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Script, Design and Science advice:
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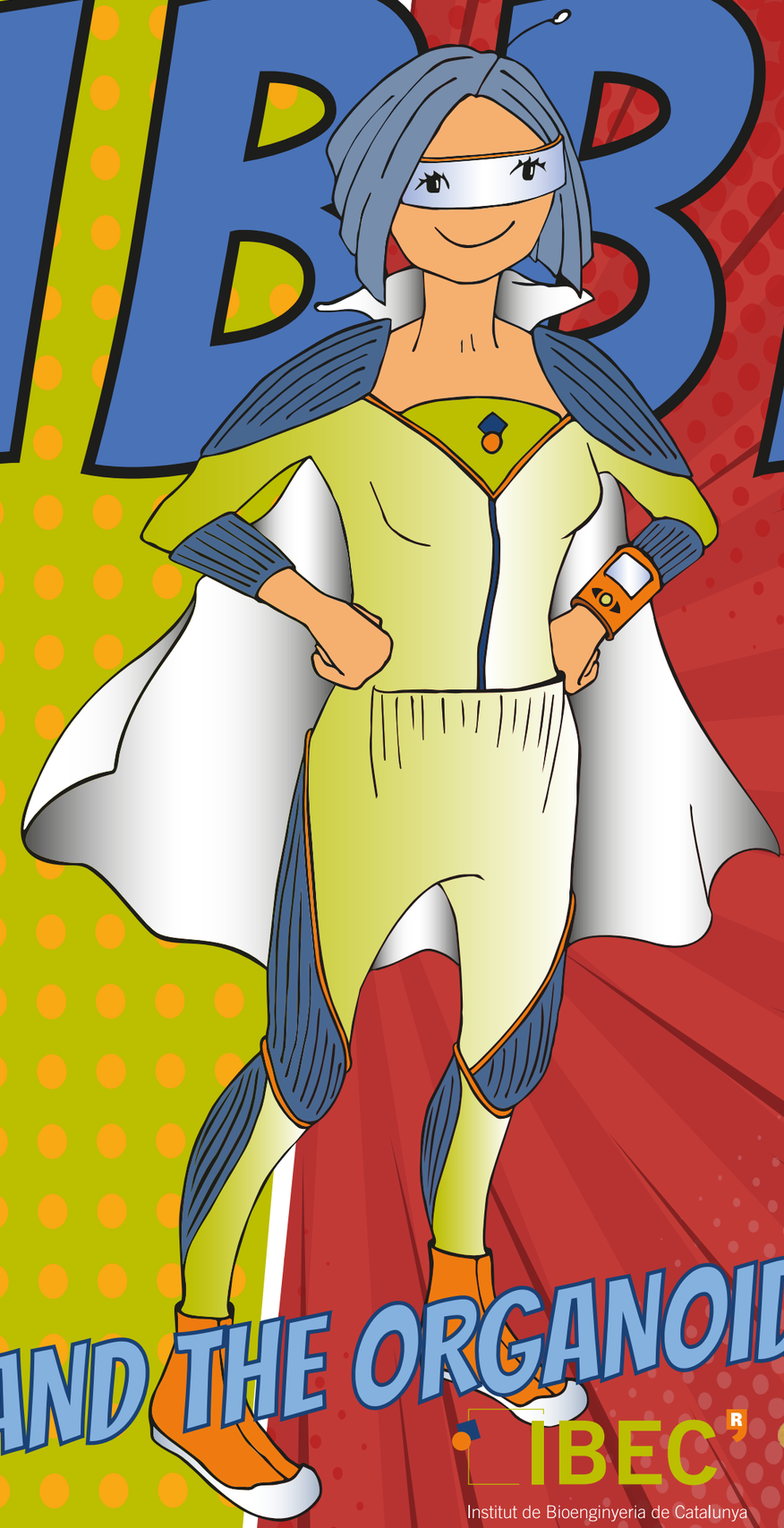
STEM CELLS: CELLS THAT RETAIN THE ABILITY TO TRANSFORM AND DIFFERENTIATE INTO VARIOUS CELL TYPES. WE CAN NOW GET STEM CELLS FROM CELLS IN THE SKIN, MUSCLE AND ALMOST ANY PART OF THE BODY.

