PIOCREAT

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PIOCREAT

PRODUCT MANUAL

3D PRINTING SOLUTIONS FOR MEDICAL APPLICATIONS

Shenzhen Piocreat 3D Technology Co., Ltd.

MEDICAL REHABILITATION

Insole Customization Solution

Designed specifically for foot health

Abnormal Feet
Flat feet, high arches, hallux valgus, calcaneus valgus, plantar fasciitis, forefoot pain, etc.

Abnormal Gait
Pigeon toes, knee hyperextension, etc.

Abnormal Body Posture
Lumbar lordosis, uneven shoulders, O/X legs, hunchback, etc.

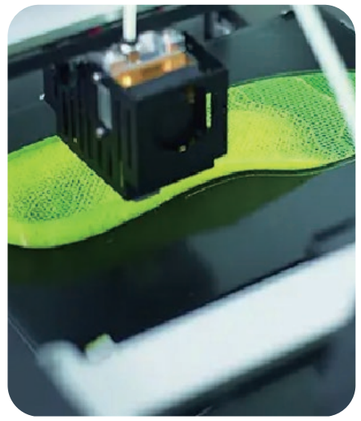
Daily Health Care
Foot Fatigue Relief, Sport Injury Prevention, etc.

Gait Analyzer FD 01

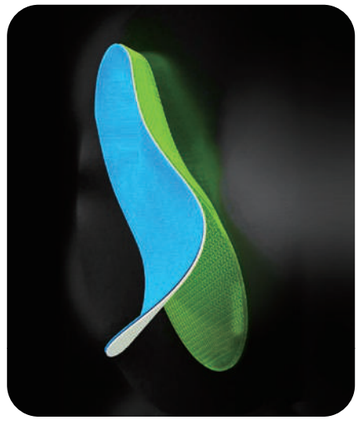
3D Smart Foot Scanner FS B002

Data Analysis

Customized Design



3D Printing Insoles IPX2

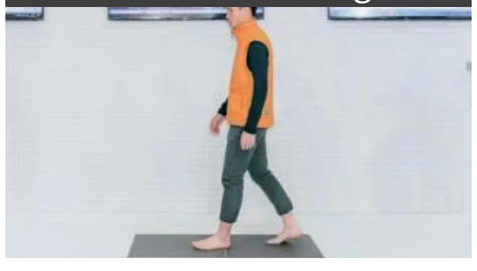


Insole Veneer Production

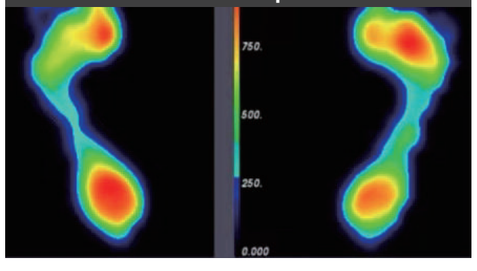
Insole Polishing

Gait analyzer FD 01

1. Guided testing



2. Get footprints



3. System calculations

4. Solution generation

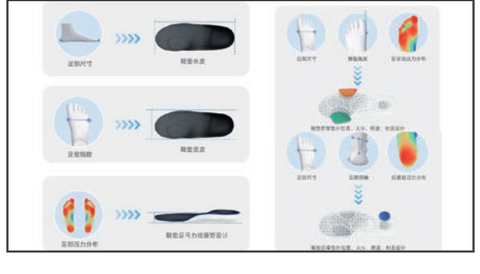
3D smart foot scanner FS B002

1. 3D scan digital technology

2. Data analysis and diagnosis

- 3D foot model
- Foot size measurement
- Foot shape detection
- Flat foot assessment
- Foot eversion assessment
- Foot Health Digital Archives
- Smart screen interaction
- AI foot health solution
- Merchant management backend

