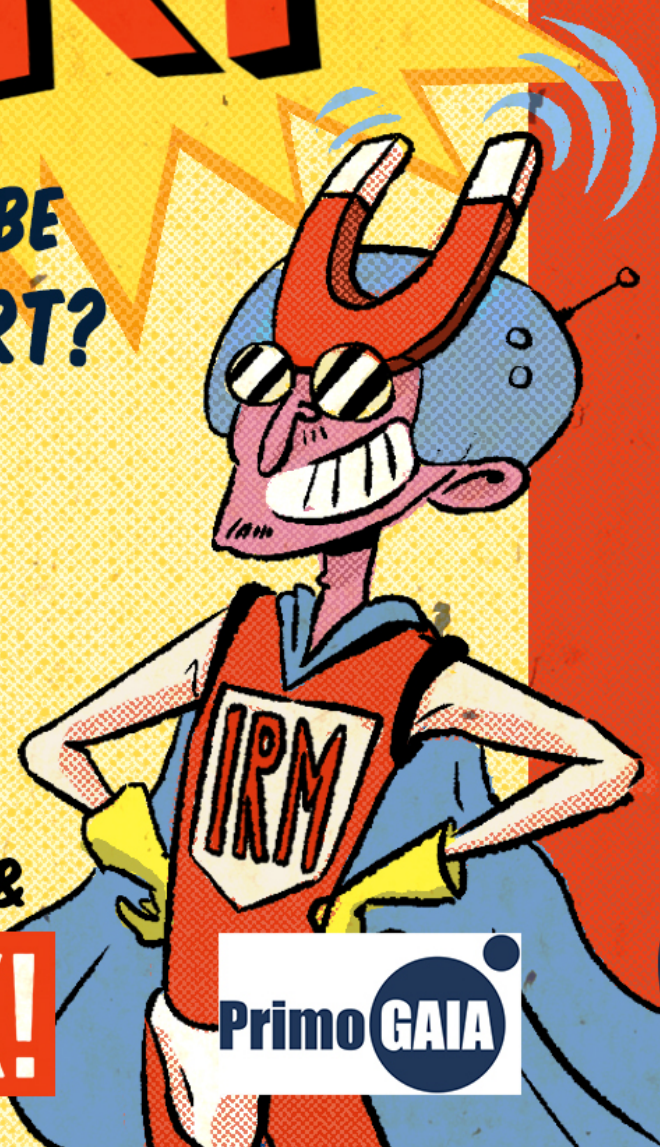


MRI

CAN IT BE
SMART?

MAGNETIC
RESONANCE
IMAGING



LOUISON WARY &

CURIEUX!

Primo GAIA

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GREAT, SO TO START, WHAT IS MRI?

IT IS A **MEDICAL IMAGING TECHNIQUE**, JUST LIKE ULTRASOUND OR CT SCANNER, THAT MAKES IT POSSIBLE TO OBTAIN A GOOD VISUAL CONTRAST OF **"SOFT" TISSUE** IN THE BODY (BRAIN, MUSCLES, LIVER AND OTHER ORGANS, ETC...).

... "SOFT"?!

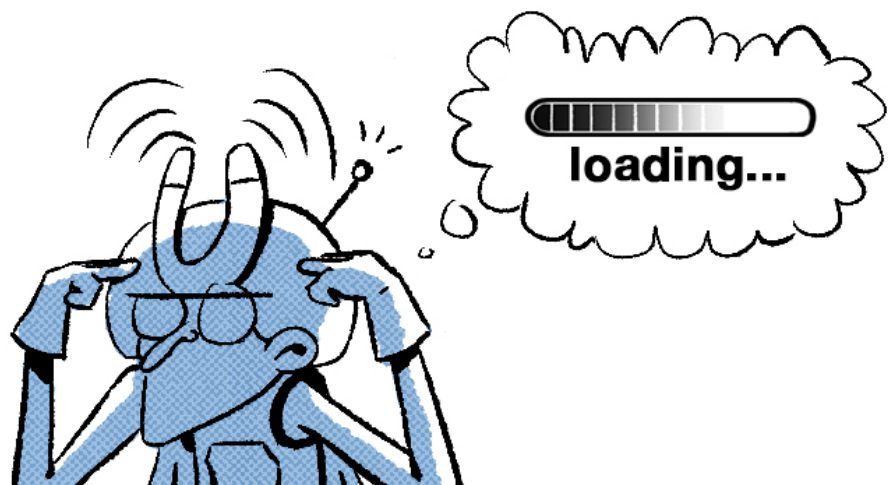


SO... HOW DOES IT WORK?

