



project

education supplement

for ages 8-12

www.macumbaproject.eu



Welcome to our special education supplement, teeming with fun facts and activities relating to the fascinating world of marine microbes!

INTRODUCING MARINE MICROBES & MaCuMBA!

The MaCuMBA project is all about studying marine microorganisms. Microorganisms, or microbes, are tiny living things that can only be seen under a microscope.

MaCuMBA is looking for new and better ways of growing marine microbes so that we can study their amazing properties and hopefully use them to make lots of useful products, such as medicines, food and fuels!

MARINE MICROBES ARE VERY IMPORTANT FOR LIFE ON EARTH FOR LOTS OF REASONS:

- Plant-like marine microbes are estimated to provide approximately half of the oxygen we need to breathe.
- Through making oxygen, marine microbes absorb large amounts of carbon dioxide from the atmosphere, which helps to protect the Earth's climate.
- Marine microbes recycle nutrients and break down marine waste, helping to keep the ocean clean!
- Marine microbes are the base of the marine food web, supporting other marine life such as fish, birds and mammals.

FUN RESOURCES & ACTIVITIES

BUILD A PLANKTON NET



Plankton is the term used to describe microscopic plants (phytoplankton) and animals (zooplankton) that float and drift with ocean currents. Follow this link to learn how to make your own plankton net to capture and study these tiny creatures!

[HTTP://LIFEADRIFT.INFO/MEDIA/1830/BUILD_A_PLANKTON_NET.PDF](http://lifeadrift.info/media/1830/build_a_plankton_net.pdf)

WHICH MICROBE ARE YOU?



Take this fun microbe personality quiz and find out which microbe is most like you! Follow the link below to take the online quiz or to download a PDF to make a microbe quiz flipbook!

[HTTP://CMORE.SOEST.HAWAII.EDU/EDUCATION/KIDSKORNER/MICROBE_QUIZ.HTM](http://cmore.soest.hawaii.edu/education/kidskornier/microbe_quiz.htm)

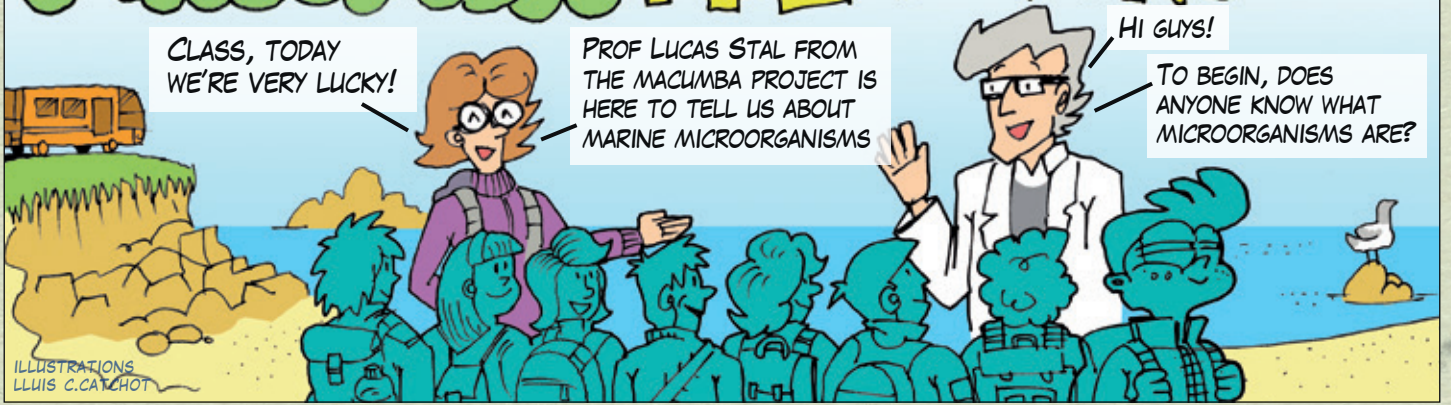
● DID YOU KNOW ?

