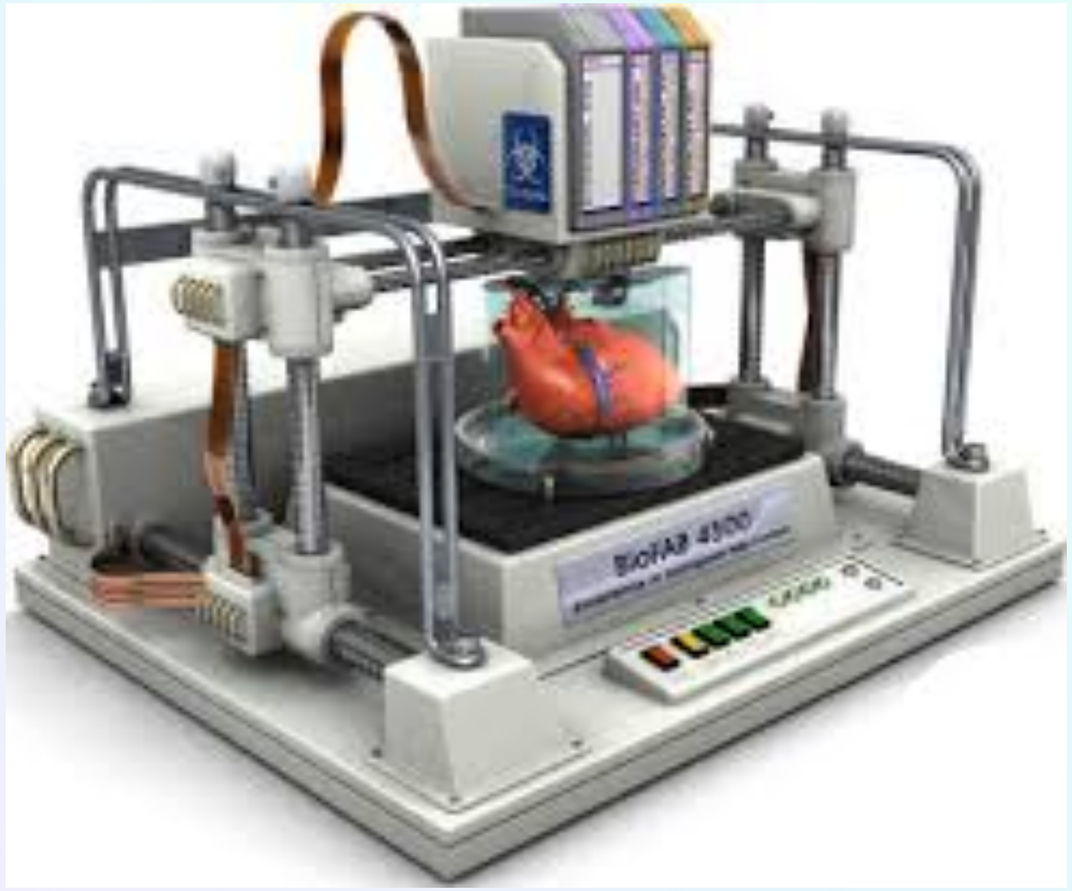
NOW ELECTRIC GADGETS WILL NOT BREAK EVEN IF HIT WITH A HAMMER

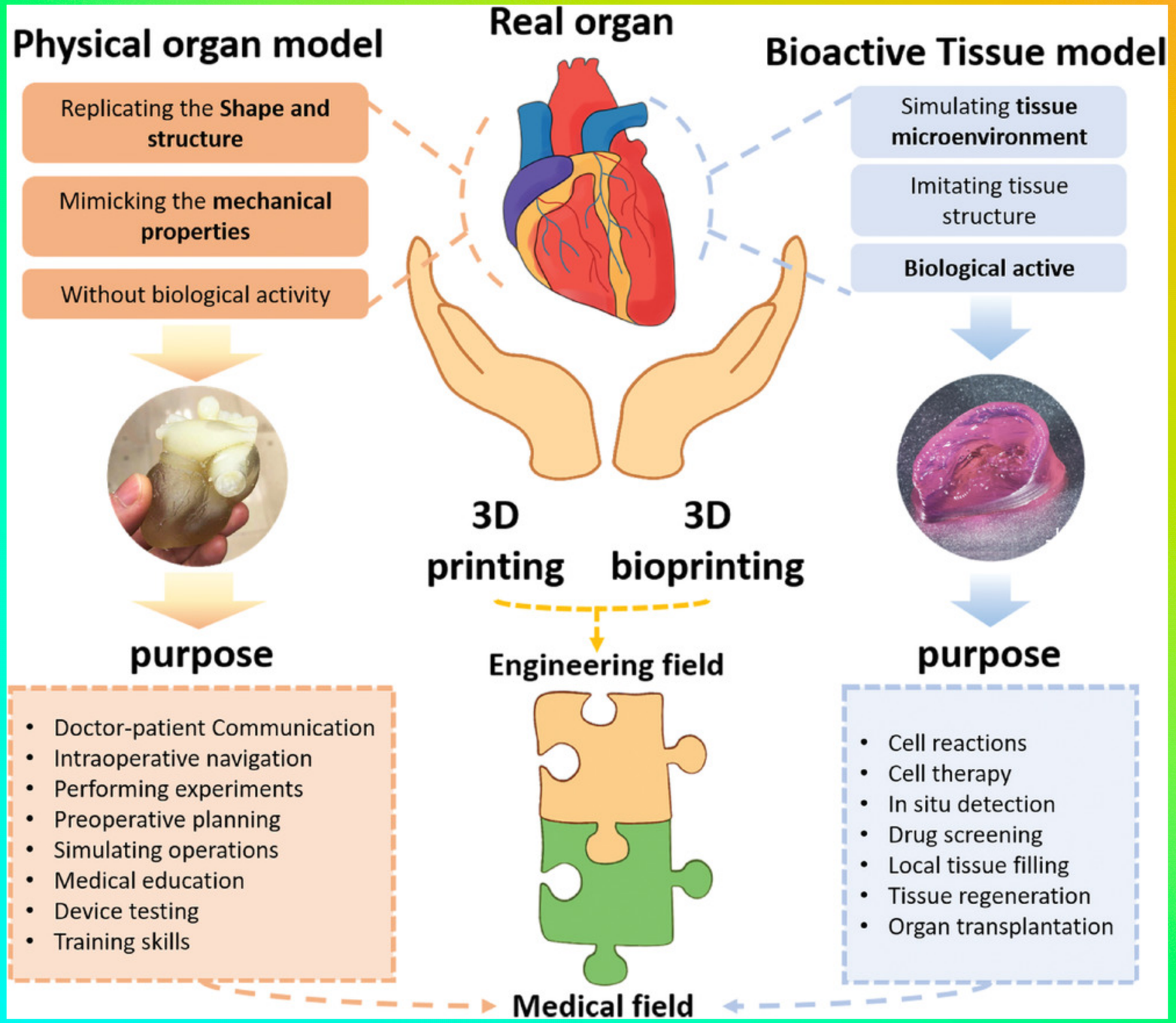
UNBREAKABLE GADGETS

- Scientists discovered new material, the more force applied on it, the stronger it will behave.
- Now smartwatch bands, wearable sensors and health monitoring electric gadgets will not break even if hammered or pulled.

- Scientists at the University of California have invented a material which cannot be broken even by pulling or slamming.

- Apart from this, human organs can also be printed with the help of 3D printer from this material.
- It follows the principle of adaptive durability.
- Materials made from this will not get damaged even in harsh environments.
- The more force is applied on them, the more tough they will show behaviour.




Physical organ model
Real organ
Bioactive Tissue model
Replicating the Shape and structure
Mimicking the mechanical properties
Without biological activity
Simulating tissue microenvironment
Imitating tissue structure
Biological active
3D printing
3D bioprinting
purpose
Engineering field
purpose
Doctor-patient Communication
Intraoperative navigation
Performing experiments
Preoperative planning
Simulating operations
Medical education
Device testing
Training skills
Cell reactions
Cell therapy
In situ detection
Drug screening
Local tissue filling
Tissue regeneration
Organ transplantation
Medical field

- The material is inspired by edible corn-starch
- The new material is actually inspired by corn starch used in cooking.
- A solution of corn starch mixed with water acts as a liquid when applied slowly and with low force, and acts as a solid when punched and punched rapidly.
- This difference in the behaviour of this material is due to the size difference of its particles.