IT USES THE FACT THAT THE BODY IS 70% WATER: WATER MOLECULES ARE MADE UP OF ATOMS, AND HYDROGEN ATOMS IN PARTICULAR. WHEN EXPOSED TO A STRONG MAGNETIC FIELD, THE PROTONS IN THE HYDROGEN ATOMS ARE MAGNETISED.

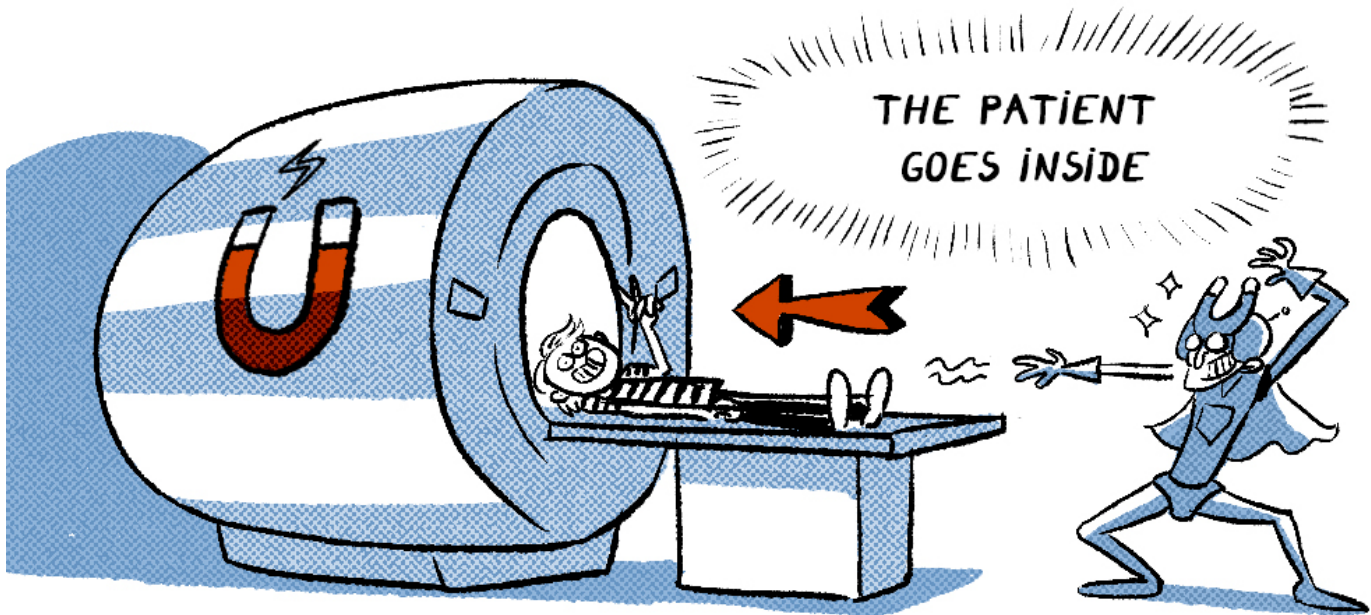


THE PROTONS' "RESONANCE" SIGNAL IS CAPTURED BY AN ANTENNA, DIGITISED, THEN PROCESSED BY COMPUTER TO OBTAIN AN IMAGE.



