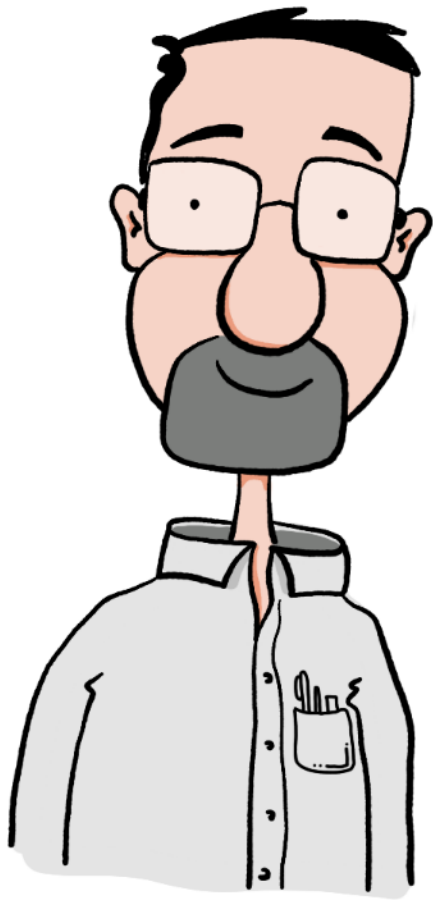


THE
ONE THING
I LEARNED
AS A
SCIENTIST

(...AND WHY YOU'LL LOVE THAT ONE THING)

ROB DIMEO
NATIONAL INSTITUTE OF STANDARDS & TECHNOLOGY





I'M ROB DIMEO

I WAS TRAINED TO BE A SCIENTIST & ENGINEER

I LOVE SCIENCE

I GET TO WORK WITH MANY
SCIENTISTS & ENGINEERS EVERYDAY

I LOVE DRAWING & DESIGN



STEM + ART = STEAM

SCIENCE
TECHNOLOGY
ENGINEERING
MATH





MIGHT BE THE
MOST IMPORTANT WORK
WE CAN EVER DO.

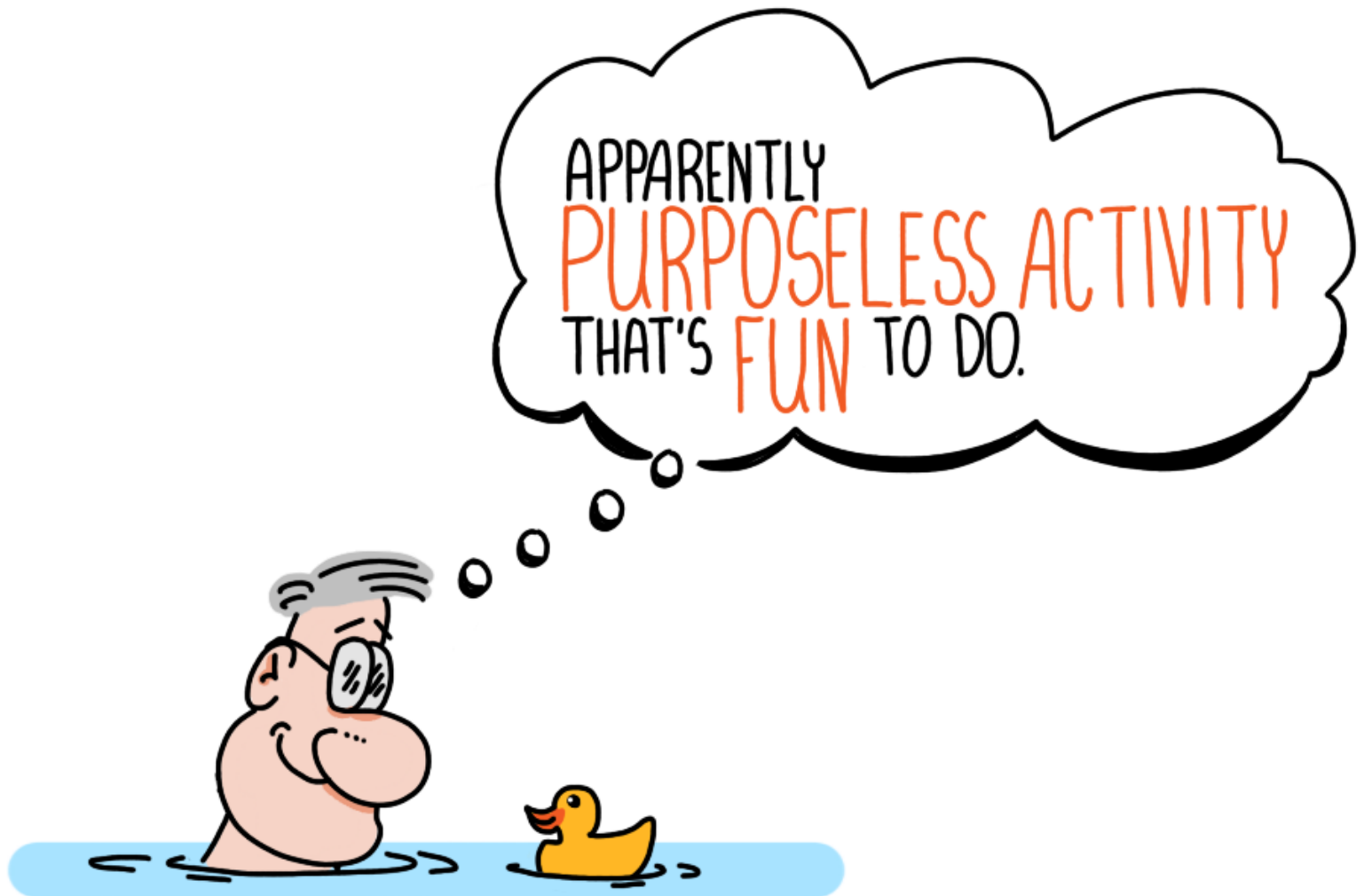


COULD BE THE KEY TO
DISCOVERING THE GIFTEDNESS
THAT IS IN EVERYONE

AN ACTIVITY SO IMPORTANT
THAT IT WAS RECOGNIZED
BY THE U.N. HIGH COMMISSION
FOR HUMAN RIGHTS AS

A RIGHT OF EVERY
CHILD







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Play

APPARENTLY
PURPOSELESS ACTIVITY
THAT'S **FUN** TO DO.