The word plankton comes from the Greek word planktos which means to wander, as plankton drift or wander on ocean currents. The word planet also comes from the word planktos!

● AMAZING MICROBE FACT !

There are so many microorganisms in the sea that if you could weigh them all they would weigh more than all the fish, mammals and other sea creatures combined!

MACUMBA MELTDOWN!



CLASS, TODAY WE'RE VERY LUCKY!

PROF LUCAS STAL FROM THE MACUMBA PROJECT IS HERE TO TELL US ABOUT MARINE MICROORGANISMS

HI GUYS!

TO BEGIN, DOES ANYONE KNOW WHAT MICROORGANISMS ARE?

ILLUSTRATIONS
LLUIS C. CATCHOT



MICROORGANISMS ARE TINY LIVING THINGS THAT CAN ONLY BE SEEN UNDER A MICROSCOPE.

THEY'RE THE OLDEST ...

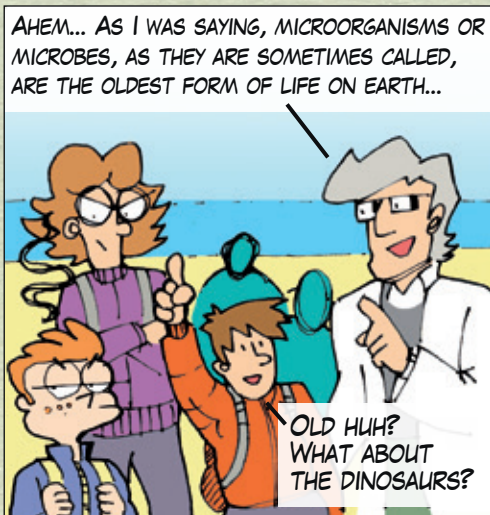
JEAN FRANÇOIS!

LEAVE THAT POOR BIRD ALONE AND GET BACK HERE!

SHRIEEK!!

