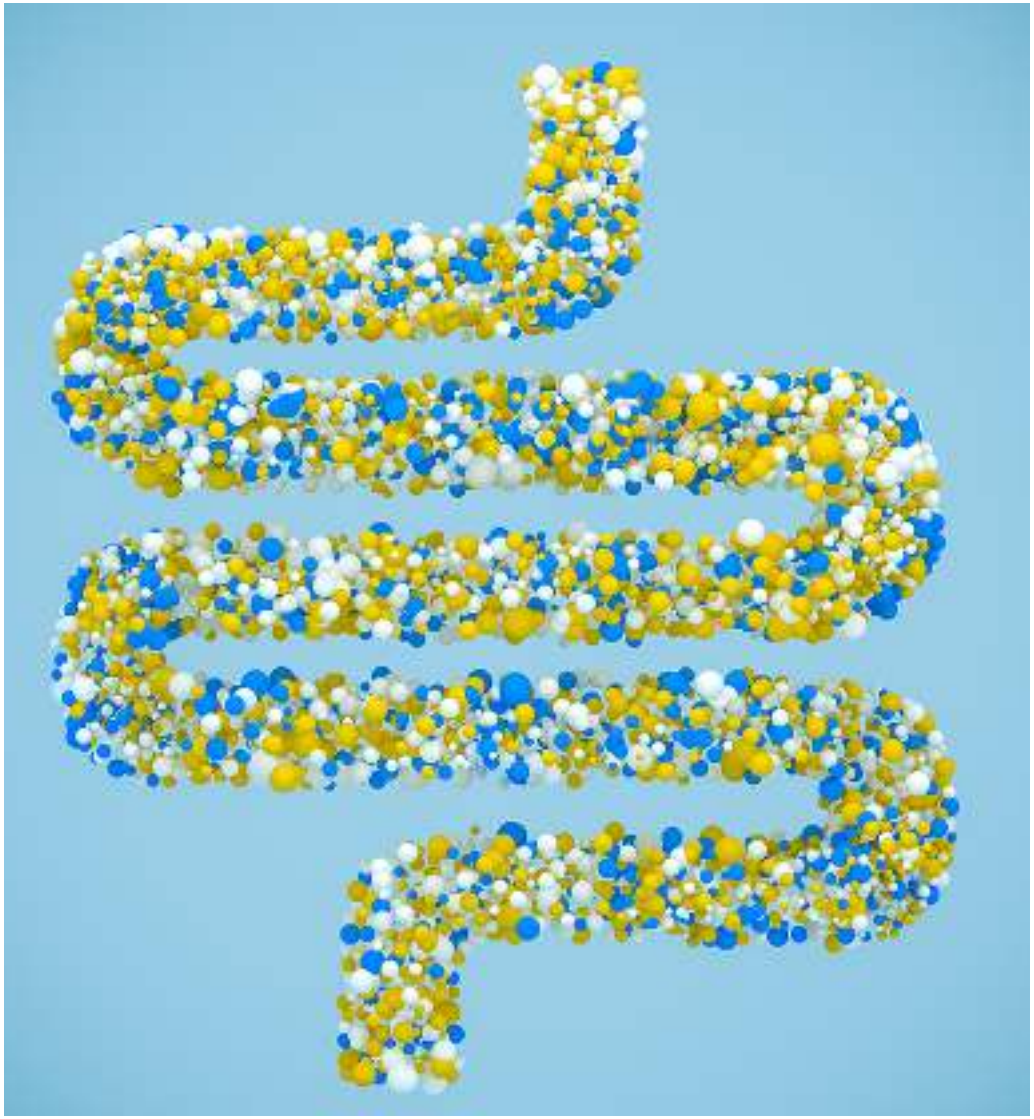
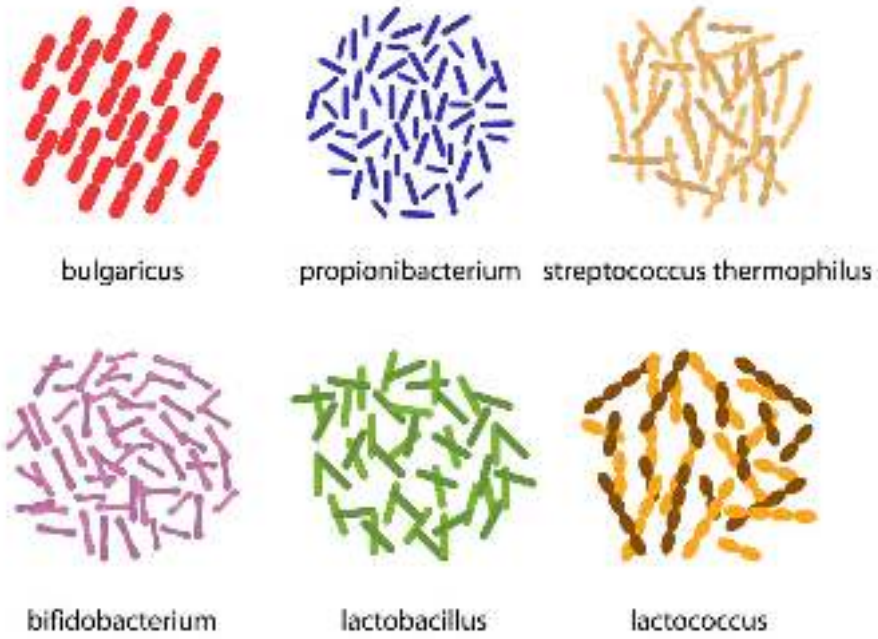
