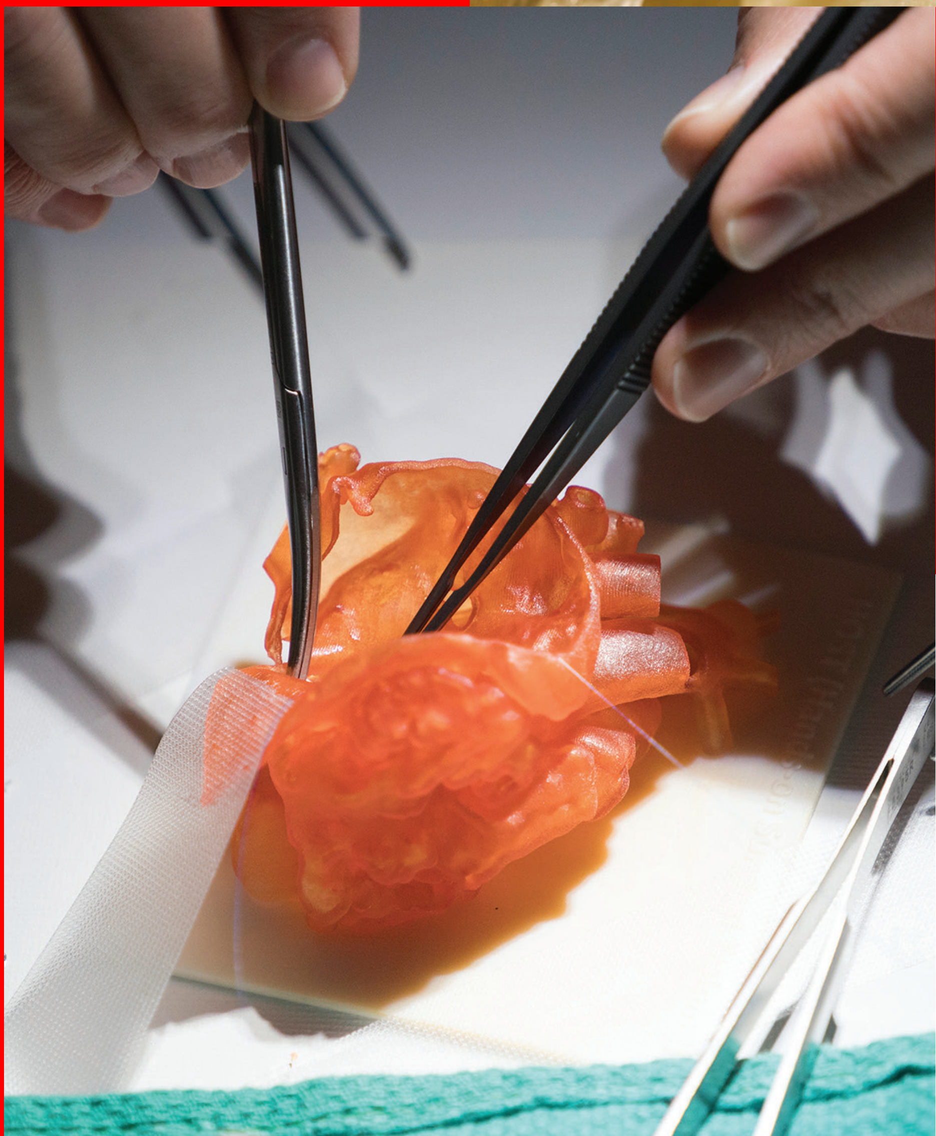


J850™ Digital Anatomy Printer Solutions

Better preparation.
Better outcomes.

Brochure

stratasys

J850 Digital Anatomy printer Proven anatomical realism.

J850 Digital Anatomy™ printer technology creates models that replicate the same biomechanical properties as human tissue to provide the most realistic testing and training.

With highly repeatable medical device testing and surgical preparation, you can create consistency across the continuum of care — all at a cost reduction of up to 70% compared with fabricated simulators, animals and cadavers.

Anatomical realism you can see and feel.

Experience the most consistent, accurate representation of your targeted pathology.