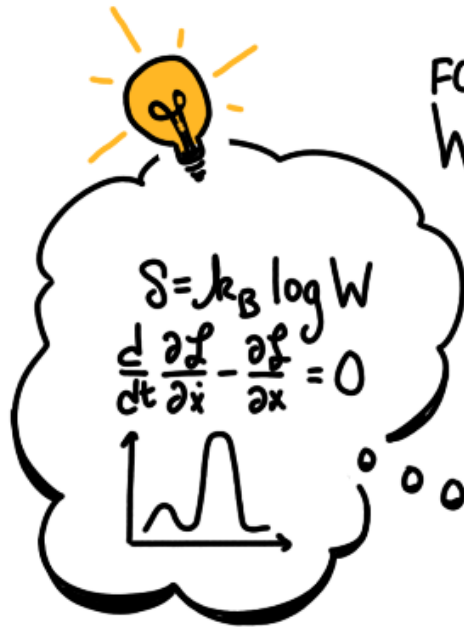
COULD BE THE KEY TO
DISCOVERING THE GIFTEDNESS
THAT IS IN EVERYONE



SCIENTISTS LOVE LEARNING & DISCOVERING NEW THINGS

FOR A SCIENTIST...
WORK CAN BE LIKE

play



BUT WHAT SORTS OF THINGS DO SCIENTISTS DO?

CREATE | COLLABORATE | SOLVE

ASK QUESTIONS

BUILD



STUDY / OBSERVE



MEASURE



EXPERIMENT

PREDICT

PLOT / GRAPH DATA

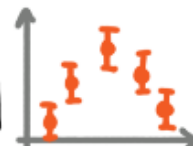
ANALYZE DATA

INTERPRET RESULTS

CALCULATE / COMPUTE

COMPARE

WRITE & DRAW



TRAVEL

PRESENT

TEACH

READ

...



THE MOST EXCITING PHRASE
TO HEAR IN SCIENCE, THE ONE
THAT HERALDS NEW 'DISCOVERIES',
IS NOT 'EUREKA!' BUT



THE MOST EXCITING PHRASE
TO HEAR IN SCIENCE, THE ONE
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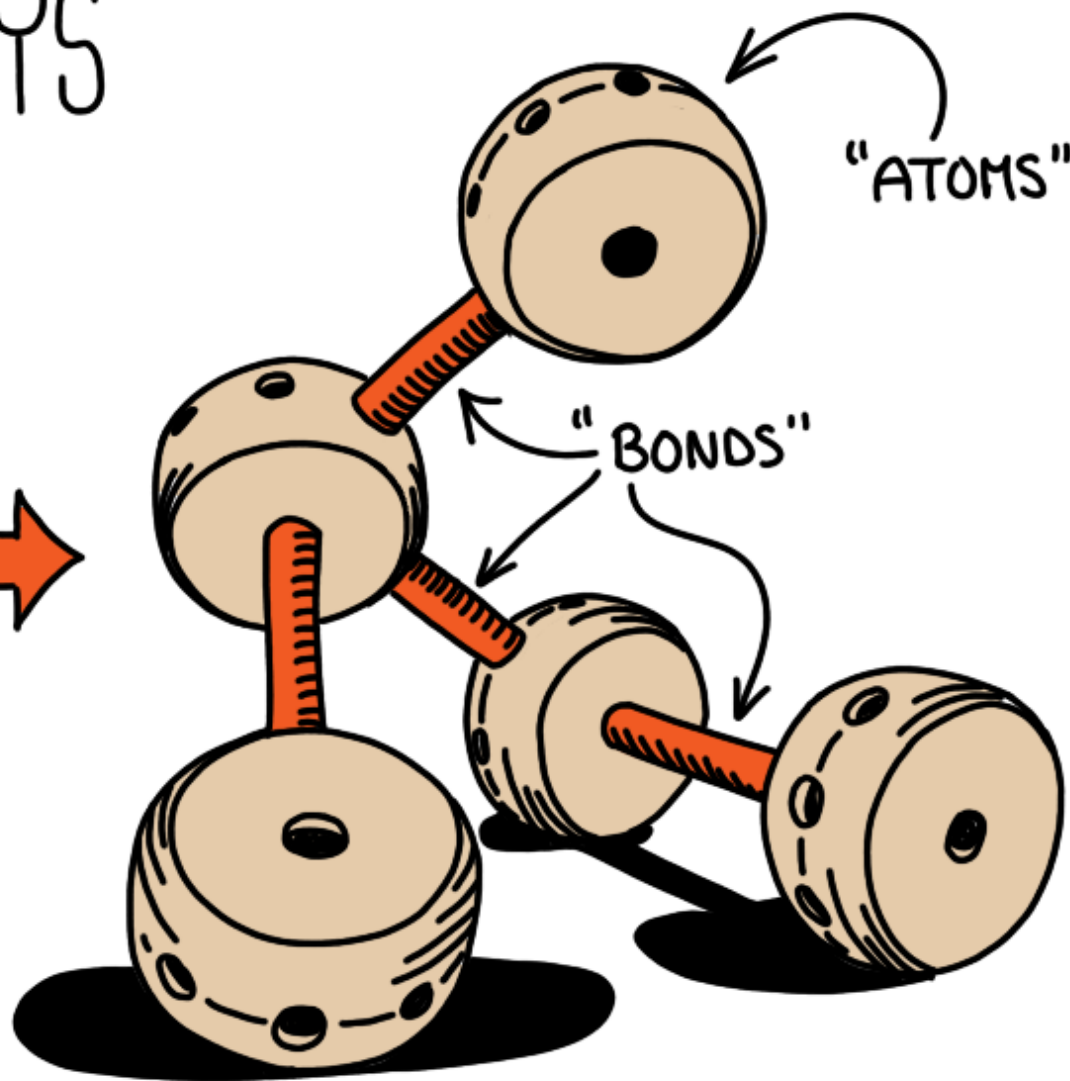