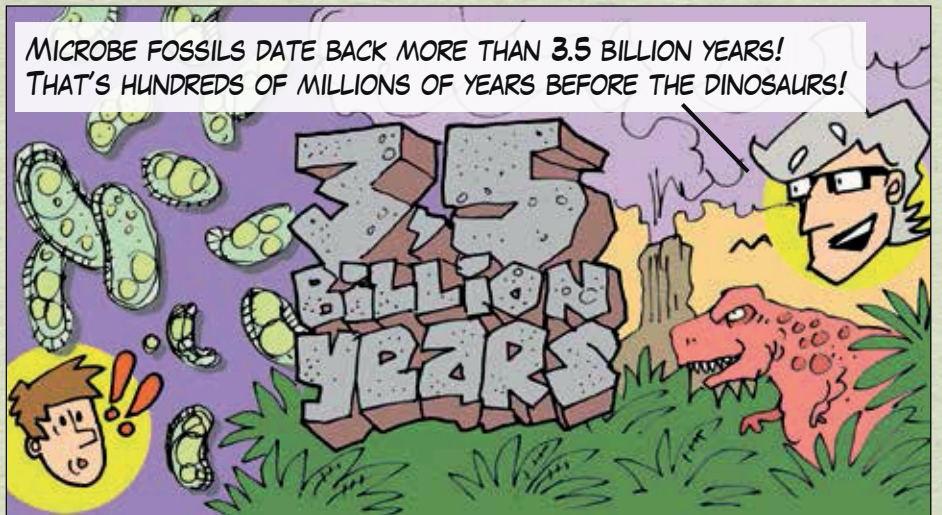
RAAH

SPLASH
SPLOSH

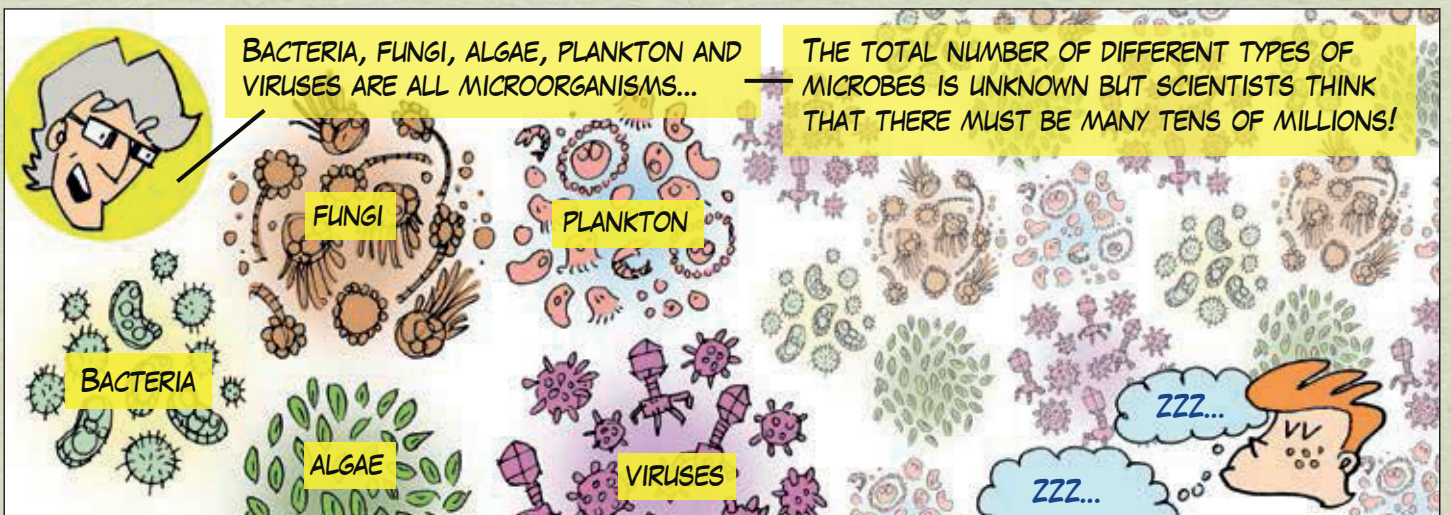


AHEM... AS I WAS SAYING, MICROORGANISMS OR MICROBES, AS THEY ARE SOMETIMES CALLED, ARE THE OLDEST FORM OF LIFE ON EARTH...

OLD HUH? WHAT ABOUT THE DINOSAURS?



MICROBE FOSSILS DATE BACK MORE THAN 3.5 BILLION YEARS! THAT'S HUNDREDS OF MILLIONS OF YEARS BEFORE THE DINOSAURS!



BACTERIA, FUNGI, ALGAE, PLANKTON AND VIRUSES ARE ALL MICROORGANISMS...

THE TOTAL NUMBER OF DIFFERENT TYPES OF MICROBES IS UNKNOWN BUT SCIENTISTS THINK THAT THERE MUST BE MANY TENS OF MILLIONS!

