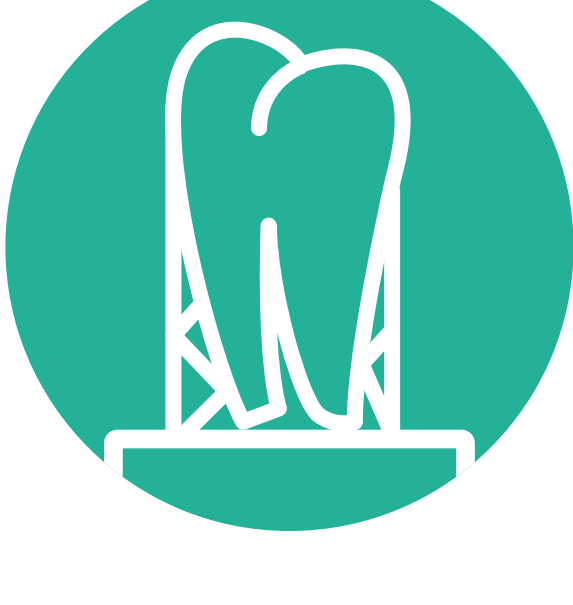


3D PRINTING IN THE MEDICAL SECTOR

2022

HOW IS THE TECHNOLOGY DEVELOPING IN MEDICINE?



Dentistry

Additive manufacturing in the dental sector helps in the development of crowns, dental implants or surgical guides.



Implants

Individualized implants are made using various 3D printing techniques adapting to the needs of patients.



Medical devices

By scanning body parts, measurements are taken to model medical applications in 3D that are adapted to each patient.



Bioprinting

Similar to inkjet printing, bioprinting is created by mixing hydrogel and human cells. After printing, the individual cells grow together to form a living tissue.



Medications

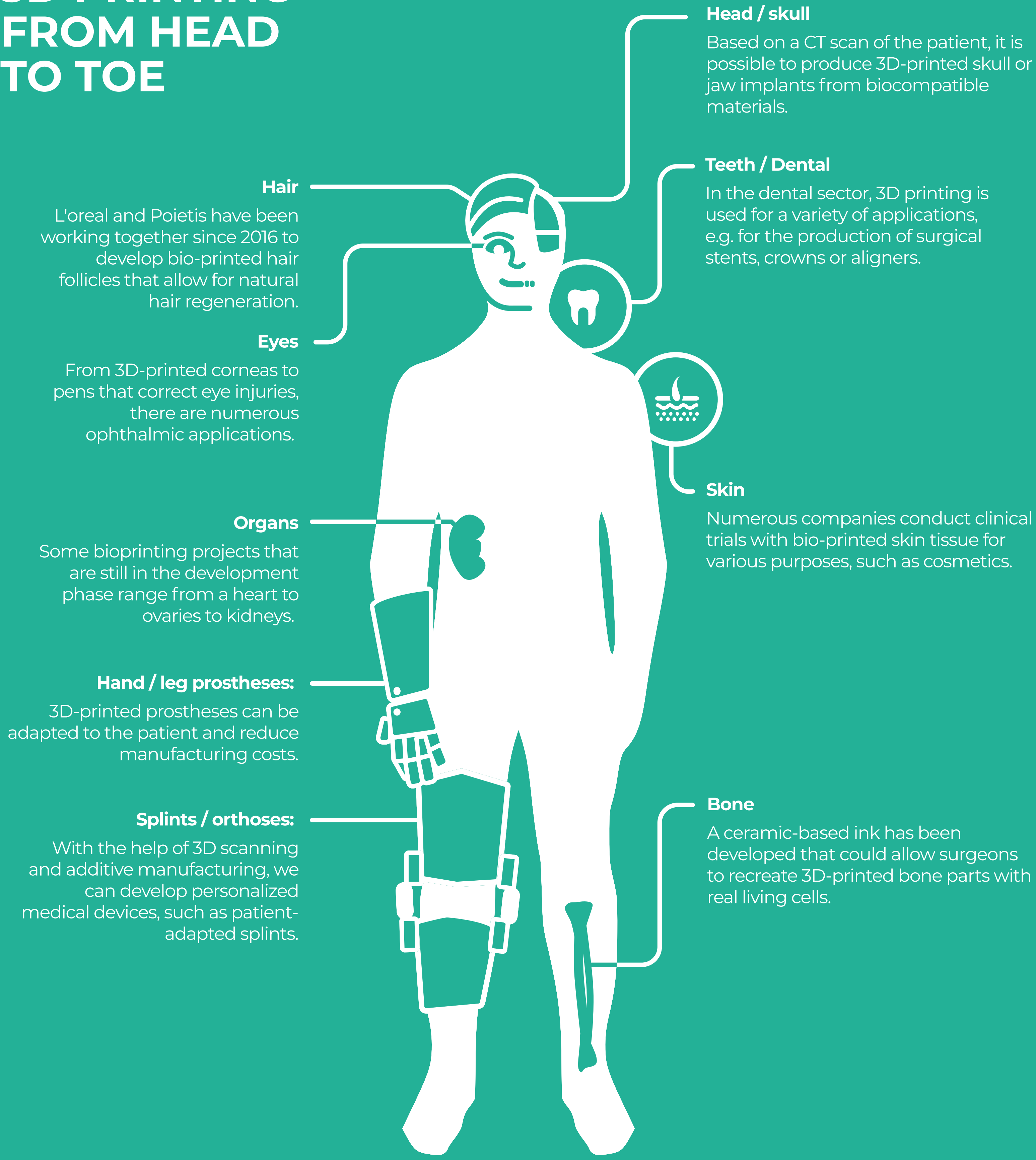
Whether with FDM, SLA or SLS technologies, 3D printed drugs enable personalized dosing for each patient.



Surgical planning

The model is created with the help of a CT scan, then scanned in 3D using special software and later produced using 3D printing.

3D PRINTING FROM HEAD TO TOE



THE MOST IMPORTANT FACTS ABOUT 3D PRINTING IN MEDICINE

185,000

Amputations are performed annually in the U.S., causes range from vascular disease to trauma

(AMPUTEE COALITION)

\$5.800 BILLION

Is the estimated value of the medical 3D printing market by 2030

(ALLIED MARKET RESEARCH)

3.5 HOURS

The time needed to make a 3D printed heart with cells, blood vessels and ventricles

(TEL AVIV UNIVERSITY INTERNATIONAL)

40,000

3D printed valves used per week to fight COVID-19

(PHOTOCENTRIC)

20.10%

Estimated annual growth rate for the medical 3D printing market until 2030

(ALLIED MARKET RESEARCH)

90 DAYS

Is all it takes for the development of a 3D printed mini liver

(UNIVERSIDAD DE SÃO PAULO)

TIMELINE

- 1984 ● Chuck Hull applies for the first patent for 3D printing technology (SLA)
- 2002 ● Scientists at Wake Forest University 3D print a functional miniature kidney
- 2007 ● Organovo, today a leader in the bioprinting industry, enters the market
- 2012 ● LayerWise creates first 3D-printed jawbone implanted in an 83-year-old woman
- 2014 ● First 3D-printed skull is implanted at the Medical Center in the Netherlands
- 2016 ● International Stem Cell Corporation develops the first functional ovary for a fertility study
- 2019 ● First 3D-printed heart made from human tissue at Tel Aviv University
- 2021 ● Patient Steve Verze receives the first 3D-printed eye prosthesis