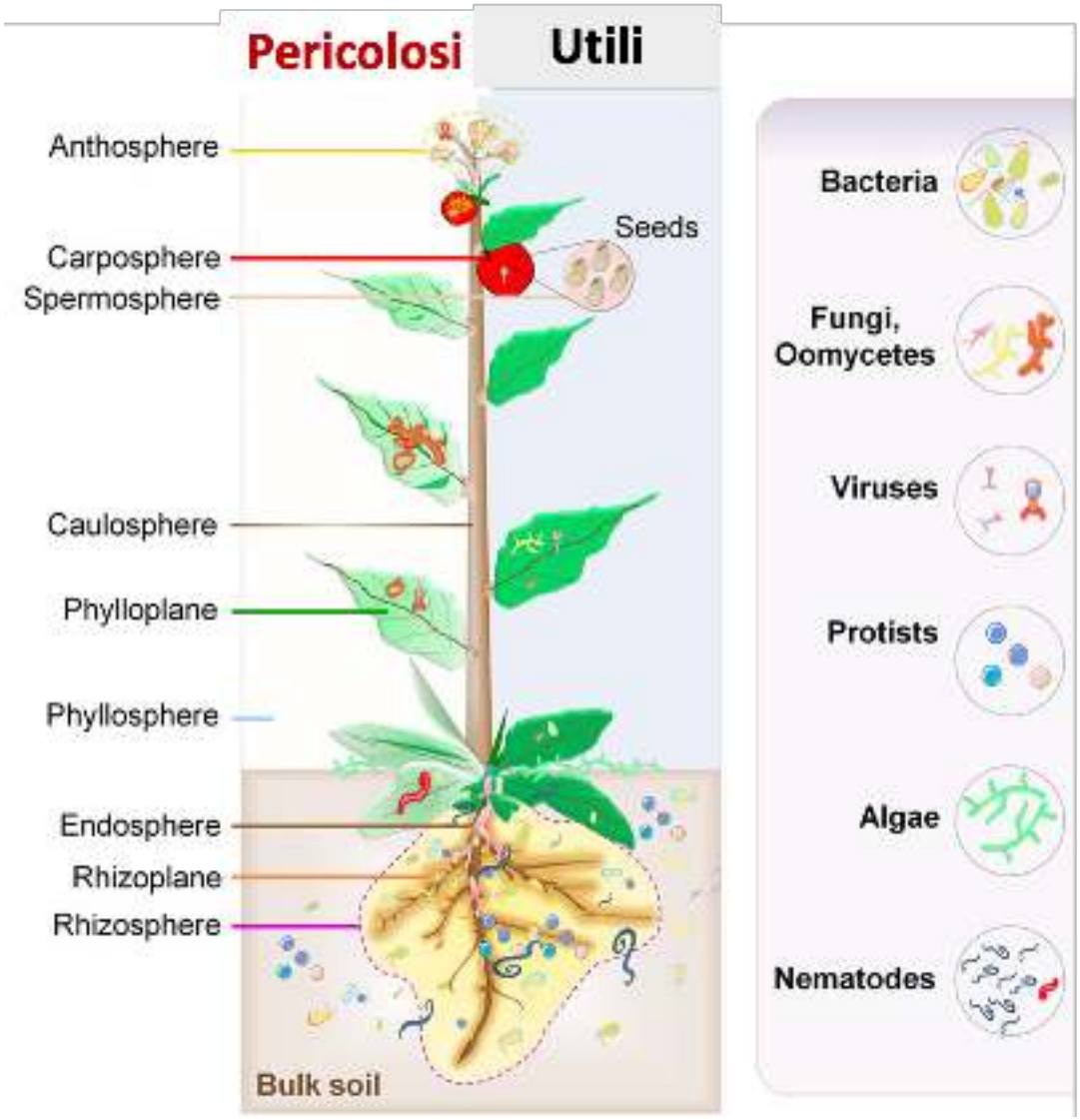
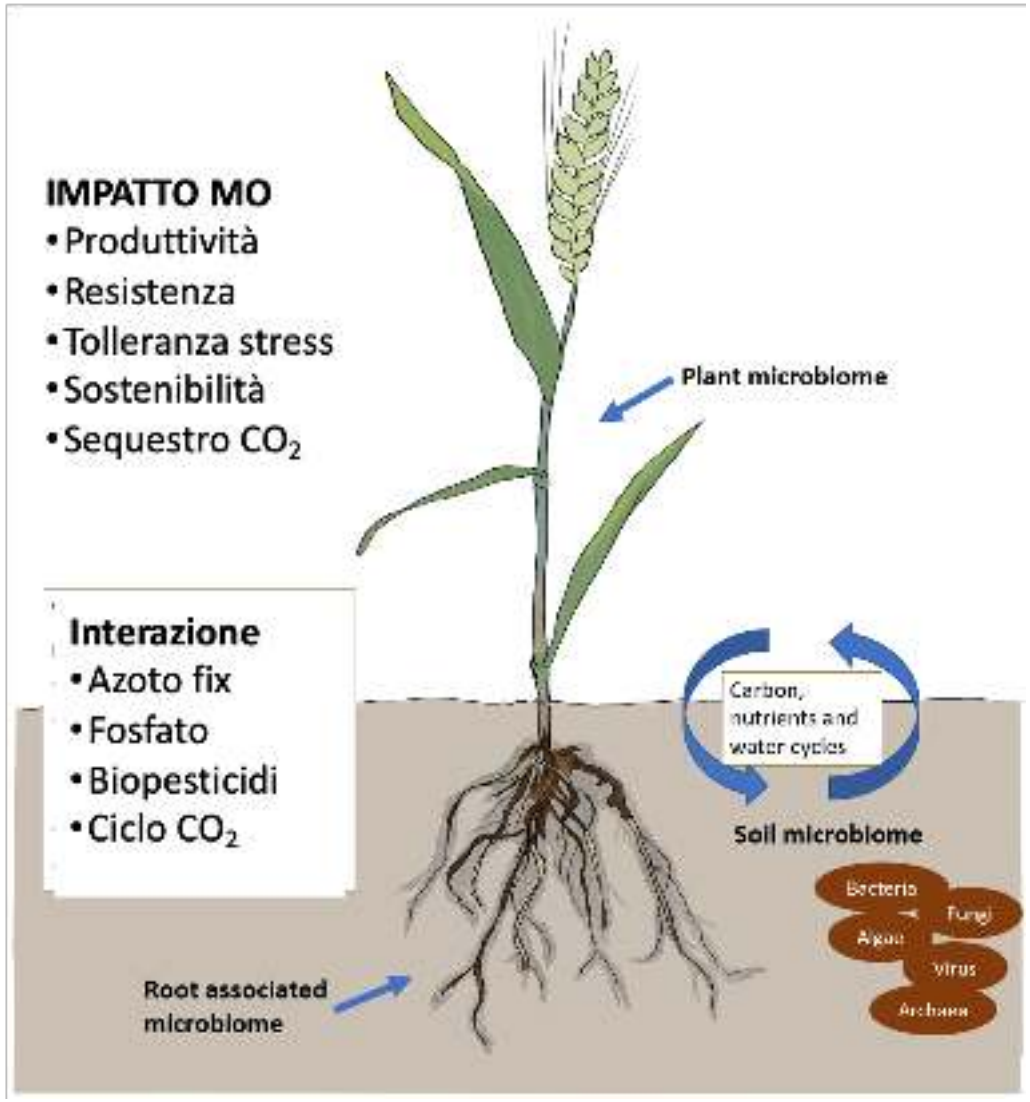