3. Insole design



4. Personalized delivery

FS B002

3D Foot Scanner

Foot data collecting within 1 second

- **Precision -** Millimeter-level 3D infrared structured light technology
- **Precise -** 1 second fast scanning, 5 seconds foot report generation
- **Comprehensive -** 30+ items of foot data, 1:1 real 3D model
- **Safety -** Non-contact scanning, safe, stable and harmless
- **Convenient -** Supports external screen display terminals

Product model:	FS B002
Operating principle:	Collect high-quality depth images with multiple sets of structured light cameras, Scanning analysis with independent data algorithms.
Diagnostic items:	Foot length, foot width, toe circumference, metatarsal circumference, ankle circumference, heel length, heel width, inner arch height, instep height, toe shape, foot width index, sole analysis, big toe angle, heel inclination angle, shoe size
Accuracy:	±5mm
Scan speed:	1 second
Number of point clouds:	About 2 million, point cloud density: about 28 points/cm²
Measuring range:	400mm (L)×400mm (W)×150mm (H)
Suitable foot length:	5cm-30cm
Equipment size:	700mm((L) × 700mm((W) × 460mm(H) Coverage area: about 0.49m²
G.W.:	65.3KG (including the weight of armrests and brackets)
Screen panel(optional):	Size: 21.5", Resolution: 1080*1920, capacitive touch, supports multi-touch
Hardware configuration:	CPU: AMD5600U six-core/twelve-thread base/maximum frequency: 2.60-4.20 GHz Memory: DDR4 SO-DIMM3200MHz 8G Storage: SATA128GSSD Power supply:AC 100-240V50/60Hz

IPX2

Special 3D Printer for custom insoles

Fast printing with independent dual nozzles

- **Special extruder**
  The structure of proximal elf extruder specially developed for flexible material makes the extrusion more stable.
- **Independent dual nozzles**
  Two independent nozzles can print two unique insole models simultaneously.
- **120mm/s fast printing**
  Produce a pair of adult-sized insoles within 30 minutes.

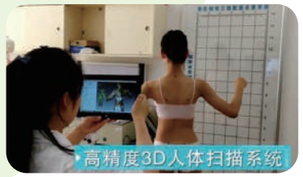
Product model:	IPX2	**Support material:**	TPU-95A/90A/85A/80A,TPE-83A
Molding technology:	FDM	**Number of nozzles:**	2
Machine size:	730×540×490mm	**Nozzle diameter:**	0.8mm(0.4,0.6mm optional)
Print size:	320×200×200mm	**Nozzle temperature:**	⩽300°C
Ambient temperature	5°C-35°C	**Printing method:**	U disk, WIFI
Ambient humidity	20%-60%	**Operation interface:**	11 languages
printing speed:	⩽120mm/s	**Supported formats:**	STL/OBJ/3MF
Printing accuracy:	±0.1mm/100mm	**Slicing software:**	Piocreat_slicer
Layer thickness:	0.3-0.5mm (standard 0.8mm nozzle)	**Operating system:**	Windows/Mac OS
Filament diameter:	1.75mm	**Power supply:**	Input AC100-240V and output 24V
Bearing weight:	⩽1KG	**Rated power:**	150W

Scoliosis Treatment Solution

Customized spinal orthotic

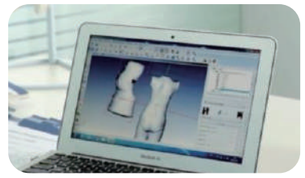
- Light weight
- Close-fitting plasticity
- Breathable and comfortable
- Personalized appearance

3D printed scoliosis orthotic production process



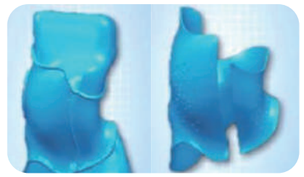
01

High-precision
3D scanning system



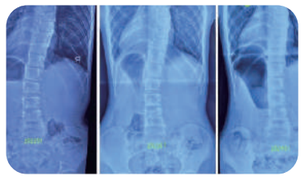
02

Body surface
three-dimensional data



03

Shape and brace design



04

3D printing model

05

Orthotic try-on and able
for second adjustment

06

Comparison of before and
after orthopedic

Data Collection → **Digital Design** → **Orthopedic Wearing** → **Fit Adjustment**