*That's
funny...*

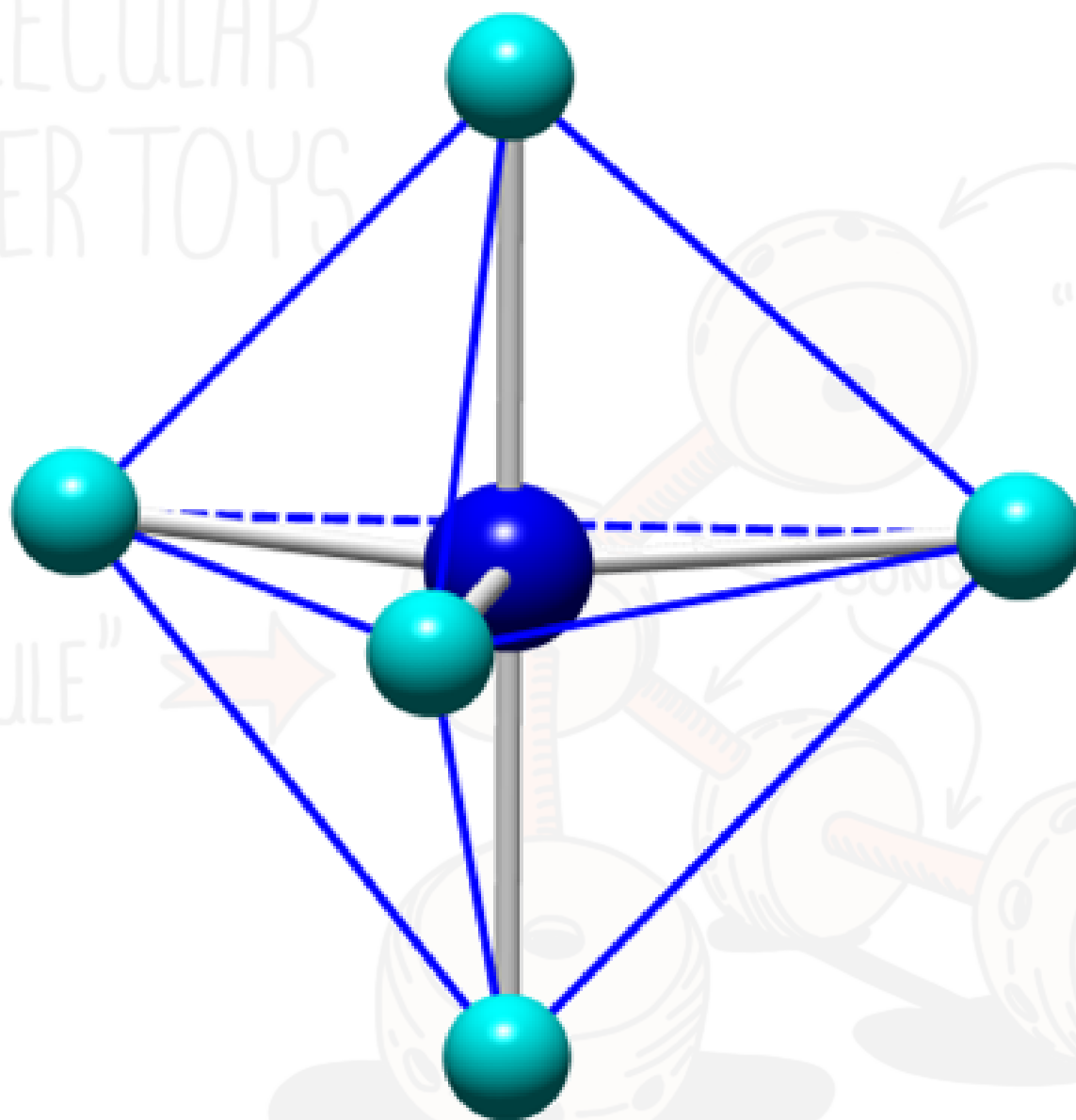
ISAAC ASIMOV

MOLECULAR TINKER TOYS

"MOLECULE"



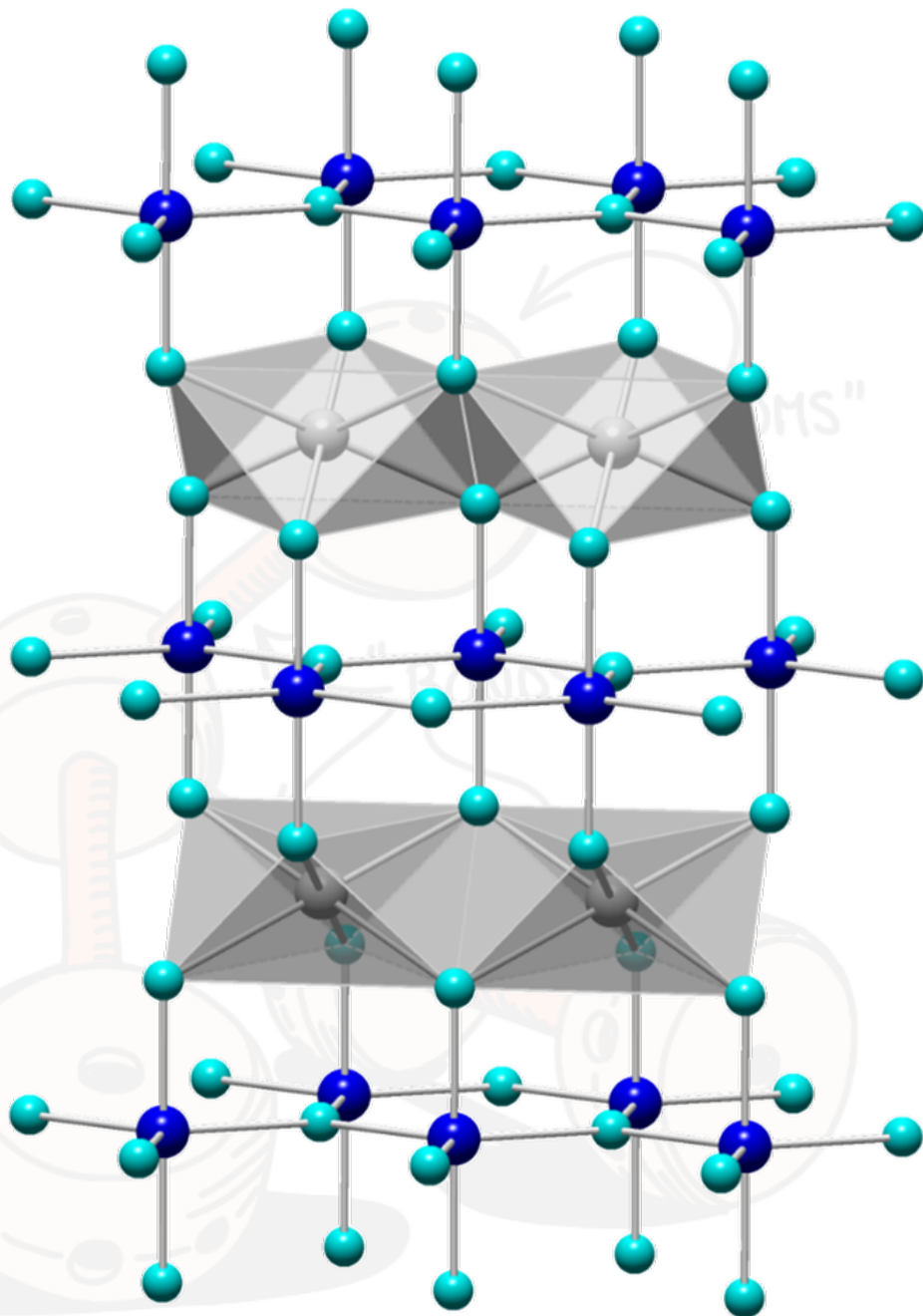
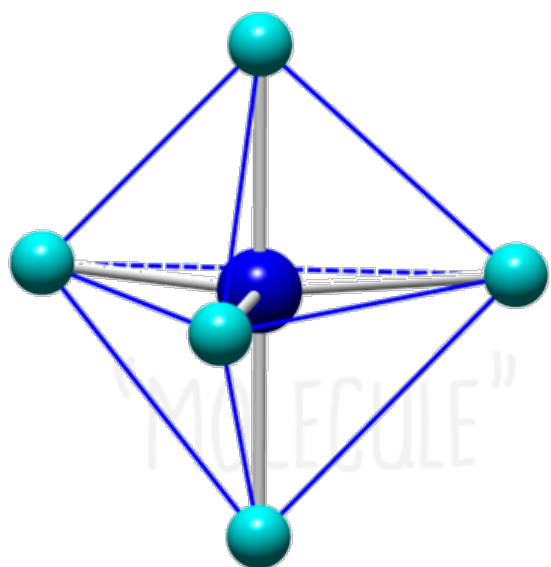
MOLECULAR TINKER TOYS