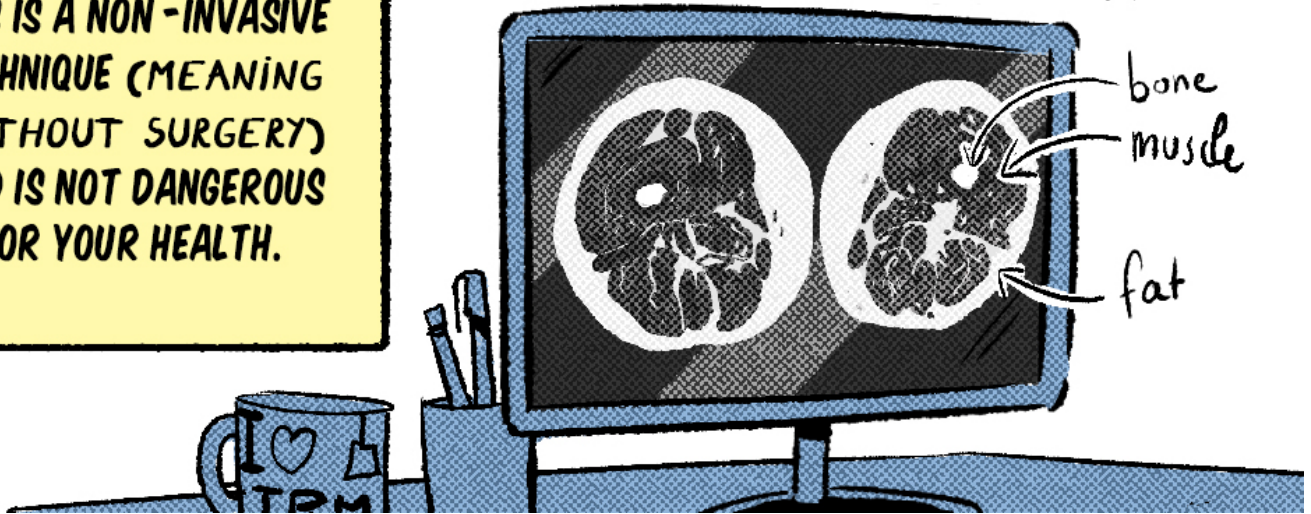
AN MRI MACHINE IS A (VERY) STRONG MAGNET

(THAT USUALLY GENERATES A MAGNETIC FIELD THAT IS 30,000 TO 60,000 TIMES STRONGER THAN THAT OF THE EARTH!)



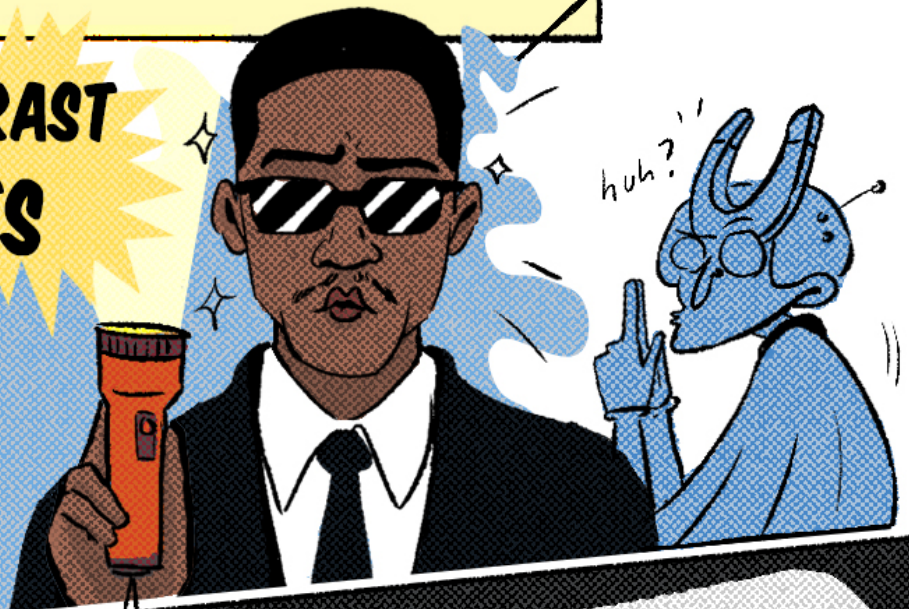
**THIS IS A NON-INVASIVE
TECHNIQUE (MEANING
WITHOUT SURGERY)
AND IS NOT DANGEROUS
FOR YOUR HEALTH.**

THIGH CROSS-SECTION



TO COMPLEMENT THE IMAGING TECHNOLOGY, THE PATIENT IS INJECTED WITH A **PRODUCT** THAT **INCREASES THE CONTRAST** IN CERTAIN TISSUES SO THAT THEY CAN BE SEEN BETTER IN THE IMAGES: THESE PRODUCTS ARE CALLED...