MS 01

FGF fully enclosed 3D printer

High-temperature pellet 3D printing

- **Fully Enclosed Chamber**
  Constant temperature work environment, good molding effect. Available for high temperature material printing.
- **Industrial Grade Nozzle Kit**
  Nozzle temperature⩽400°C
- **Large printing size**
  500×500×650mm
- **Material break detection**
  Add pellets and continue printing

Product model:	MS 01	**Print layer thickness:**	0.5-1.5mm
Molding technology:	FGF	**Printing material:**	High temperature composite materials
Print size:	500×500×650mm	**Discharging mechanism:**	screw extruder
Machine size:	870×970×1521mm	**Pellet diameter:**	2-5mm
Package size:	1036×990×1670mm	**Printing method:**	USB disk
N.W.:	274KG	**System languages:**	Chinese/English
G.W.:	324KG	**Heating bed temperature:**	⩽110°C
Number of nozzles:	1	**Power requirements:**	100-120V~, 200-240V~, 50/60Hz
Nozzle temperature:	⩽400°C	**Rated power:**	4200W
Printing accuracy:	100±0.1mm	**Slicing software:**	Piocreat_slicer
Nozzle diameter:	1.0mm standard (2.0, 3.0, 4.0mm optional for sale)		

Customized Spinal Orthotics

Avoids the orthotic making errors from traditional molding techniques by using three-dimensional scanning. captures a high-precision three-dimensional data model of the human body, and perfectly matches the X-ray film.

Slim Fit

Integrated 3D printing
Highly pliable
Good orthotic effect

Super Breathable

⩾50% breathable hole design on the surface, Permeable and comfortable wear.

Light Weight

20% reduced thickness
530g average weight

Custom Design

Customized hole patterns
Customized signature

High Quality

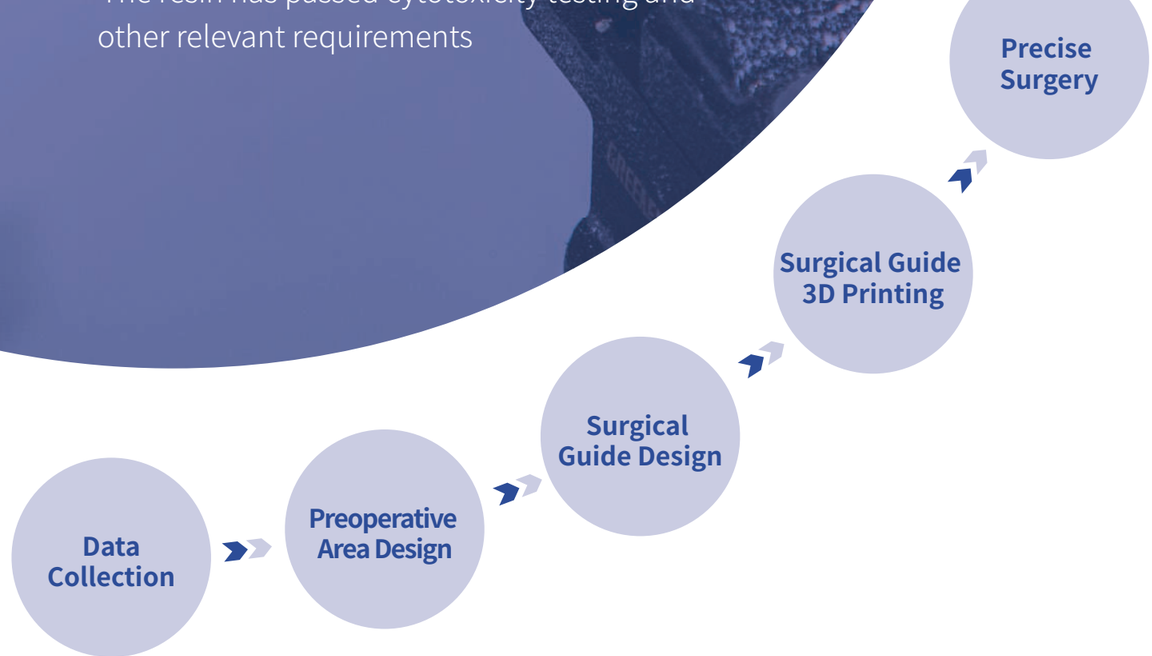
High-quality certified materials
Bio-compatibility and sensitivity test
5000 times open-close test

