



DURING THE SAME PERIOD, SCIENTISTS WERE STUDYING THE PROCESS OF PHOTOSYNTHESIS AND DESPERATELY LOOKING FOR PROTEINS THAT WERE INVOLVED. THEY KNEW ABOUT ONE WHICH ACTS AT AN EARLY STAGE OF THE PROCESS: A CARBOXYLASE WHICH PLUCKS CO<sub>2</sub> FROM THE ATMOSPHERE TO MAKE ENERGY.

# RUBISCO

THE (PLANT) KINGDOM'S SLOTH





SO RUBISCO FIXES ATMOSPHERIC CO<sub>2</sub> AND EXTRACTS ITS CARBON (C) TO MAKE 3-PHOSPHOGLYCERATE (3PG)

3 PG HAS THREE FATES

EITHER IT REINTEGRATES THE PROCESS OF PHOTOSYNTHESIS



OR IT IS STORED AS SUCROSE



OR IT IS IMMEDIATELY USED FOR ITS ENERGY



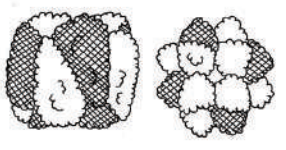
NOT ONLY IS IT HUGE BUT IT'S ALSO VERY LAZY...

MOST ENZYMES PROCESS ABOUT ONE THOUSAND MOLECULES PER SECOND...

... RUBISCO... BARELY THREE!

PRETTY IMPRESSIVE, RUBISCO!

USUALLY COMPOSED OF EIGHT LARGE SUB-UNITS THAT DO ALL THE WORK, AND EIGHT SMALLER ONES THAT SUPPORT THE LOT



ONE WONDERS HOW SUCH A LARGE LOAFER HAS SURVIVED IN THIS CRUEL WORLD

THE ANSWER: PLANTS OPTED FOR THE PRODUCTION OF STUPENDOUS AMOUNTS OF RUBISCO TO COUNTERACT ITS SLOTHFULNESS

DID YOU KNOW THAT ABOUT 50% OF THE PROTEIN IN PLANT CELLS IS RUBISCO?

AND WAIT FOR THIS!

ITS ACTIVE SITE IS SO UNSELECTIVE THAT RUBISCO ALSO FIXES OXYGEN

ALTHOUGH NO-ONE KNOWS WHY

HENCE «OXYGENASE»

RUBISCO IS THE MOST ABUNDANT PROTEIN ON EARTH

ALTHOUGH ANIMALS HAVE NONE!

THIS IS BOTHERSOME BECAUSE IT STOPS CO<sub>2</sub> FROM BINDING

AND THAT COSTS ENERGY (25% ACTUALLY)

BUT WE STILL LOVE RUBISCO!

IT MAKES YOU WANT TO GET FAT

AND WORK LESS