THE CONTRAST AGENTS

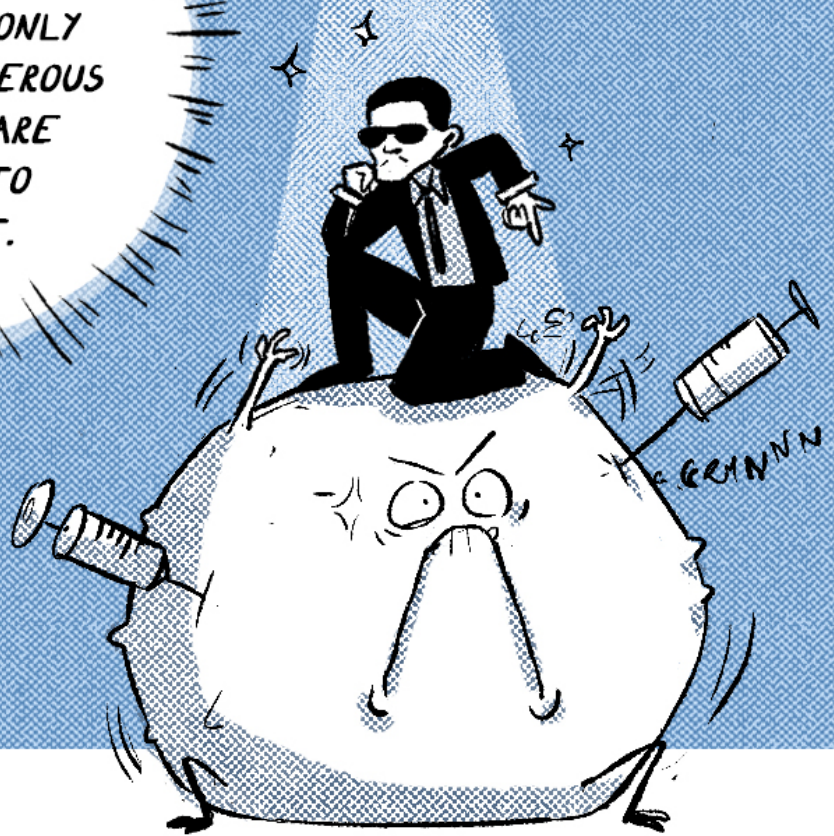


FOR EXAMPLE, THEY MAKE IT POSSIBLE TO BETTER IDENTIFY TUMOURS AND HAEMORRHAGES.



RECENT TECHNICAL ADVANCEMENTS NOW ENABLE THE CREATION OF CONTRAST AGENTS WITH SPECIALIZED FUNCTIONS.

FOR EXAMPLE, SOME AGENTS ONLY HIGHLIGHT CANCEROUS CELLS THAT ARE RESISTANT TO TREATMENT.

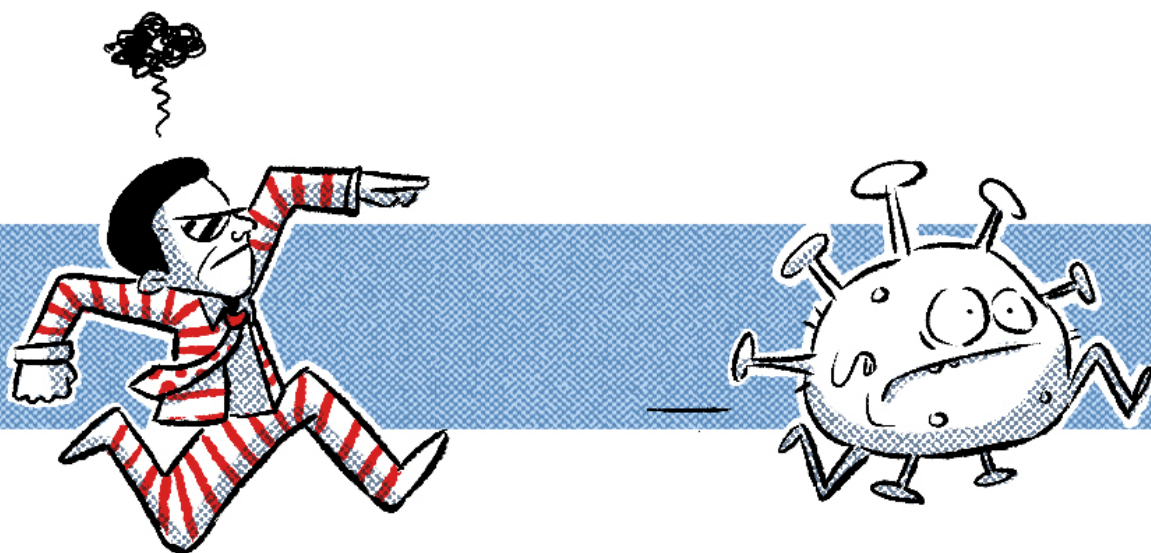


WHEN THE MRI ALLOWS YOU TO SEE MOLECULES "IN ACTION" IN THE BODY, WE CALL THAT **MOLECULAR IMAGING**.