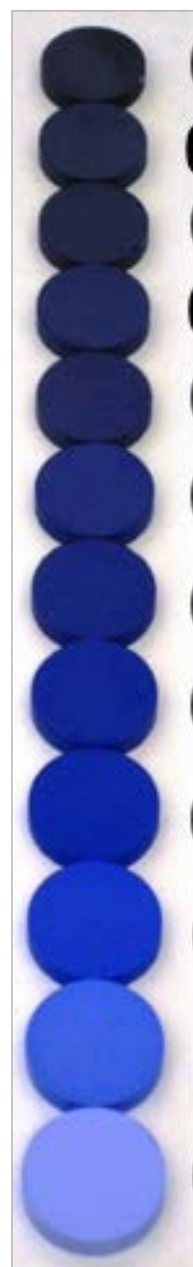
"ATOMS"

"MOLECULE"

MOLECULAR
TINKER TOYS







0.50

0.45

0.40

0.35

0.30

0.25

0.20

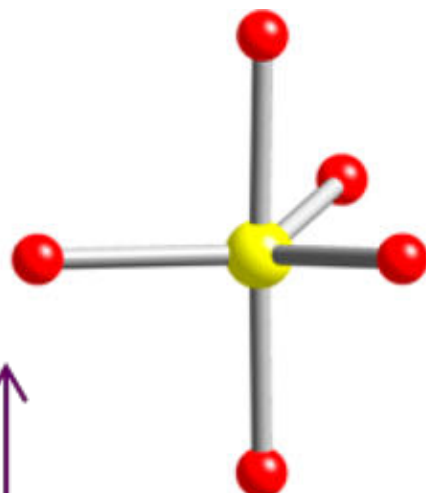
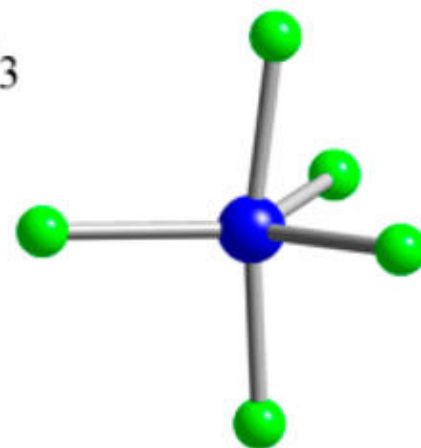
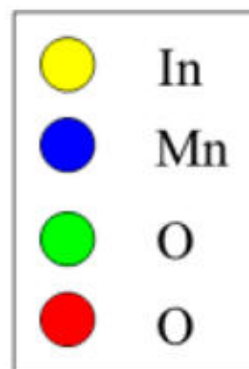
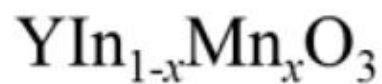
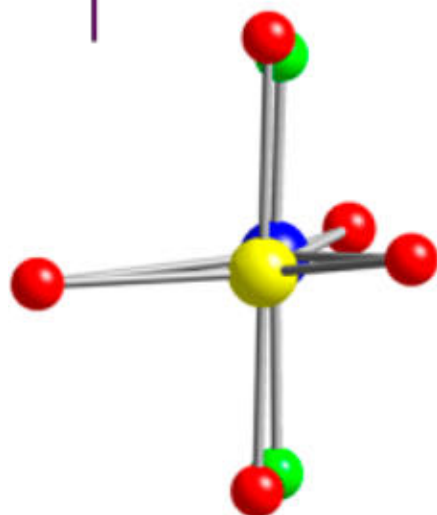
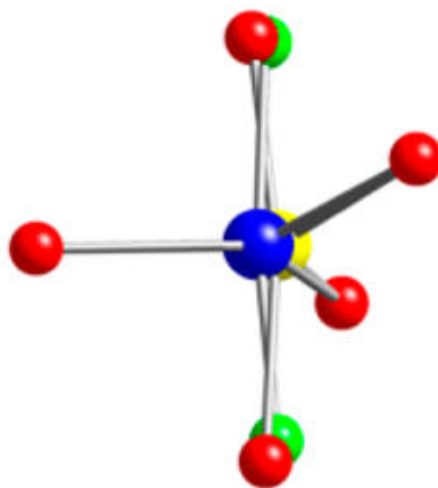
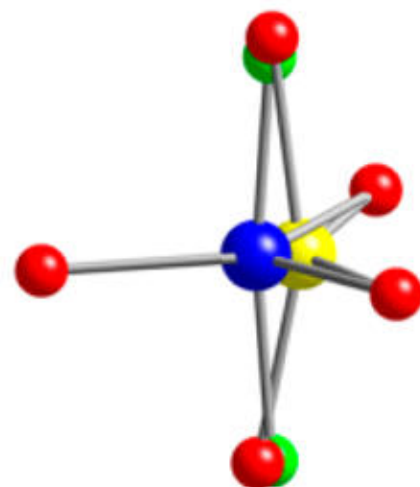
0.15