Probiotics

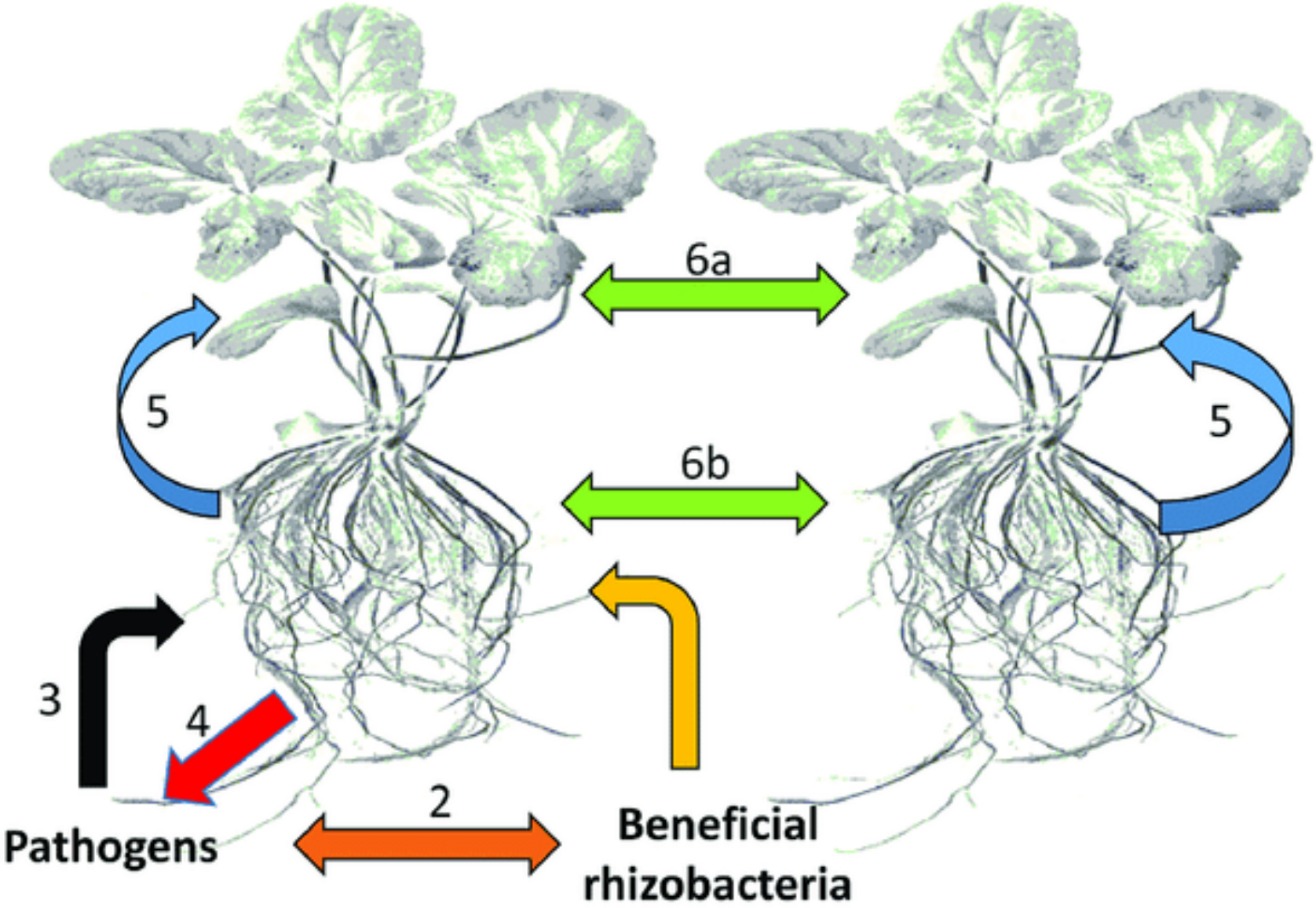

bulgaricus
propionibacterium
streptococcus thermophilus
bifidobacterium
lactobacillus
lactococcus

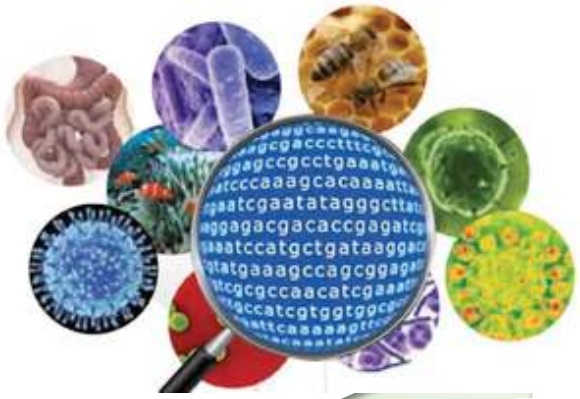

Pericolosi
Utili
Anthosphere
Seeds
Carposphere
Spermosphere
Caulosphere
Phylloplane
Phyllosphere
Endosphere
Rhizoplane
Rhizosphere
Bulk soil
Bacteria
Fungi, Oomycetes
Viruses
Protists
Algae
Nematodes


IMPATTO MO
• Produttività
• Resistenza
• Tolleranza stress
• Sostenibilità
• Sequestro CO_2
Plant microbiome
Interazione
• Azoto fix
• Fosfato
• Biopesticidi
• Ciclo CO_2
Carbon, nutrients and water cycles
Soil microbiome
Bacteria
Fungi
Algae
Virus
Archaea
Root associated microbiome

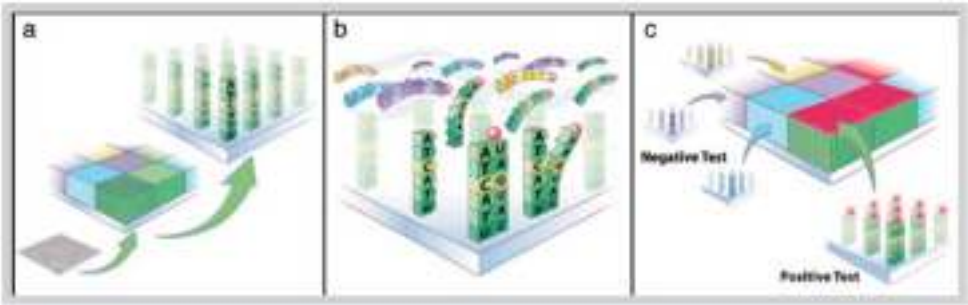
I NUMERI ▸ Oltre 1800 articoli scientifici pubblicati su Rizobatteri che Promuovono la Crescita delle Piante (+410 su PGPB e 910 su funghi)