3D SCAFFOLD: IT IS A 3D STRUCTURE MADE OF BIOMATERIALS, AND WHERE CELLS CAN FORM TISSUES.

BIOMATERIALS: SET OF MATERIALS THAT CAN BE USED IN OUR BODY WITHOUT PUTTING OUR HEALTH AT RISK.

3D BIO PRINTER: IT IS A PRINTER THAT COMBINES CELLS AND SUBSTANCES THAT STIMULATE CELL GROWTH ALONG WITH BIOMATERIALS THAT MIMIC THE CHARACTERISTICS OF NATURAL TISSUE AS MUCH AS POSSIBLE. GENERALLY, 3D BIOPRINTING USES THE 'LAYER BY LAYER' METHOD TO DEPOSIT MATERIALS KNOWN AS 'BIOTINTS' TO CREATE TISSUE-LIKE STRUCTURES.

IBBI



AND THE ORGANOIDS

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EXCELENCIA SEVERO OCHOA

IBBI WILL FIGHT KIDNEY DISEASES. SHE WANTS TO STUDY IF A DRUG WILL WORK, BUT SHE HAS A PROBLEM. HOW WILL SHE TEST A DRUG WITHOUT ENDANGERING ANYONE'S HEALTH?

I'VE GOT IT! I NEED TO CREATE A MINI-ORGAN THAT WORKS JUST LIKE OUR KIDNEYS.

IT IS NOT USEFUL TO TEST THIS DRUG IN ANIMAL MODELS. THEY ARE SO DIFFERENT FROM US...

GOT IT !!!

I WILL DO IT USING PATIENT'S STEM CELLS!!

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I NEED TO CREATE A MICROENVIRONMENT ON THIS CULTURE PLATE AND THEN WE'LL START WITH THE 3D STRUCTURE.

I'LL TELL YOU HOW IT'S DONE

FOLLOW ME!

TO CREATE THE MINI-KIDNEYS, IBBI WILL NEED A THREE-DIMENSIONAL SCAFFOLD OR STRUCTURE AND DEPOSIT ON IT THE STEM CELLS. THIS PROCESS SHOULD BE DONE IN A VERY CONTROLLED ENVIRONMENT WHERE THERE IS NO CONTAMINATION FROM THE OUTSIDE. WE CAN USE A 3D BIOPRINTER LIKE THE ONE WE HAVE AT IBEC.

NOW WE HAVE TO TAKE CARE OF OUR SCAFFOLD WITH CELLS AS IF WE WERE TAKING CARE OF A TOMATO PLANT!

FROM NOW ON, IBBI WILL HAVE TO TAKE CARE OF THE GROWTH OF THE CELLS. IT'S VERY IMPORTANT TO FEED AND MAINTAIN THEM AT THE RIGHT TEMPERATURE AND HUMIDITY CONDITIONS

SCAFFOLD

ORGANOID

GROWING MEDIUM

20 DAYS LATER ...

HUMAN KIDNEY
10-12 CM

BEAN
1-2 CM

KIDNEY ORGANOID
2-4 MM

ONCE AGAIN BIOENGINEERING HAS HELPED US! NOW WE CAN INVESTIGATE WITHOUT WITHOUT RISKING PEOPLE'S LIFES.

AS YOU HAVE SEEN, NOWADAYS WE CAN NOT ONLY CREATE KIDNEY ORGANOIDS, BUT ALSO HEART, LUNG AND ALMOST ANY ORGAN.

THE DEVELOPMENT OF ORGANOIDS STILL HAS SOME LIMITATIONS, BUT IT IS ALREADY HELPING US NOT ONLY TO TEST DRUGS BUT TO UNDERSTAND THE MECHANISMS OF INFECTION AND SPREADING OF SOME DISEASES SUCH AS IN THE CASE OF COVID-19.

SCIENCE AND WIT, A COMBINATION THAT ALWAYS WIN!