BACTERIA

FUNGI

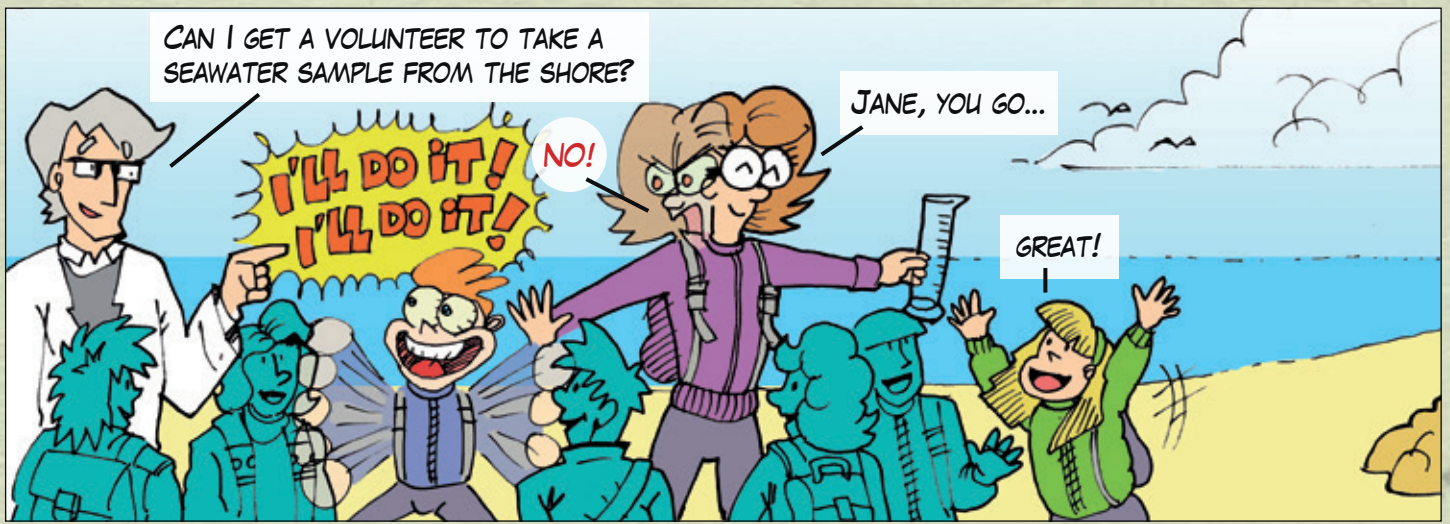
PLANKTON

ALGAE

VIRUSES

ZZZ...

ZZZ...



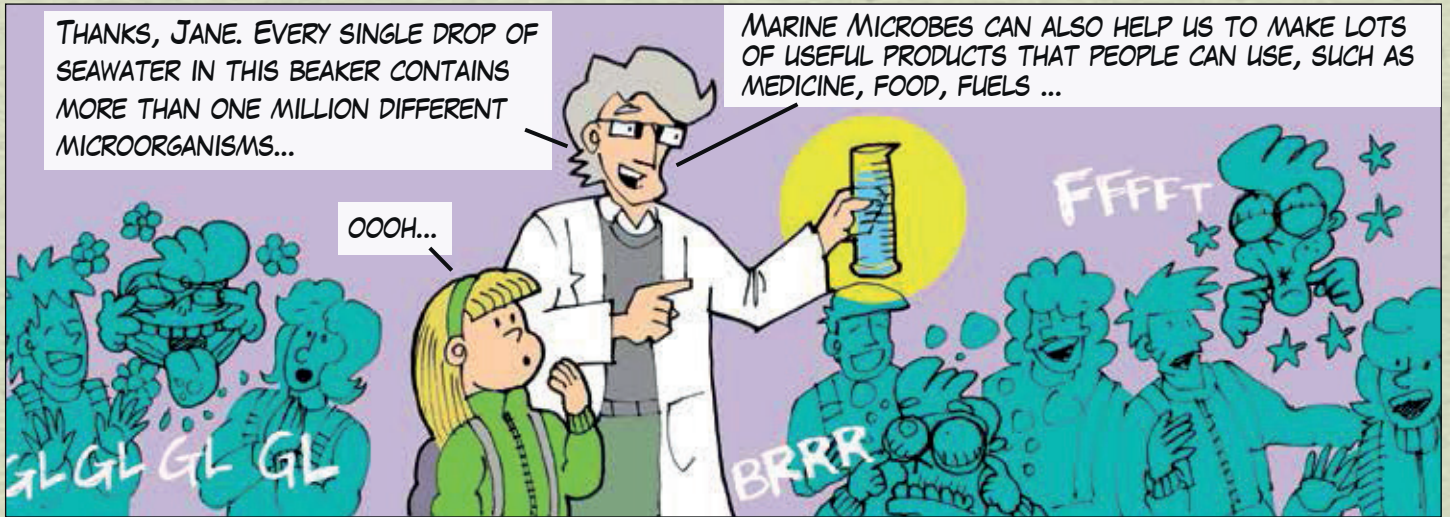
CAN I GET A VOLUNTEER TO TAKE A SEAWATER SAMPLE FROM THE SHORE?