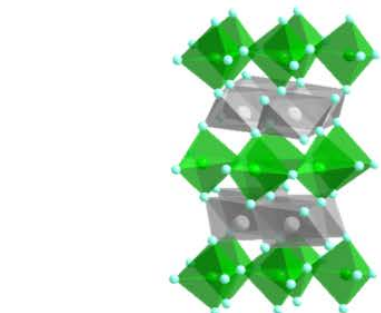
0.10

0.05

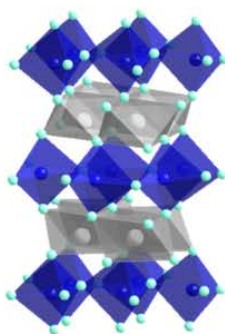
0.02

0.01

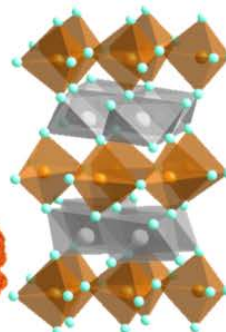
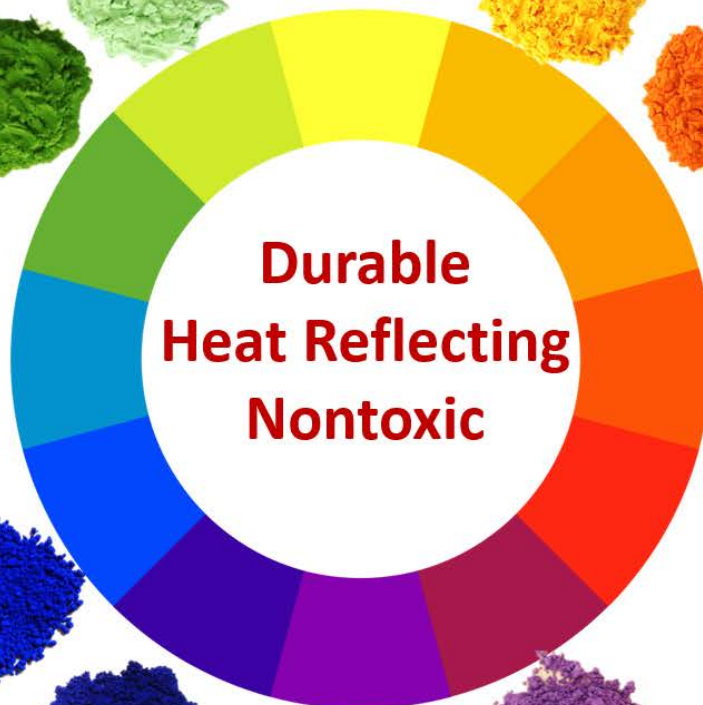
 x  $x = 0.0$  $x = 1.0$  $x = 0.2$  $x = 0.5$  $x = 0.8$



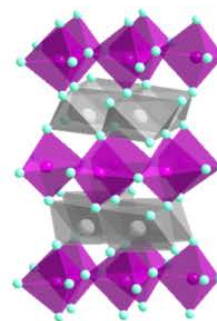
Green Hues



Blue Hues



Orange Hues



Purple Hues



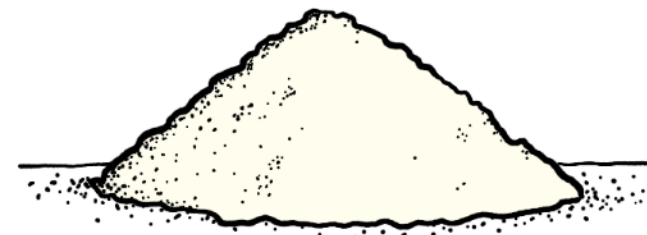
MORE

Colors

FROM DIFFERENT
BUILDING BLOCKS

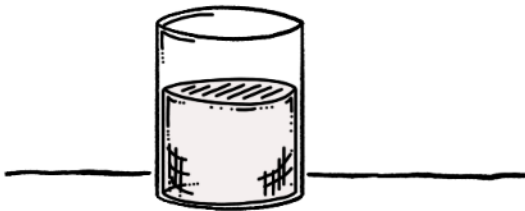


Oobleck!



