



NATURE HAS ALWAYS INSPIRED HUMAN BEINGS

WE STUDY BIRD FLIGHT TO DESIGN PLANES

WE PINCH PERFUME FROM FLOWERS

SPIDER SILK TO CREATE TEXTILES

AND PIGMENTS FROM MINERAL TO MAKE COLOURS

AND MORE STILL...

LET'S GO!

A WASP'S STING



WE EVEN USE ANTIMICROBIAL PEPTIDES FROM ANIMAL VENOM TO PROTECT OURSELVES!

OOOHH! POLYBIA PAULISTA!

JUST IN TIME FOR MY DEMONSTRATION



I'LL TAME IT FOR YOU LADIES!

COOCHY COOCHY

GASP!



POOR ALOYS

HE'S SACRIFICED HIS LIFE FOR SCIENCE

DON'T WORRY

HE'LL GET OVER IT...

AS USUAL

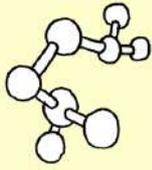
THIS WASP'S VENOM IS MADE OF



PROTEINS



PEPTIDES (SMALL PROTEINS)



AND OTHER BIO-ACTIVE SUBSTANCES

THESE COMPONENTS EITHER CAUSE PARALYSIS, OR PAIN, OR DEVELOPMENTAL ARREST, OR IMMUNE SUPPRESSION

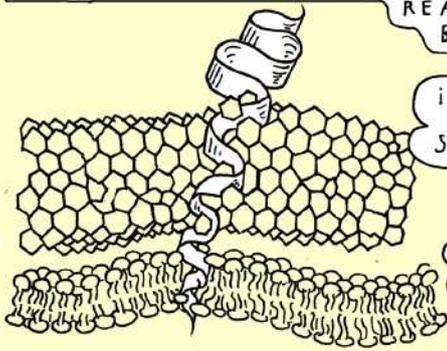
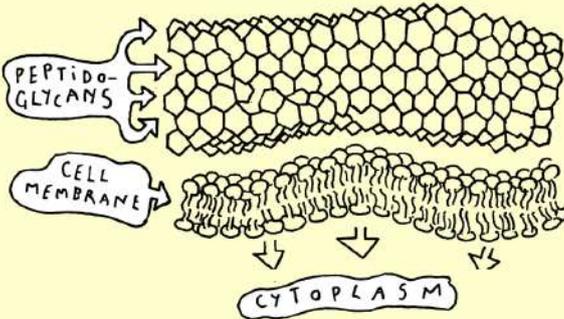
{APM} ANTIMICROBIAL PEPTIDE

...OR ANTIMICROBIAL ACTIVITY THANKS TO ONE PARTICULAR {APM}: POLYBIA-CP



DESPITE ITS SMALL SIZE (BARELY 10 AMINO ACIDS), POLYBIA-CP ADOPTS A HELICAL FORM AND ATTACKS

GRAM+ BACTERIA BY CROSSING THE THICK LAYER OF PEPTIDOGLYCANS TO REACH THE CELLULAR MEMBRANE, WHICH IT PUNCTURES!



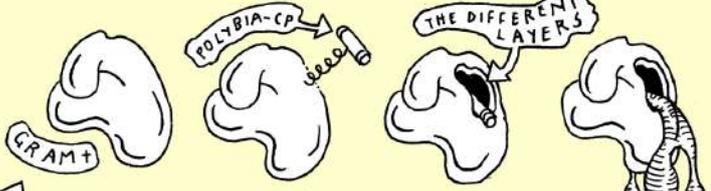
IT REMINDS ME OF SOMETHING

SOMETHING YOU CAN EAT



LET'S AVOID CULINARY REFERENCES

BUT NOT SCHEMATIC REPRESENTATIONS



THE BACTERIUM'S INSIDES SEEP OUT OF THE HOLE... LEADING TO ITS DEATH!

GOOP

ONCE THE PROCESS WAS UNDERSTOOD, SCIENTISTS REALISED THAT APMS COULD PERHAPS SOLVE THE GROWING PROBLEM OF DRUG-RESISTANT BACTERIA

WHAT'S MORE, IN SOUTH AMERICA MILLIONS OF PEOPLE CATCH CHAGAS DISEASE EVERY YEAR

TO BEGIN WITH, YOU FEEL ALMOST NOTHING* TRYPANOSOMA CRUZI HIDES IN OUR HEART, OUR INTESTINES OR OUR BRAIN... AND YEARS LATER, A VICTIM MAY DEVELOP CARDIAC, DIGESTIVE OR NEUROLOGICAL PROBLEMS

POLYBIA-CP MAY HAVE FAR LESS SIDE EFFECTS THAN THE DRUGS CURRENTLY USED

POLYBIA-CP ALSO SEEMS TO PRESENT ANTI-CANCER PROPERTIES WHILE BEING RELATIVELY HARMLESS TO HEALTHY CELLS

CAUSED BY THE PARASITE *TRYPANOSOMA CRUZI*, IT IS TRANSMITTED BY KISSING BUGS THAT FEED ON BLOOD

CHAGAS DISEASE IS AS DEADLY AND WIDESPREAD AS MALARIA



...OUR PAULISTA

AS FOR ALOYS, HE MAY BE SUFFERING FROM AN OVERDOSE OF APMS, OR A SLIGHT ALLERGY

OR HE GOT A FRIGHT OR PERHAPS HE FAINTED WITH THE PAIN?

HE'S SUCH A SENSITIVE BOY...

HE'S MOVING!



NO NO I'M OK I'M FINE

IT WAS JUST TIME FOR MY AFTER-NOON NAP