- Hollow design
- High performance special materials
- Long-lasting and durable
- Highly customized perfect fit
- Easy to wear
- Breathable and comfortable
- Suitable for hot weather

Surgical Guide Solutions

Provide precise surgical operation

- Piocreat patented Surgical Guide Resin Pro
- Easy forming, high strength, and good toughness
- The guide plate is highly durable during surgical cutting
- Ensuring accurate size of the surgical cutting site
- The resin has passed cytotoxicity testing and other relevant requirements



MG 01

LCD 3D printer

29μm High-precision 3D Printer

- **High Uniformity Integral Light Source**
  High light uniformity, better than parallel light sources
- **385nm Wavelength High-precision Forming**
  10.3" 8K monochrome screen
- **Highly Stable Z-axis**
  Z-axis dual linear guide + ball screw dual configuration provide higher positioning accuracy

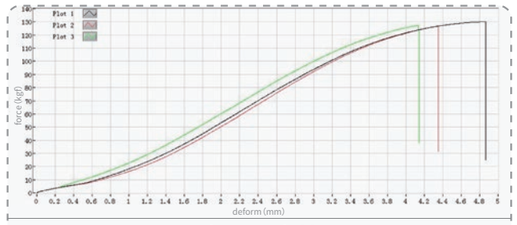
Product model:	MG 01	**Print size:**	228×128×200mm
Molding technology:	LCD	**Resolution:**	7680*4320
Printing speed:	70mm/h（0.05mm）	**Wavelength:**	385nm
Layer thickness:	0.01-0.1mm	**File format:**	cxdlpv4
XY axis accuracy:	29μm	**Connection method:**	USB disk, WIFI
Print screen:	10.3" 8K monochrome screen	**Package Size:**	480×425×720mm
Rated voltage:	100-120V~/200-240V~, 50/60Hz	**Machine size:**	340×292×552mm
Rated power:	300W	**N.W.:**	15.77KG
Operating system:	Piocreat BOX (Win7 or above X64, Mac)	**G.W.:**	20.55KG
Device language:	13 different languages		
Printing material:	Surgical guide resin pro, High fidelity model resin, rigid resin, water-washable resin, PLA bio-based resin, flexible resin, ABS-like resin, highly transparent resin, compatible with third-party resin		

UV02

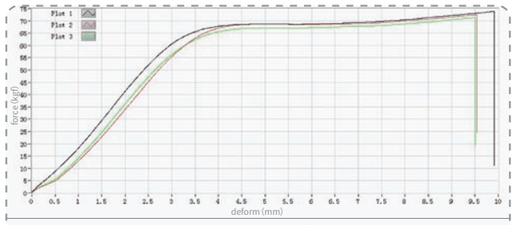
High-speed curing machine

Adjustable light intensity

- **Fast Curing**
  Normally 1-5 minutes
- **Adjustable Light Intensity**
  Adjustable light intensity: 5%-100%
- **Preset and Customizable Cure Settings**
  8 sets of regular curing data



Tensile strength 64Mpa
UV02 post-curing 5 minutes



Tensile strength 35Mpa
No post-cure treatment

Product model:	UV02
Machine color:	White
Cured size:	D180×H120mm
Machine size:	366×300×250mm
Package Size:	464×386×334mm
Rated power:	360W
Input voltage:	100-120V~/200-240V~,50-60Hz
Adjustable light intensity:	5-100%
Adjustable curing time:	00:01 - 30:00(Max.30min)
Machine net weight:	11KG
Machine gross weight:	14KG