CORN STARCH

+



H₂O

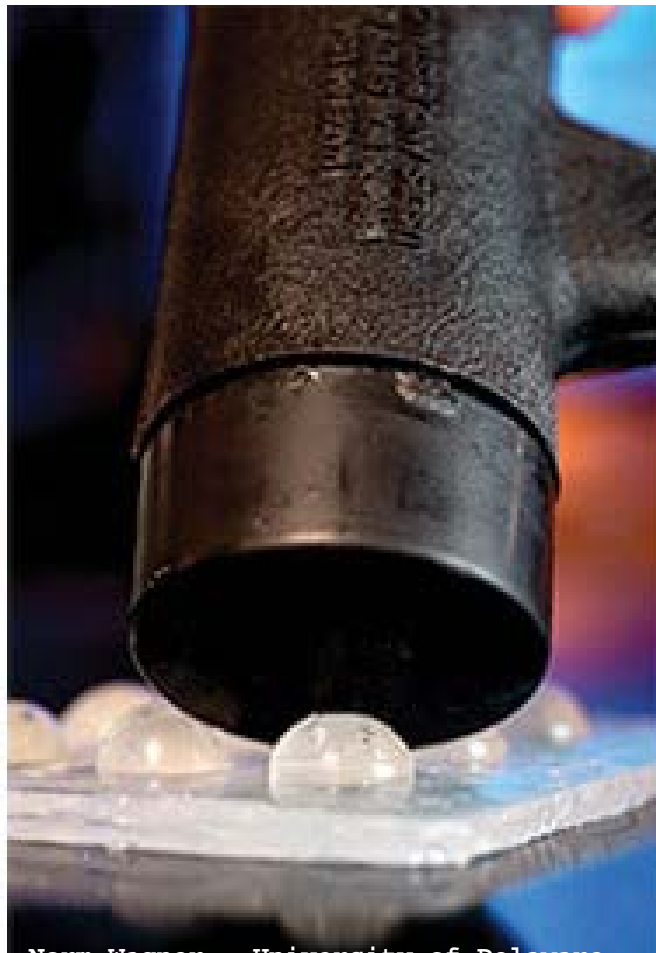


EASY ^{TO} STIR SLOWLY

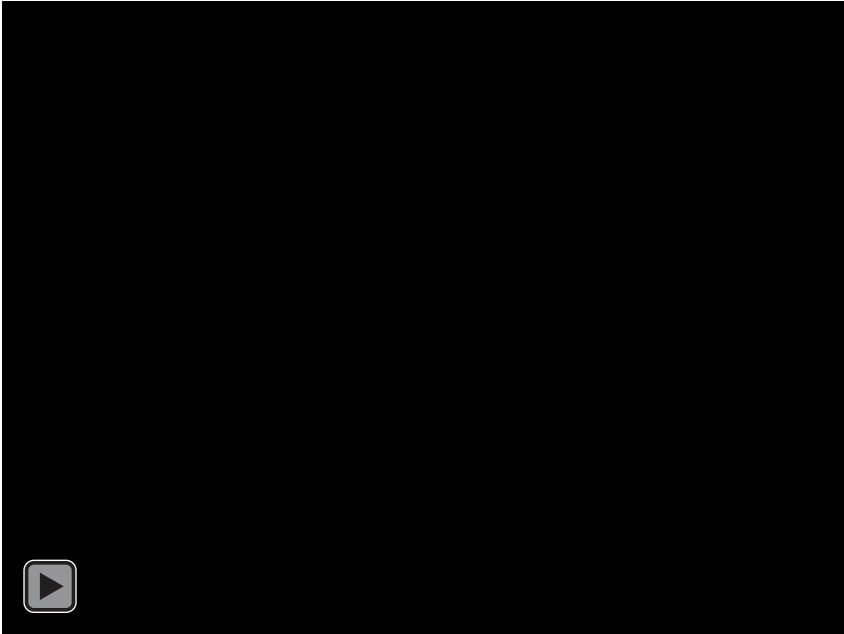
BUT

HARD ^{TO} STIR FAST

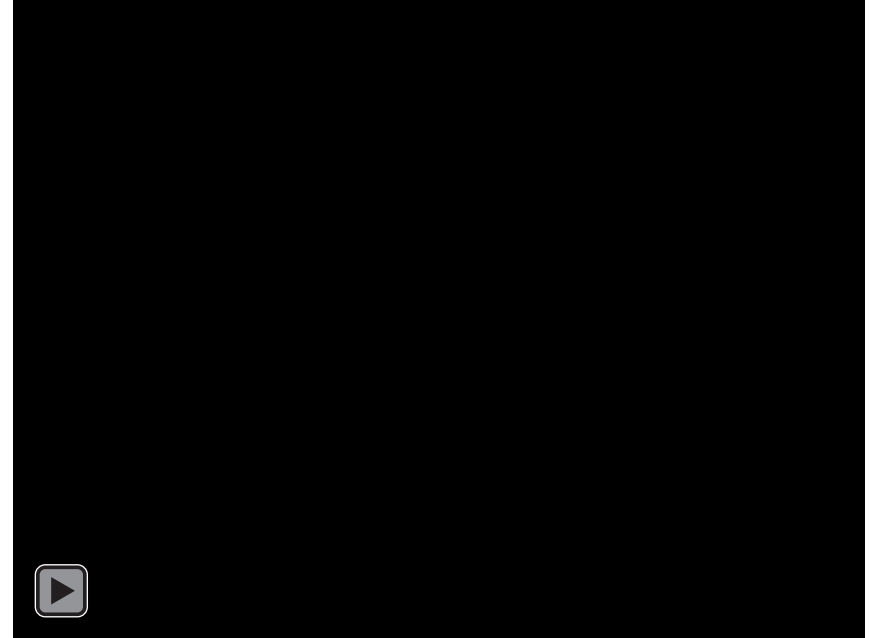
LIQUID BODY ARMOR



LIQUID BODY ARMOR



NYLON



NYLON + STF

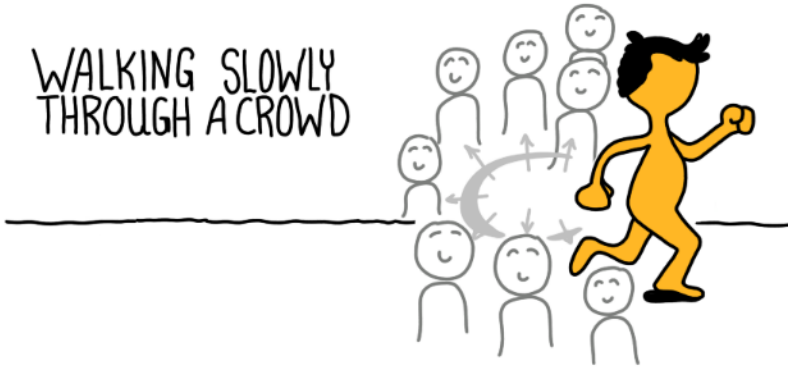
APPROACHING A CROWD



APPROACHING A CROWD



WALKING SLOWLY
THROUGH A CROWD



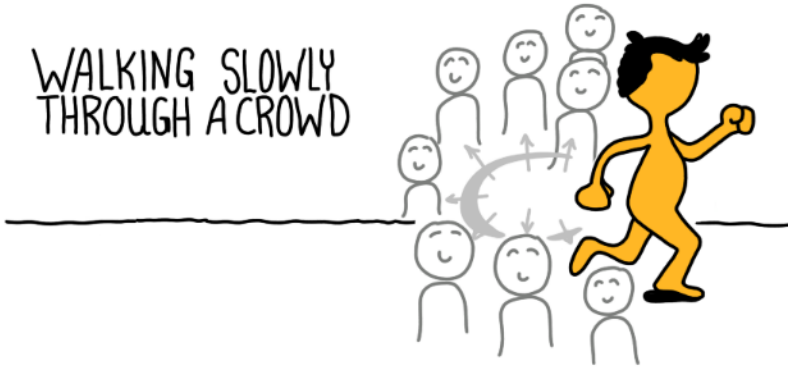
APPROACHING A CROWD



RUNNING INTO A CROWD



WALKING SLOWLY
THROUGH A CROWD



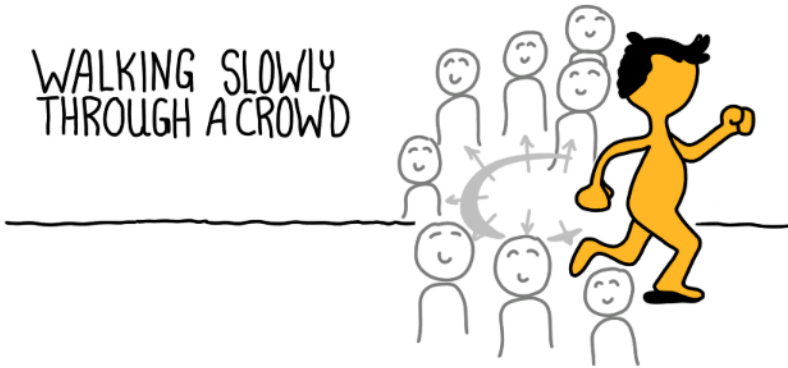
APPROACHING A CROWD



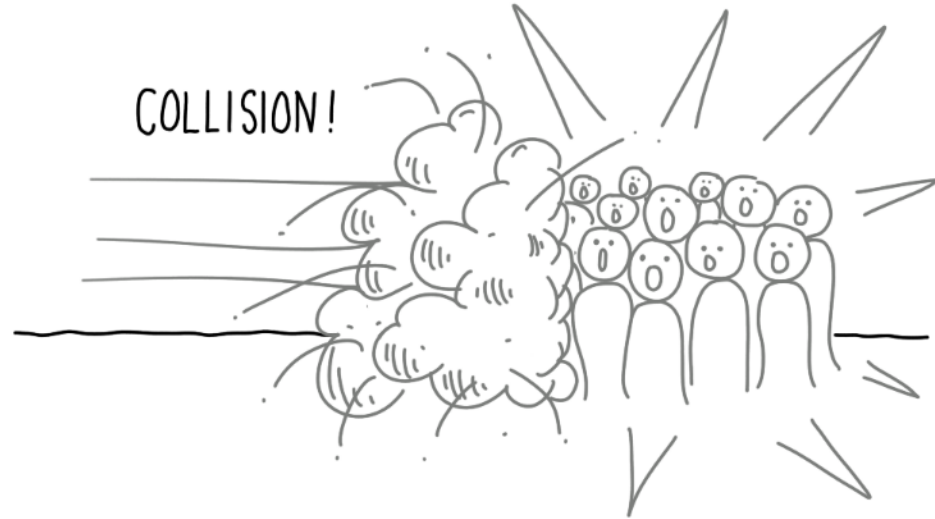
RUNNING INTO A CROWD



WALKING SLOWLY
THROUGH A CROWD



COLLISION!