Fonte: Scopus (periodo 2015 ad oggi)


6a
5
5
6b
3
4
2
Pathogens
Beneficial
rhizobacteria



DNAChip

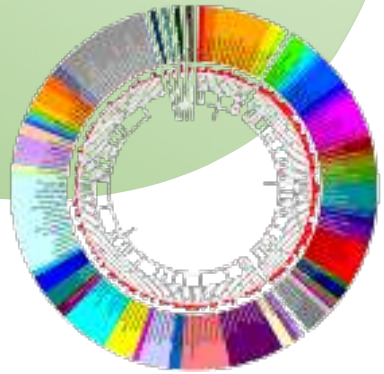


Chi c'è?

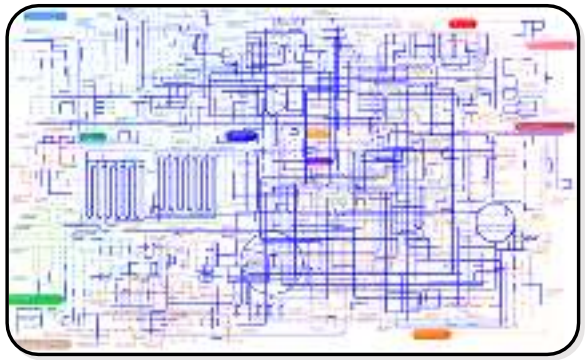
Che fa?

Bacterium A
Bacterium B
...
Bacterium X

Fungus ……



+

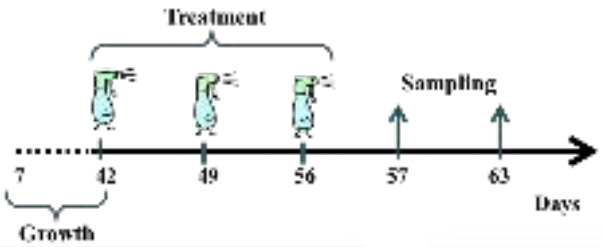


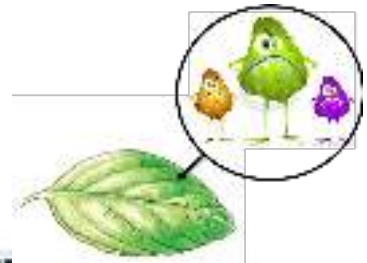
Gene A
Gene B
...
Gene X

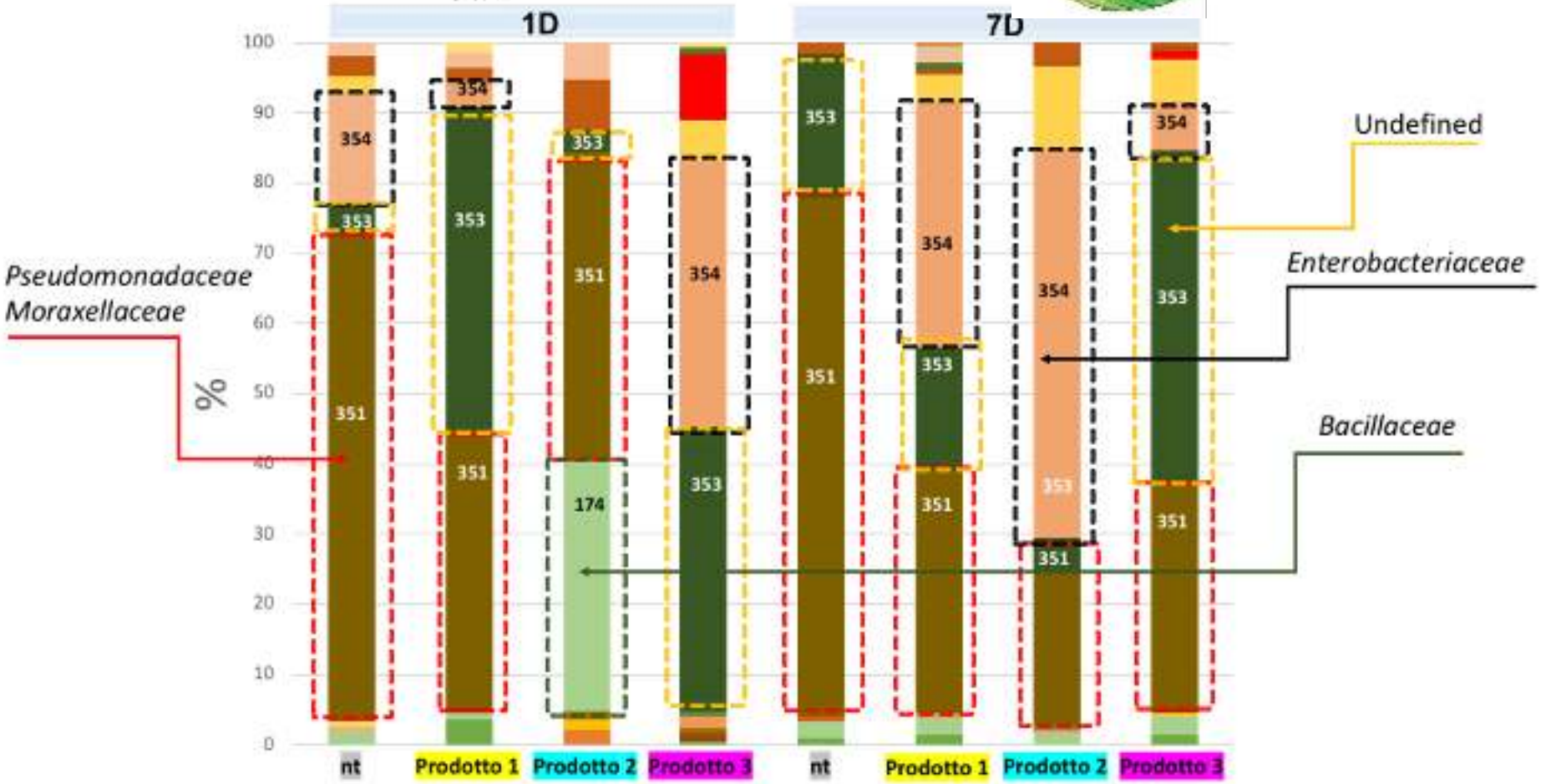
Gene …..