SG Pro

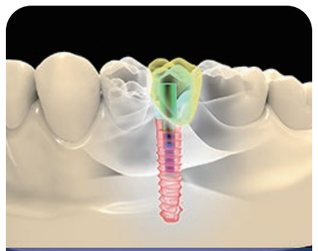
Surgical guide resin pro(Dental/Medical)

High transparency, high elongation at break and high impact strength

- **High Transparency**
  Improve the accuracy and safety of surgery.
- **High Strength and Toughness**
  Deform without breaking when subjected to external force.
- **High Impact Strength**
  High resilience.
- **Supports High-temp Sterilization**
  Withstand 135 °C without cracking or deforming.

Measurement	Test method	Value
Viscosity, cps (@25°C)	ASTM D 2196	700-900
Density, g/cm³ (@25°C)	ASTM D 792	1.05-1.10
Hardness, Shore D	ASTM D 2240	75-80
Flexural modulus, Mpa	ASTM D 790	1000-1200
Flexural strength, Mpa	ASTM D 790	＞40
Tensile modulus, Mpa	ASTM D 638	230-270
Tensile strength, Mpa	ASTM D 638	＞30
Elongation at break,%	ASTM D 638	**110-140**
Impact strength,notched Izod, J/m	ASTM D 256	**240-300**
Heat deflection temperature, °C	ASTM D648 @66PSI	60-70

Preoperative tooth position design



3D implant position designing

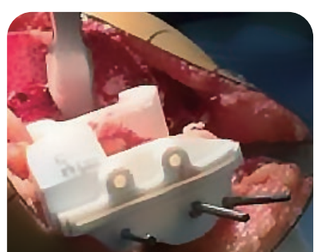
Dental surgical guide plate production completed

Precision minimally invasive implant surgery

Surgical guide resin toughness test

Medical surgical guide

Preoperative location design

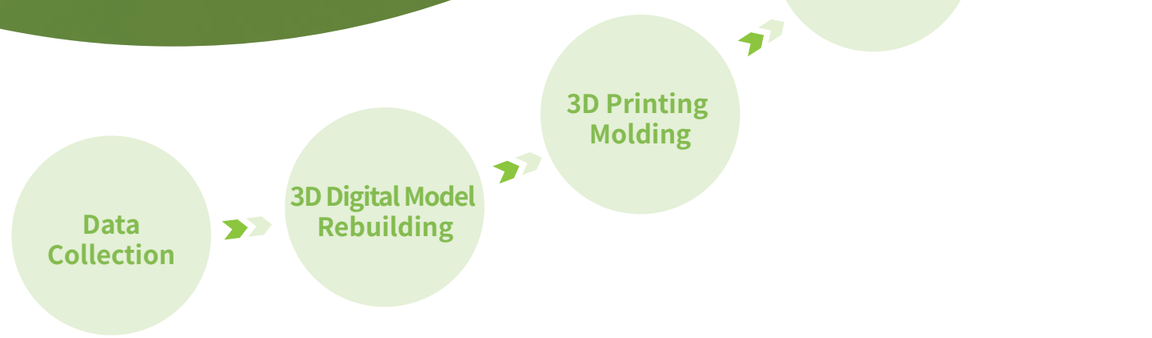


Precise surgery

Surgical Model Solution

Utilizing digital technology to visualize medical information and assist clinical practice

- Visualize complex tissue structures with 1:1 physical tissue model.
- Facilitate preoperative communication of surgical plans optimize the design of surgical plans.
- Lower surgical risks, shorten surgical time, and improve surgical operation effects.



