

# ON LIGHT, BUDS AND BURSTS



THEY CATCH PHOTONS OF WHICH LIGHT IS MADE

AND A FEW ENZYMES FINISH OFF THE JOB

THEN ADD A LITTLE WATER

five hours later

YOU GET THE PICTURE?

OF COURSE

WITH THE HELP OF PHOTONS, A PLANT FIXES CARBONIC ACID (CO<sub>2</sub>) AND WATER (H<sub>2</sub>O) TO PRODUCE SUGARS WHILE RELEASING OXYGEN (O<sub>2</sub>)

LET ME EXPLAIN

LET ME SUM THINGS UP

THIS METABOLIC PROCESS IS CALLED PHOTOSYNTHESIS, IT'S VERY COMPLICATED

6 CO<sub>2</sub> + 6 H<sub>2</sub>O + PHOTONS → C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> + 6 O<sub>2</sub>

THIS REACTION TAKES PLACE IN THE MEMBRANE OF AN ORGANELLE: THE CHLOROPLAST!



CHLOROPLASTS ARE ONLY FOUND IN PLANT CELLS AND ALGAE

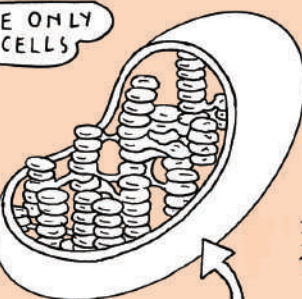
PHOTOSYNTHESIS PRODUCES SUGARS

THERE!

YOUR TURN, VIVIENNE

WELL DONE!

EXCELLENT SUMMARY



HERE'S A TYPICAL ONE, FULL OF PRETTY THYLAKOIDS

WHICH STORE ENERGY!



FROM NOW ON, YOU WILL BE MY ASSISTANT!

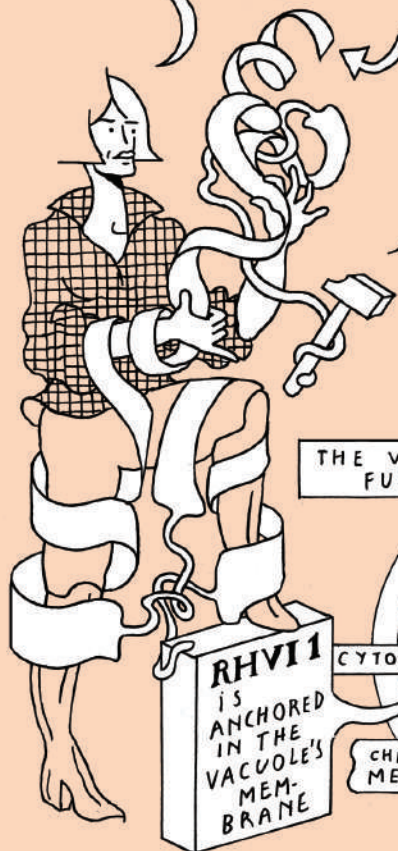


IT'S TIME TO INTRODUCE AN ENZYME

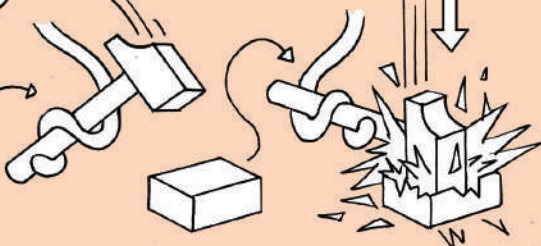
OUR FRIEND, ACID BETA-FRUCTOFURANOSIDASE 1 OR RHVI1!

RHVI1 SPLITS A CERTAIN TYPE OF SUGAR CALLED SACCHAROSE

AND PRODUCES MONOSACCHARIDES, WHICH ARE SPLIT A SECOND TIME TO FREE THE ENERGY THEY STORE



RHVI1 IS ANCHORED IN THE VACUOLE'S MEMBRANE

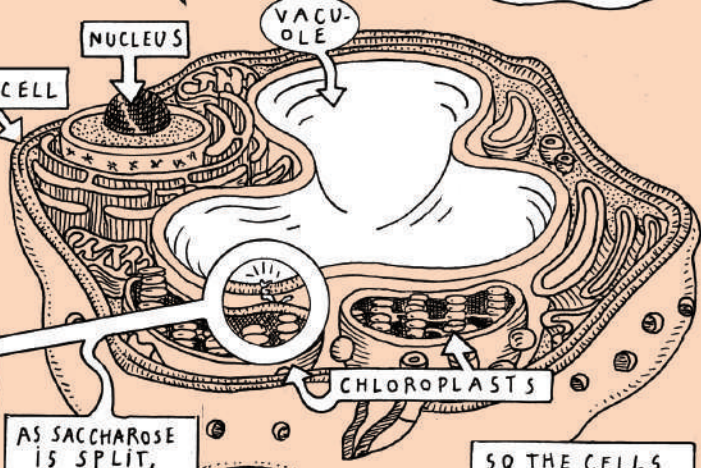


THE BUD OPENS

AND THE FLOWER BLOSSOMS!

HALF PLANT CELL

THE VACUOLE IS MOSTLY FULL OF WATER



CYTOSOL

CHLOROPLAST'S MEMBRANE

THYLAKOIDS

AS SACCHAROSE IS SPLIT, RHVI1 FILLS THE VACUOLE WITH MONOSACCHARIDES

WHICH CAUSES EVEN MORE WATER TO ENTER (OSMOSIS)

SO THE CELLS SWELL, WHICH IS A PREREQUISITE FOR BUDDING!

GIVE ME LIGHT AND A LITTLE WATER

A PINCH OF CO2

THEN WATCH MY ROSA

SEE THE STEMS STRETCH

AND THE BUDS BULGE

THE PETALS PART

AND THE FLOWERS FULGE!



ARE YOU ALSO A POET, MADAME, VIVIENNE!



I FIND THIS EPISODE RATHER KITSCH...

DON'T YOU?