JANE, YOU GO...

NO!

I'LL DO IT!
I'LL DO IT!

GREAT!

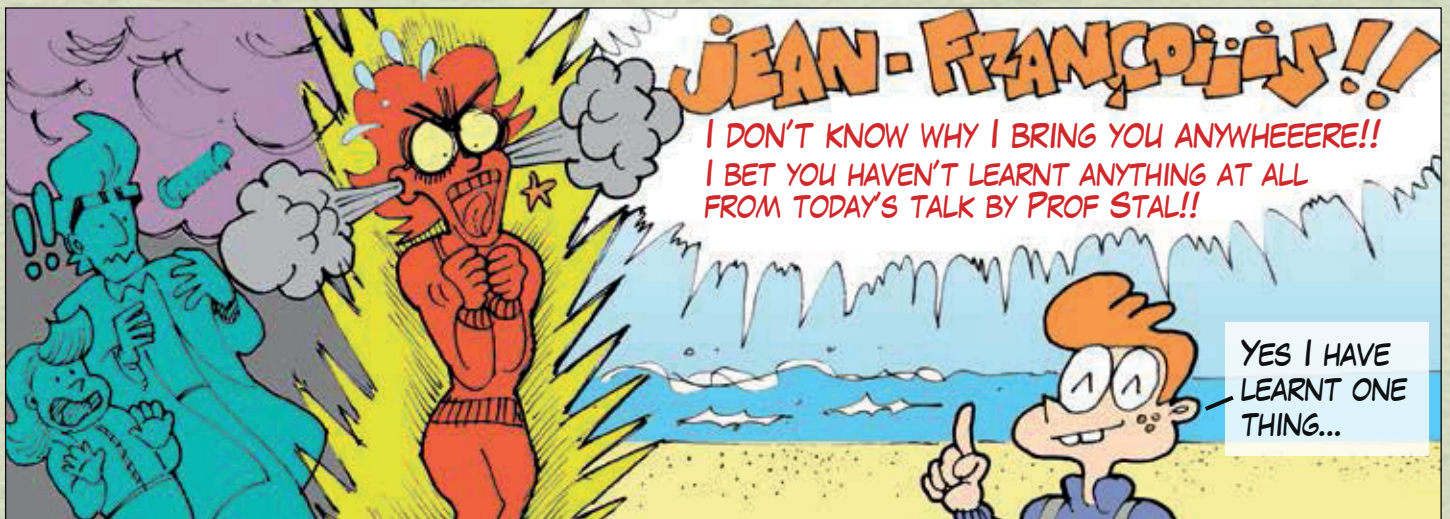


THANKS, JANE. EVERY SINGLE DROP OF SEAWATER IN THIS BEAKER CONTAINS MORE THAN ONE MILLION DIFFERENT MICROORGANISMS...

MARINE MICROBES CAN ALSO HELP US TO MAKE LOTS OF USEFUL PRODUCTS THAT PEOPLE CAN USE, SUCH AS MEDICINE, FOOD, FUELS ...

OOOH...

FFFFT



JEAN-FRANÇOIS!!