Foliar Application of Vegetal-Derived Bioactive Compounds Stimulates the Growth of Beneficial Bacteria and Enhances Microbiome Biodiversity in Lettuce

Francesca Luchinelli[1], Anna Grazia Ficca[1], Giuseppe Colla[1], Eva Baldassarre Ševcovič[2] and Maurizio Rossi[1]*







Il nostro obiettivo

- *Caratterizzare nuovi microrganismi con attività di biostimolo & biocontrollo*
- *Formulare nuovi prodotti*

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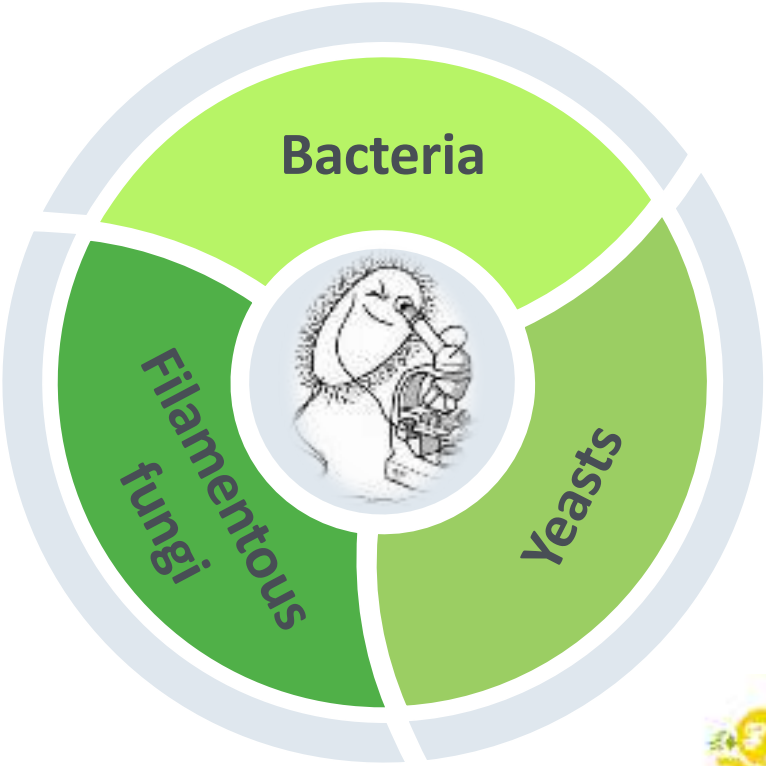
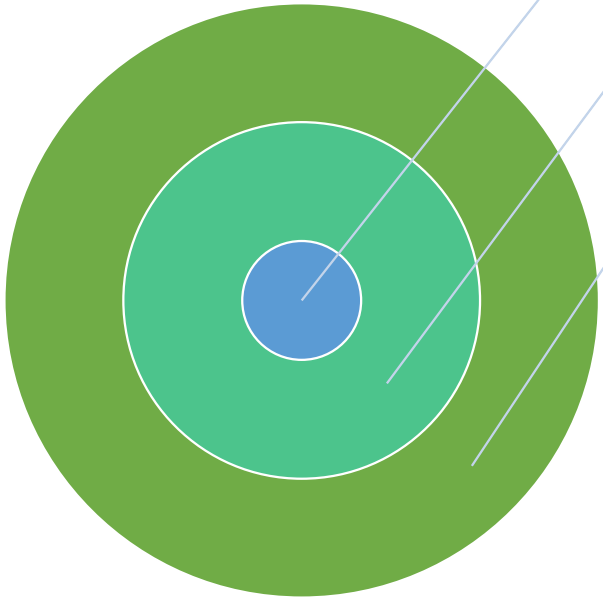
La nostra filosofia

Lavorare con i microrganismi e far lavorare I microrganismi per noi



La nostra risorsa è la BIODIVERSITA?



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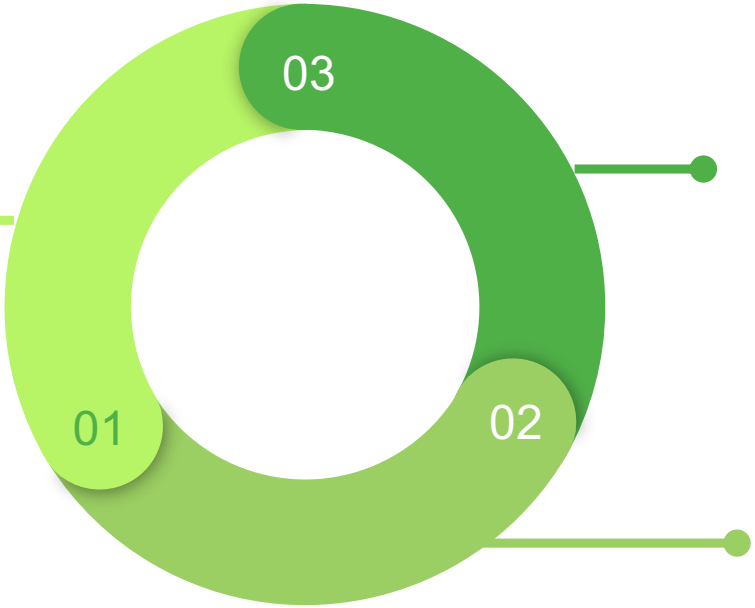
Partire dalla biodiversità

Analizzare le popolazionie & isolare i microrganismi



Caratterizzare i microrganismi

Ottimizzare la crescita & formulare un prodotto

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Tecnologie che utilizziamo

- NGS, genome sequencing, direct cloning, transposon mutagenesis.
- Recombinant DNA technologies & conventional genetic improvement.
- RNA, protein and metabolite analysis
- Cultivation in shaken-flasks, CST Reactors, Solid-State Fermenter.