NEWTONIAN FLUIDS

VERSUS

NON-NEWTONIAN FLUIDS

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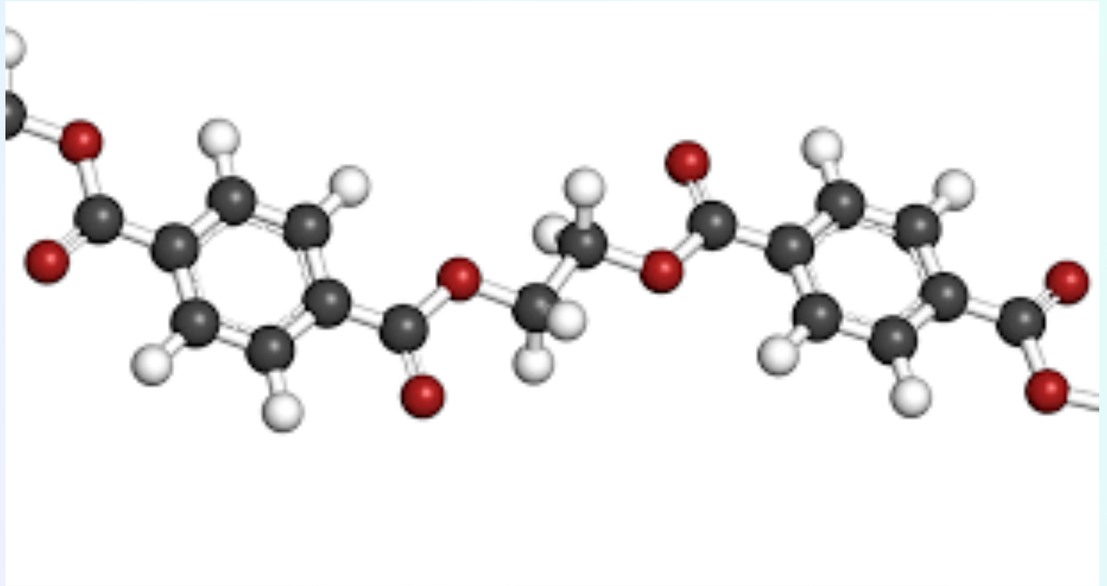
NEWTONIAN FLUIDS	NON-NEWTONIAN FLUIDS
Newtonian fluids are fluids that obey Newton's laws of constant viscosity	Non-Newtonian fluids are fluids that do not have constant viscosity
Viscosity remains constant regardless of the magnitude of the applied stress or the rate of deformation	Viscosity can vary depending on the magnitude of applied stress
Exhibit a linear relationship between the shear stress and the rate of deformation	Exhibit a nonlinear relationship between shear stress and shear rate
Water, glycerol, alcohol, and mineral oil are a few examples	Emulsions, suspensions, and gels are a few examples

- Scientists want to make polymer using this theory.
- Researchers also want to use this theory with polymers, from which these wearables can be made.
- Scientists are using congested polymers, which help in conducting electricity while remaining soft and pliable.



- New material made from four polymers
- Scientists have created by combining :

■ Poly(2-acrylamido-2-methylpropanesulfonic acid),

■ small molecules of polyaniline

■ and large molecules of high conductor poly(3,4-ethylenedioxythiophene) polystyrene sulphonate (PEDOT:PSS)

- When less force was applied on it, its shape and size changed, but when the force was increased, the material started behaving more rigidly.
- By increasing the amount of PEDOT:PSS to 10%, its adoptive durability and conductivity also increased.

- Metabolites of materials act as shock-absorbers
- Super small metabolites are made by combining two positively and two negatively charged polymers.
- These metabolites, like shock-absorbers, absorb any impact without breaking. Actually, this material is very soft and flexible.