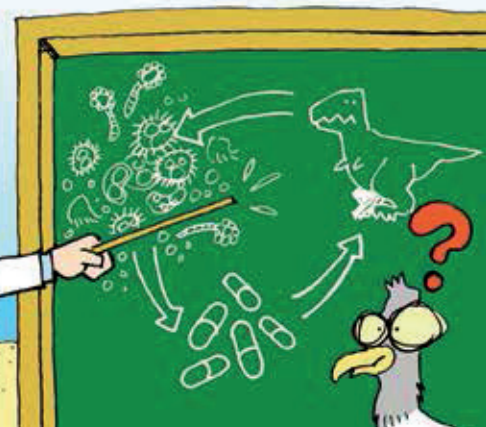
I DON'T KNOW WHY I BRING YOU ANYWHEERE!! I BET YOU HAVEN'T LEARNT ANYTHING AT ALL FROM TODAY'S TALK BY PROF STAL!!

YES I HAVE LEARNT ONE THING...



IF DINOSAURS HAD EATEN THE MEDICINE FROM THE MICROBES 3.5 BILLION YEARS AGO THEY WOULDN'T HAVE DIED AND WOULD STILL BE WITH US TODAY!

HA HA HA HA HA!!



MARINE MICROBE QUIZ

Now that you have learned all about marine microbes, it's time to test your knowledge!

1

Which of these could you use to look at marine microorganisms?

- A. Telescope
- B. Binoculars
- C. Microscope

2 Which of the following is thought to be the earliest form of life?

- A. Dinosaurs
- B. Coniferous Trees
- C. Microorganisms
- D. Trilobites

2

5

Phytoplankton are...

- A. Microscopic plants that float and drift with the oceans currents.
- B. Microscopic animals that float and drift with the oceans currents.

3

Marine microbes are an important source of:

- A. Medicines
- B. Alternative energy
- C. Food for the marine food web
- D. All of the above

4

Marine microbes produce around how much of the oxygen that we breathe?

- A. 10%
- B. 30%
- C. 50%
- D. 70%

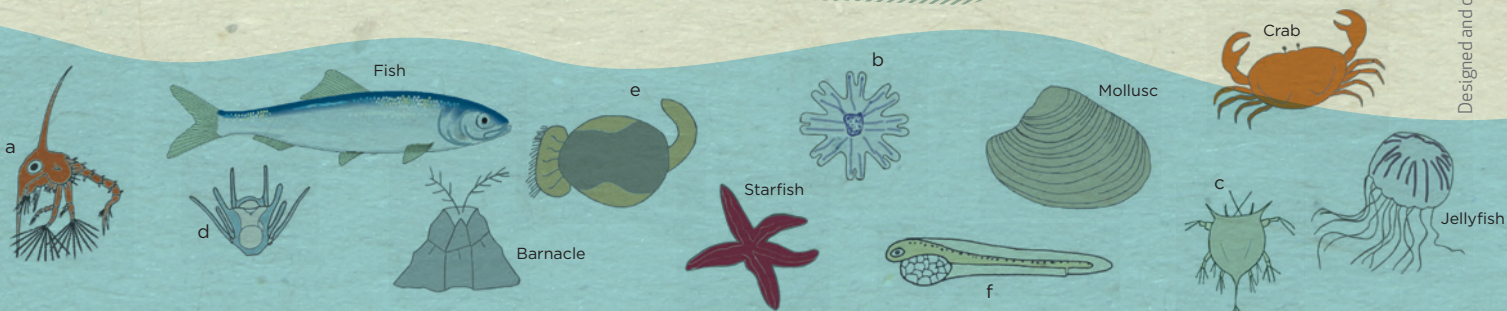
6

Which weighs more?

- A. All the fish and mammals in the sea
- B. All the marine microbes in the sea

7

Some plankton (called meroplankton) are baby versions of bigger marine animals. Can you match the sea creatures below with their baby meroplankton?



ANSWERS: Q1. C Q2. C Q3. D Q4. C Q5. A Q6. B Q7. a → crab, b → jellyfish, c → mollusc, d → barnacle, e → starfish, f → fish