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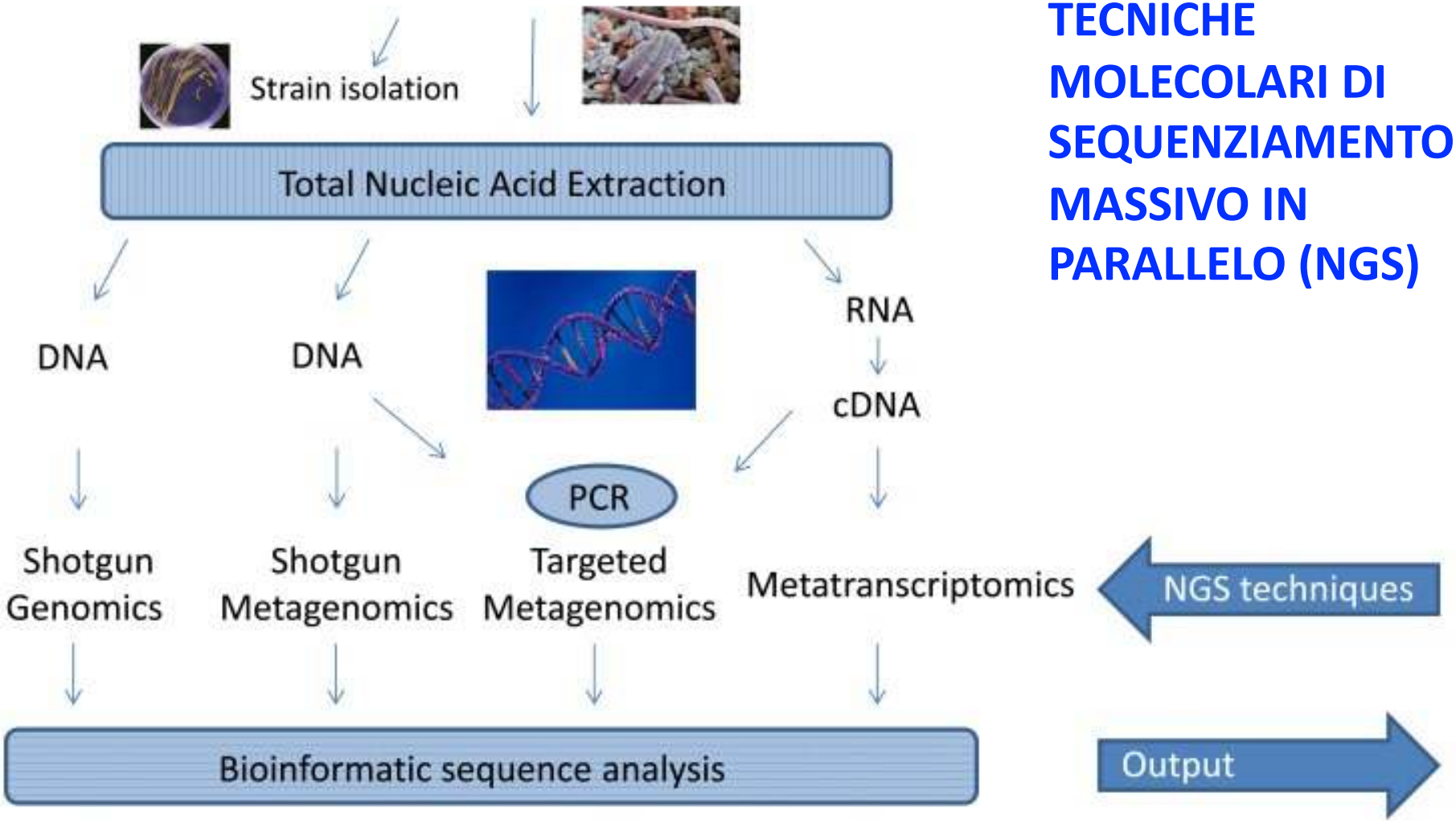
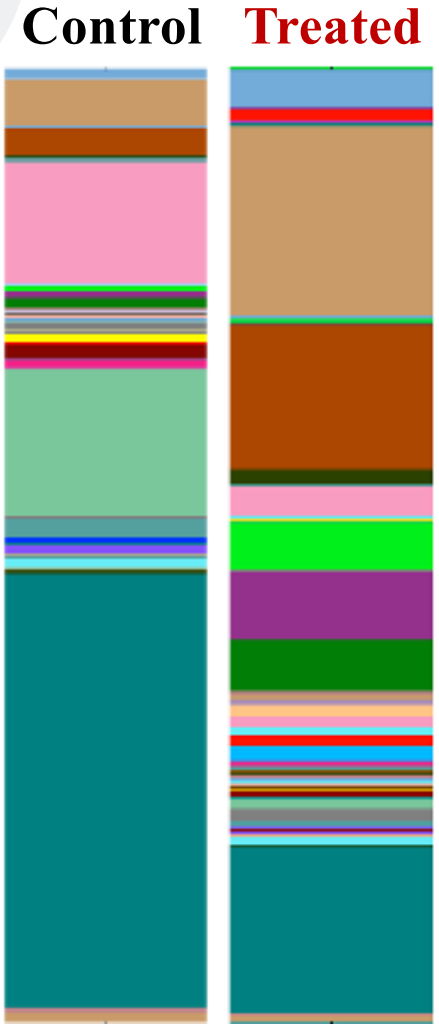
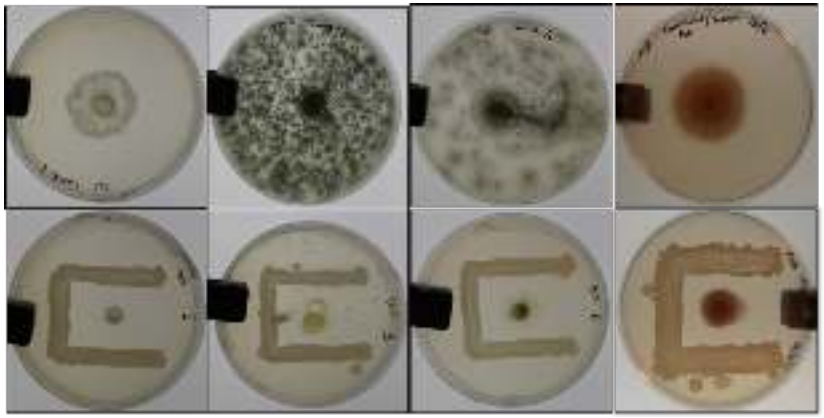
Materiale ambientale



TECNICHE MOLECOLARI DI SEQUENZIAMENTO MASSIVO IN PARALLELO (NGS)

Dal microbiota della foglia ai «Biostimolanti microbici»