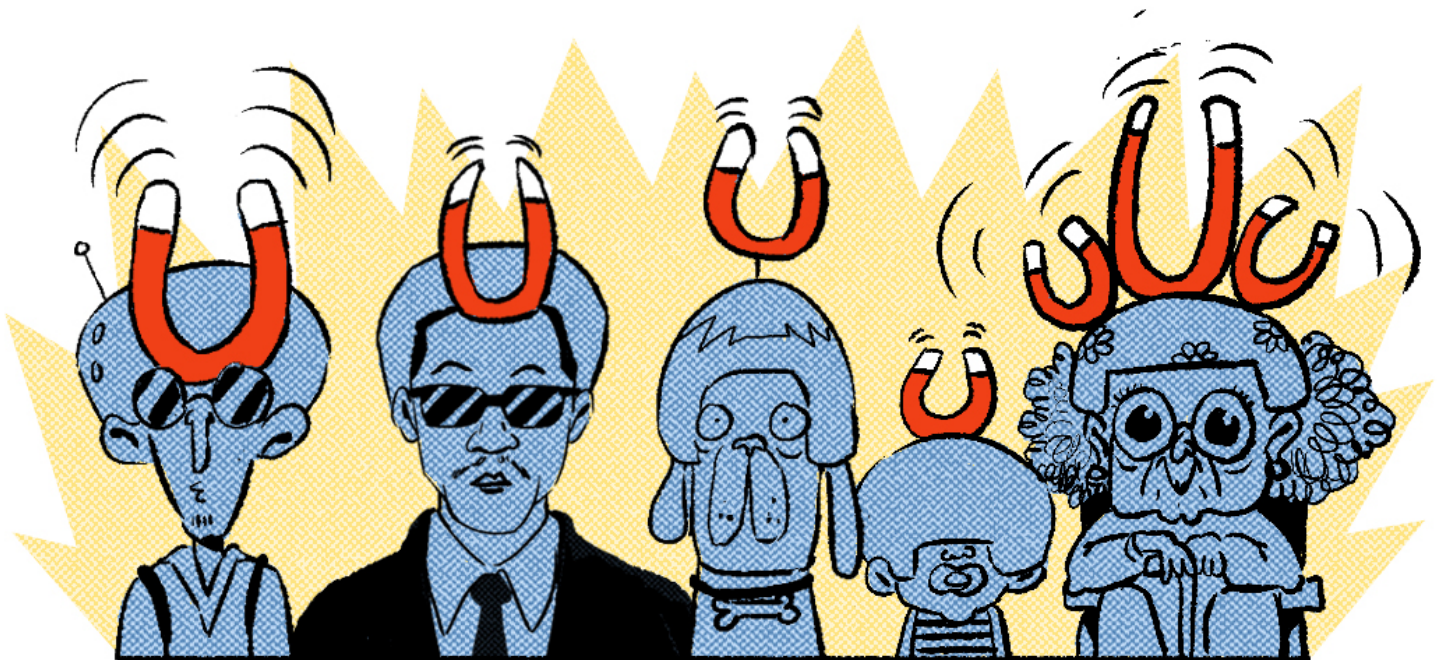
AS PART OF THE EUROPEAN **PRIMOGAIA** PROJECT, RESEARCHERS ARE IN THE PROCESS OF DEVELOPING A TECHNOLOGY THAT COULD **REVOLUTIONISE MRI**.

THEY HAVE CREATED A **"SMART" CONTRAST AGENT**

WHEN FACED WITH BIOCHEMICAL REACTIONS LINKED TO CERTAIN DISEASES, IT SIGNALS THEM BY CHANGING MAGNETIC COLOUR.



THE OUTCOME OF THE PRIMOGAIA PROJECT COULD OPEN AN OPPORTUNITY FOR A NEW TYPE OF IMAGING WITH MRI MACHINES THAT HAVE AN **ULTRA-LOW MAGNETIC FIELD**: LIGHTER AND LESS EXPENSIVE, THEY WOULD MAKE IT POSSIBLE TO EXPAND THE USE OF MRI...



...WHICH WOULD BECOME JUST AS ACCESSIBLE TO FIELDS SUCH AS HUMANITARIAN MEDICINE.

THIS PROJECT HAS RECEIVED FUNDING FROM EUROPEAN UNION'S HORIZON 2020 RESEARCH AND INNOVATION PROGRAM UNDER GRANT AGREEMENT NO 863099



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