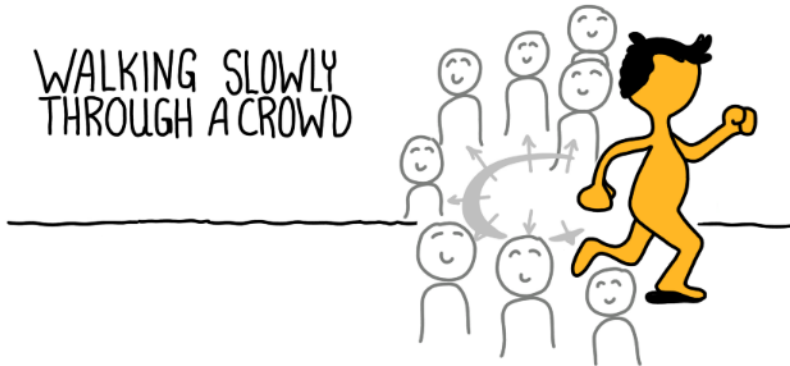
APPROACHING A CROWD



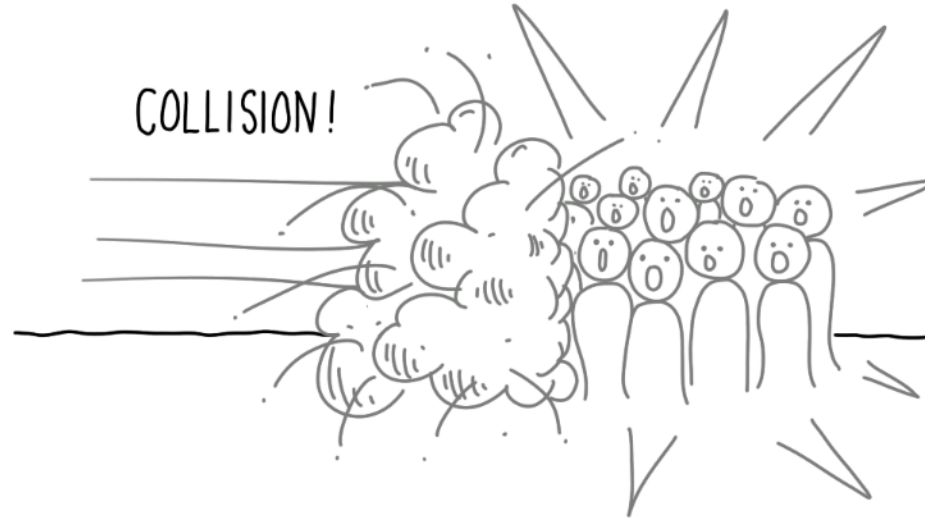
RUNNING INTO A CROWD



WALKING SLOWLY
THROUGH A CROWD



COLLISION!



UGLY AFTERMATH



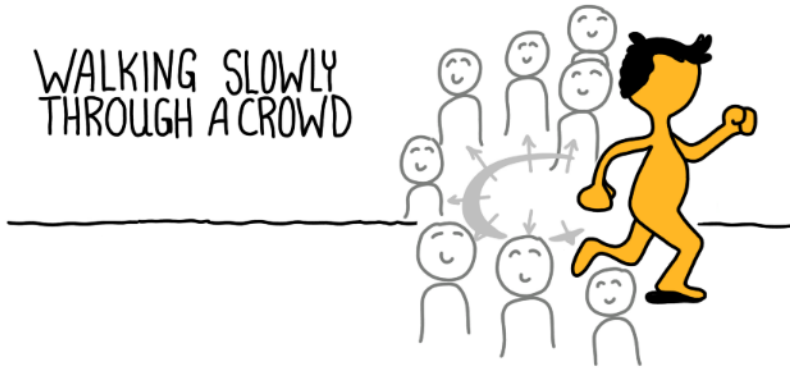
APPROACHING A CROWD



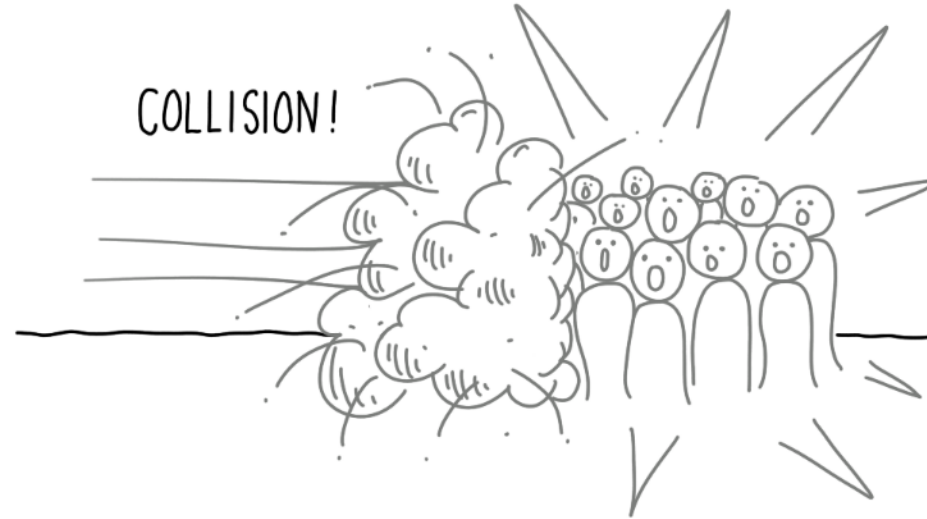
RUNNING INTO A CROWD



WALKING SLOWLY
THROUGH A CROWD



COLLISION!