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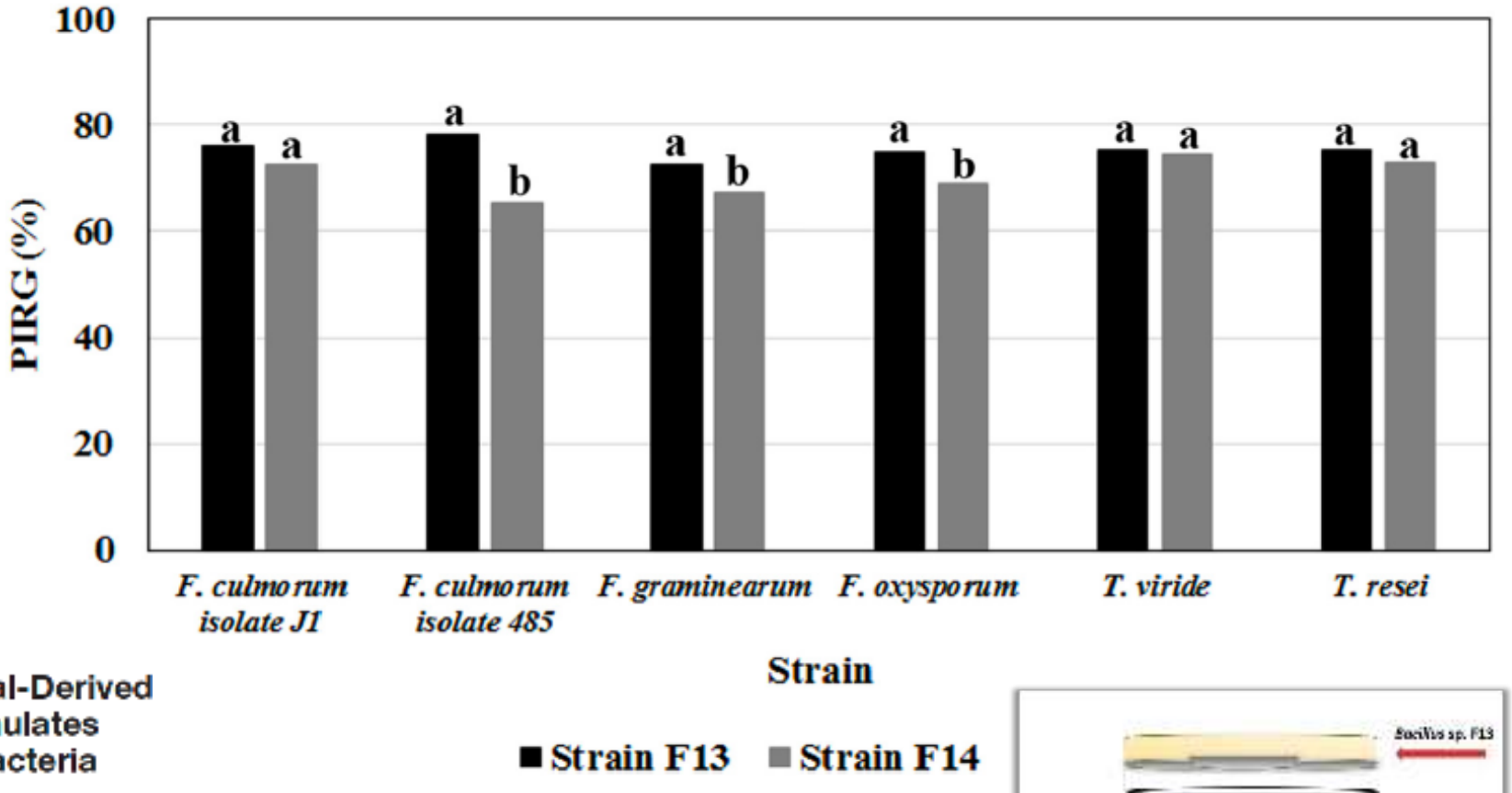