GS01

FDM printer for surgical model application

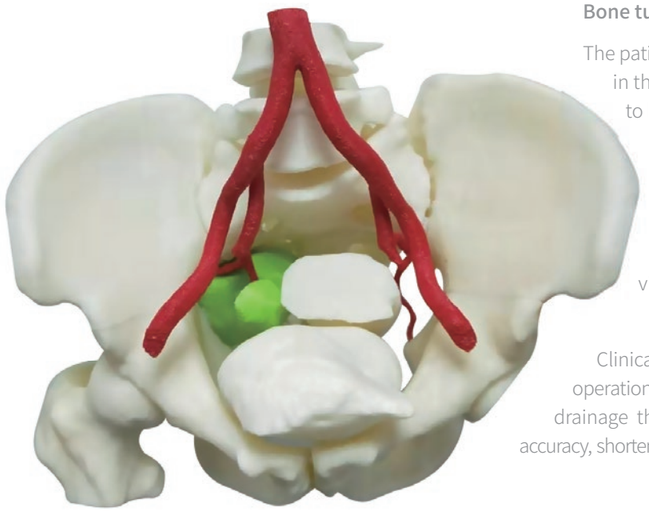
Fast printing, more efficient

- **12x Faster, More Efficient**
  The printing speed is up to 600mm/s and the acceleration is up to 20000mm/s².
- **32mm³/s High Flow Hot Nozzle**
  Heat to 200°C in 40s ensures that the materials are fully melted during high-speed and high-temperature printing.
- **Vibration/Layer Optimization**
  Built-in vibration sensor which can control resonance and optimize layer texture.

Product model:	GS01	**Filament diameter:**	1.75mm
Molding technology:	FDM	**Nozzle diameter:**	0.4mm (optional 0.6/0.8mm)
Print size:	300×300×300mm	**Nozzle temperature:**	⩽320°C
Machine size:	435×462×526mm	**Heating bed temperature:**	⩽120°C
Package Size:	545×545×665mm	**Printing platform:**	Flexible print platform
N.W.:	18KG	**Printing method:**	USB disk printing/Ethernet/Cloud printing /LAN printing
G.W.:	23KG	**Rated voltage:**	100-240V ~, 50/60Hz
Printing speed:	⩽600mm/s	**Rated power:**	1000W
Acceleration:	⩽20000mm/s²	**Support material:**	ABS/PLA/PETG/PET/TPU/PA/ABS/ASA/PC/ PLA-CF/PA-CF/PET-CF
Printing accuracy:	100+0.1mm	**Print file:**	G-Code
Print layer thickness:	0.1-0.35mm	**Slicing software:**	Piocreat_slicer
Extruder type:	Dual gear proximal extruder	**Slice file format:**	STL/OBJ/AMF
Supported functions:	AI camera/AI lidar/resuming operation after power outage/material break detection/air purification /vibration pattern optimization/lighting/automatic sleep		

Surgical model

It can be used for preoperative surgical planning, surgical rehearsal, and preoperative matching of individualized implants.
Surgical training models for various disease states can be designed and printed according to the doctor's requirements.



Bone tumor resection surgery

The patient's MR examination revealed a huge bone tumor in the pelvis, and he was subsequently scheduled to be hospitalized for surgical removal.

In order to have a reference to the actual size of the tumor during surgery, doctors recommend that 3D printing be used to create a model including the tumor, aorta, and adjacent parts in vitro before surgery for intraoperative reference.

Clinical results show that the 3D model group has shorter operation time, less intraoperative bleeding and postoperative drainage than the non-3D model group, improves surgical accuracy, shortens operation time, and achieves better surgical results.

Other surgeries

Medical information visualization, using digital technology to help individualize, precise, and minimally invasive clinical care.