UGLY AFTERMATH

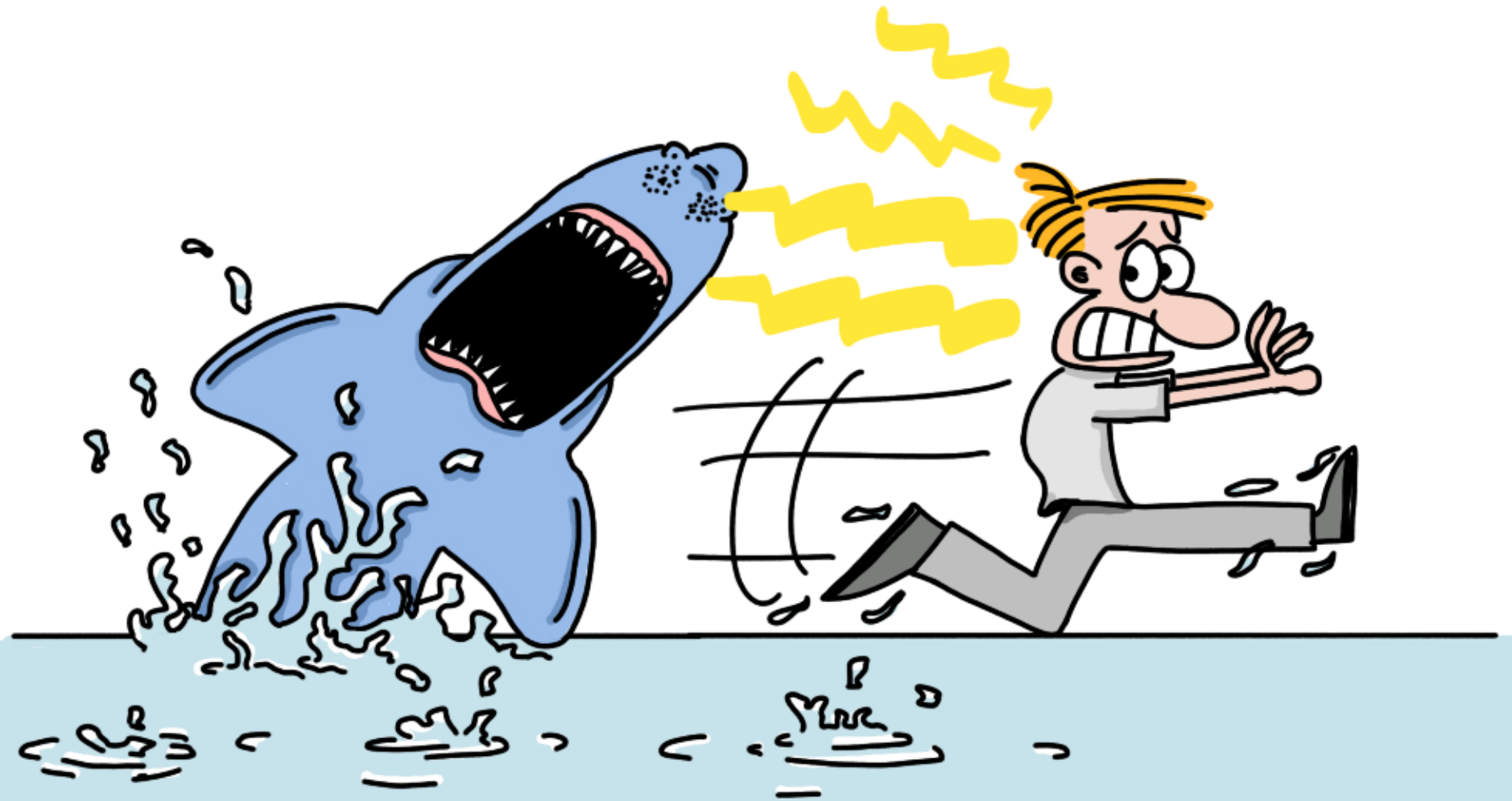


AND THAT'S HOW
"OOBLECK"
WORKS!

All living creatures produce an electric field when their muscles contract

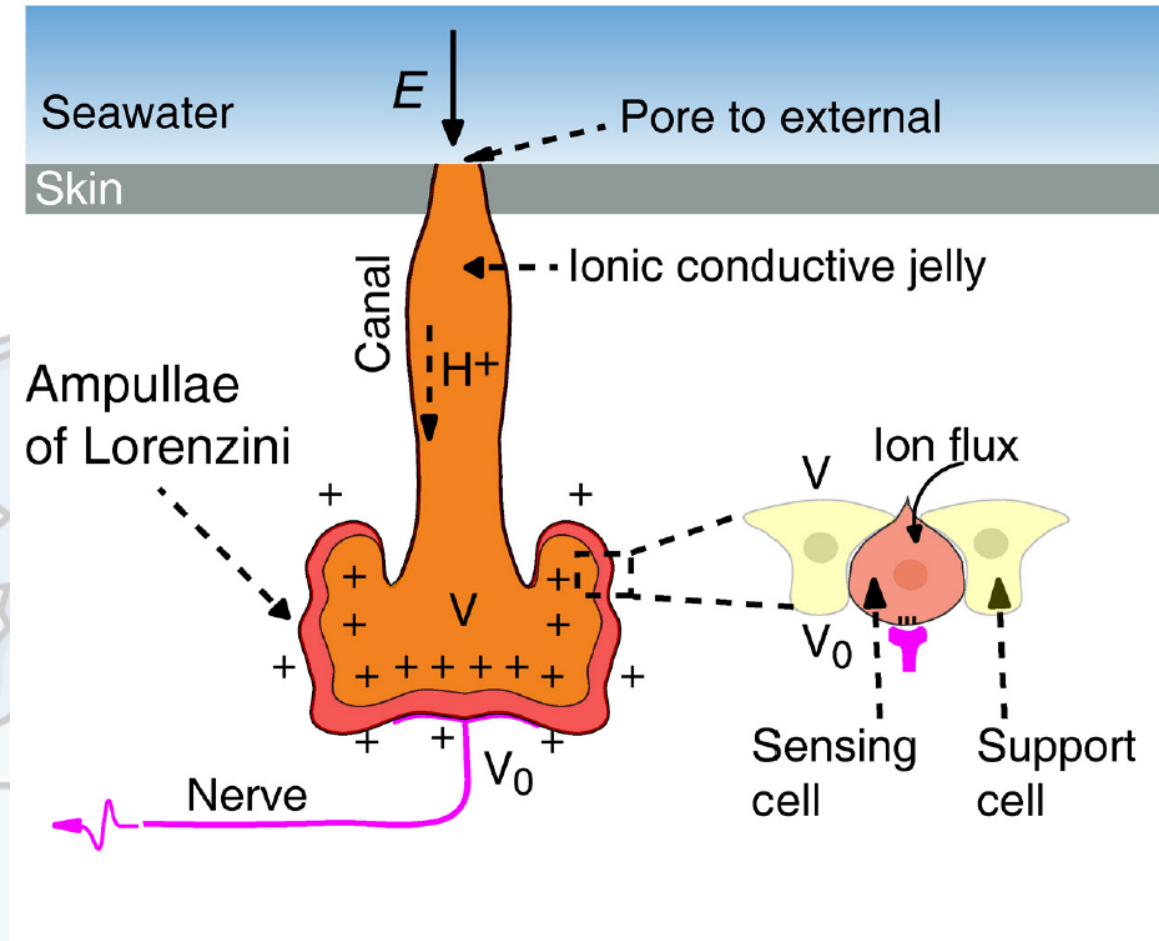


Some living creatures can detect prey from that



How do sharks do it?

ampullae of Lorenzini



?



?