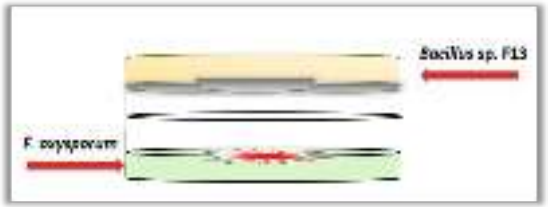

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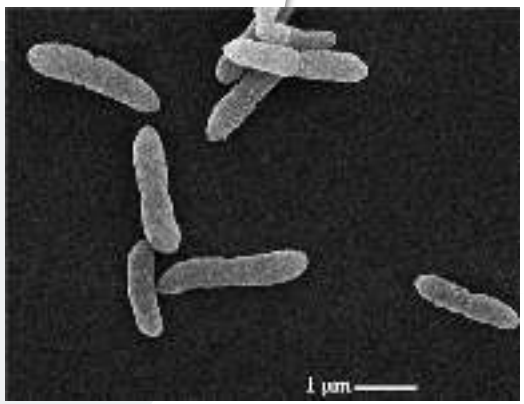
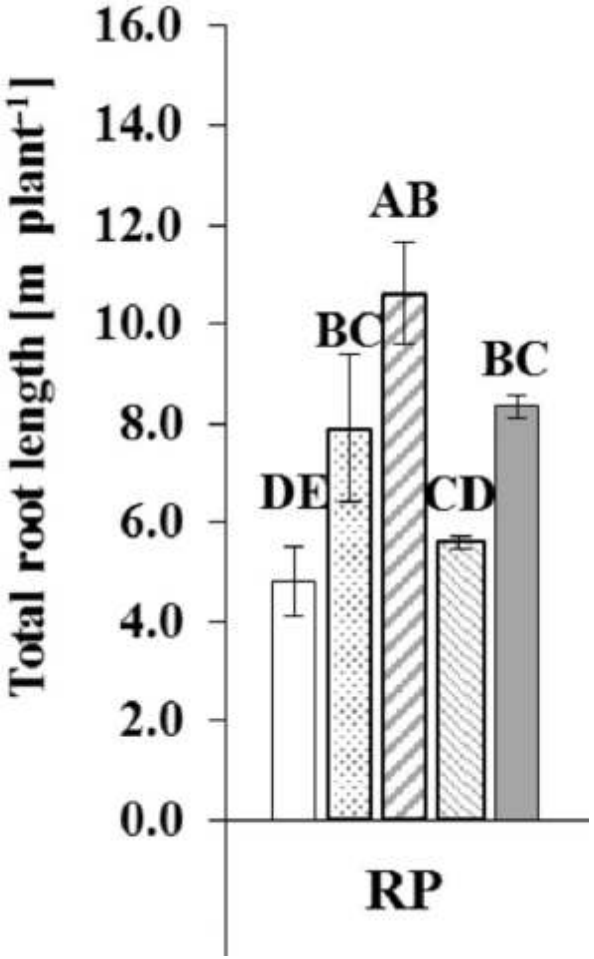
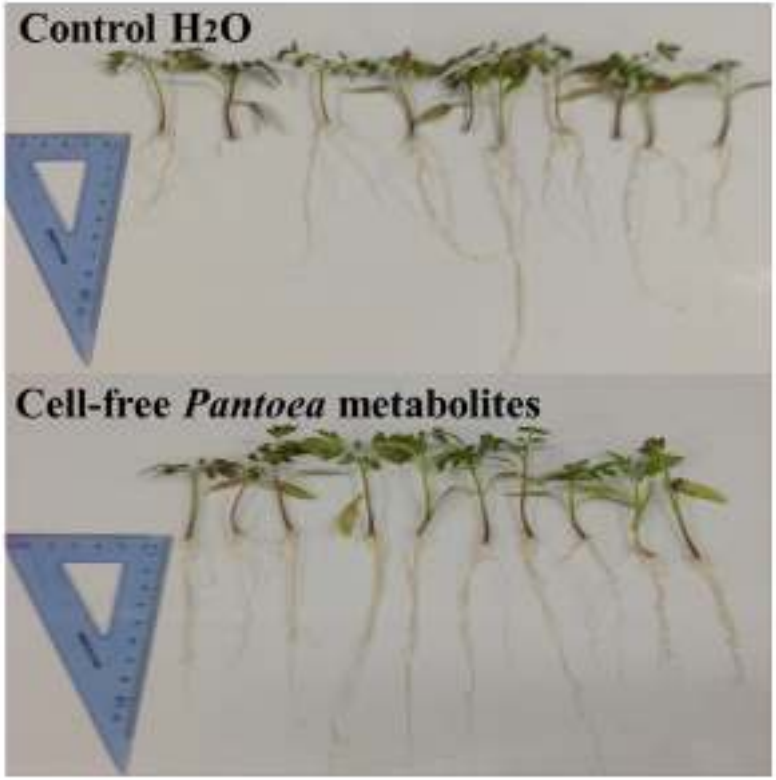
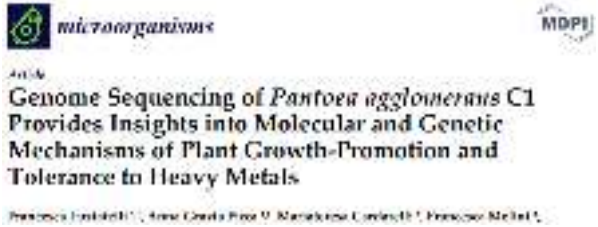


ORIGINAL ARTICLE

Growth-promoting bacteria and arbuscular mycorrhizal fungi differentially benefit tomato and corn depending upon the supplied form of phosphorus






microorganisms

MDPI

Article

Genome Sequencing of *Pantoea agglomerans* C1 Provides Insights into Molecular and Genetic Mechanisms of Plant Growth-Promotion and Tolerance to Heavy Metals

Dal microbiota della foglia ai «Biostimolanti microbici»

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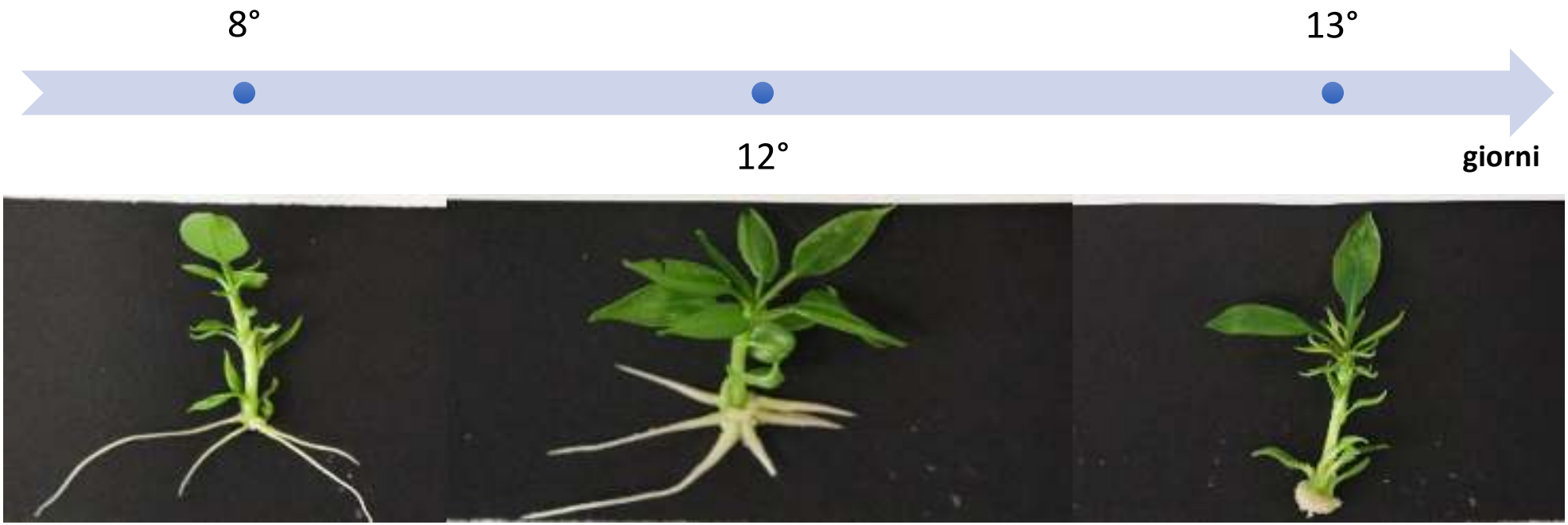

Metaboliti microbici

Metaboliti microbici + Ormone di sintesi

Ormone di sintesi

«Biostimolanti microbici»

Trattato (sopra) vs non trattato (sotto)

RINGRAZIAMENTI

- FRANCESCA LUZIATELLI
- ANNA GRAZIA FICCA
- FRANCESCA MELINI
- GIUSEPPE COLLA
- YOUSSEF ROUPHAEL
- MARIATERESA CARDARELLI
- PAOLO BONINI
- ROSARIO MULEO
- MASSIMILIANO MENEGHINI

BIOSTIMOLANTI
CONFERENCE

Grazie per l’attenzione!

Per domande?

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