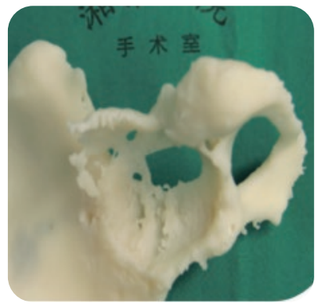
Clubfoot

Jaw reconstruction

Kidney tumor

Spinal tumor

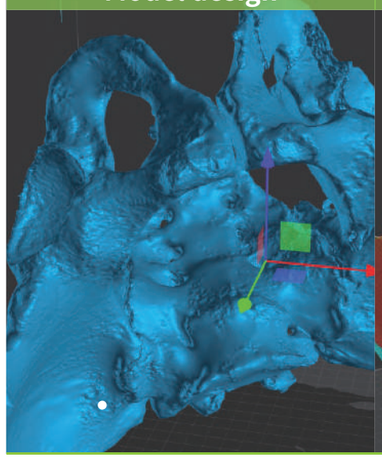
Nerve sheath tumor



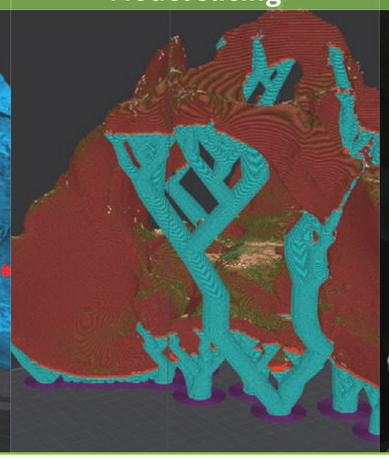
Acetabular revision

Scoliosis

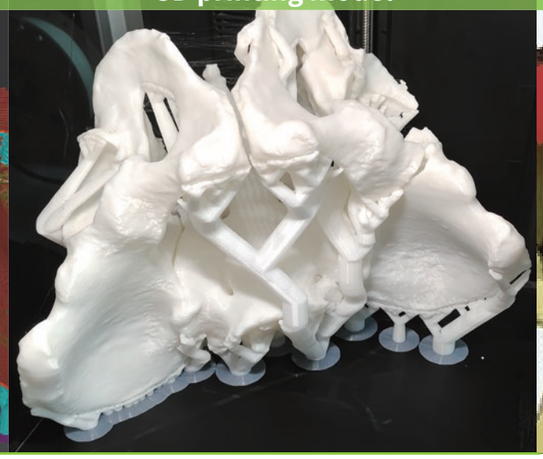
Breast tumor



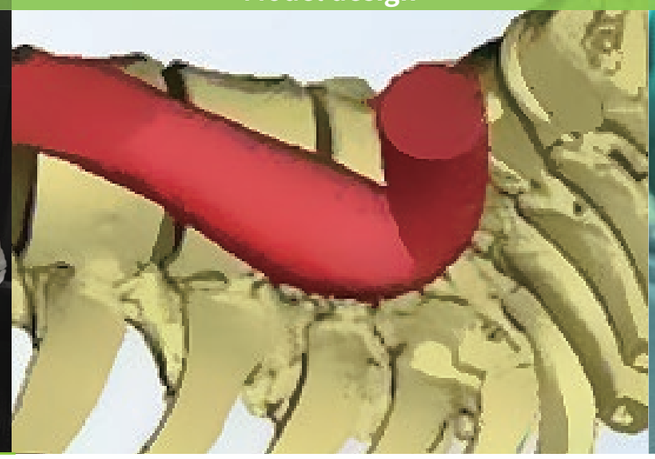
Model design



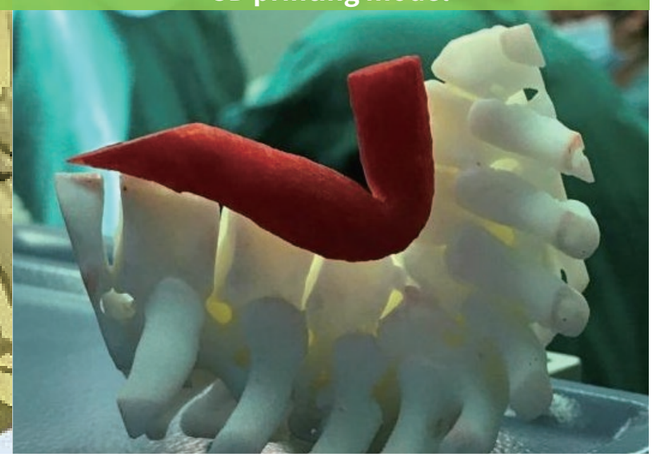
Model slicing



3D printing model



Model design



3D printing model