The Digital Anatomy printer software gives you the power to create the most lifelike anatomical models available. Clinically validated preset anatomy options deposit 3D printing materials to behave with biomechanical accuracy that mimics human tissue and bone like never before.

Structural Heart

Experience the physiological response of native cardiac tissue.

- **See** the accurate biomechanical behavior associated with gender, age, ethnicity and other physiological and pathological characteristics.
- **Feel** realistic feedback while suturing, cutting, inserting and deploying devices.

A study comparing the biomechanical properties of porcine tissue to 3D printed myocardium found that Digital Anatomy printed models mimic real tissue better than any other material.[1]

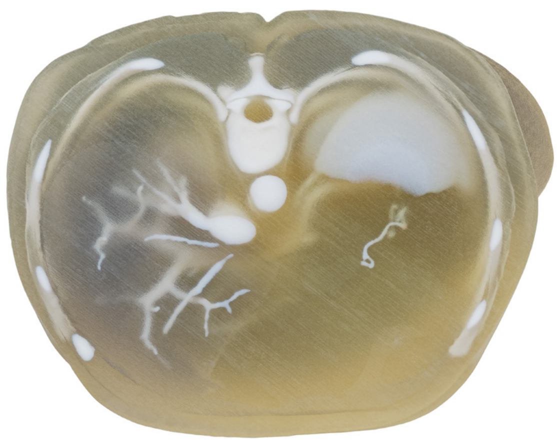
Blood Vessels

Experience the arterial elasticity caused by changes in blood pressure and disease.

- **See** how the artery will move as internal and external forces are applied with blood vessel material that mimics vessel degeneration.
- **Feel** realistic vessel responses while inserting and deploying devices.

A study comparing 3D printed aortic, carotid and coronary artery models to native vessel behavior found that the Digital Anatomy printer creates the most accurate arterial models available.[2]

Anatomical realism you can see and feel.



Musculoskeletal

Experience the density properties of human bone.

- **See** accurate bone articulation with variations in cancellous and cortical density.
- **Feel** realistic feedback while tapping, reaming, sawing, inserting screws and attaching plates.

Biomechanical testing confirmed the driving torque and pullout force of screw fixation in 3D printed bone models have similar haptic responses to human bone.[3] Mechanical tests confirm spine models accurately simulate the natural axes of movement of the human spine as the following forces are applied: disc compression, extension, flexion, lateral bending and axial tension.[4]

General Anatomy

Experience the response of native organ tissue.

- **See** the accurate biomechanical behavior associated with organ structures and disease states.
- **Feel** realistic feedback while suturing, cutting, inserting and deploying devices.

Radio realistic models with full contrast options.

- **See** adiopaque properties just like real tissue under CT and X-ray imaging.
- **Control** the radiopacity properties of each printed model.

Innovative materials make it possible.

Unlock unique material combinations that create realistic models that vary in softness, flexibility and density, mimicking native tissue behavior.

- **GelMatrix®** — Unique GelMatrix material and GelSupport™ depositing patterns allow you to print small, complex vascular structures and easily remove internal support material.
- **TissueMatrix®** — Sophisticated material configurations allow for models that feel and behave like native organ tissue when force is applied.
- **BoneMatrix®** — Complex material depositing patterns mimic porous bone structures, fibrotic tissues and ligaments.
- **RadioMatrix™** — Radiopaque 3D print material gives you the power to create medical models that exhibit realistic features under X-Ray and CT

Digital Anatomy software
The power to create.

Digital Anatomy printer software gives you the power to create the most lifelike anatomical models available.

Clinically validated preset anatomy options deposit 3D printing materials to behave with biomechanical accuracy, mimicking human tissue and bone like never before.

The power to produce accurate biomechanical behavior.

Anatomies are configured using unique material combinations that vary in softness, flexibility and density to mimic native tissue behavior.

The power to create models in a few simple clicks.

The preset anatomy menu offers more than 100 options that allow you to print accurate, lifelike models by simply choosing the desired anatomy.

The power to mimic native tissue and bone structures.

- Complex Blood Vessel Capabilities — Create and remove support structures from internal cavities such as small, complex blood vessels.
- Slice Preview — Visualize individual slices of internal anatomy structures and confirm pathology, material and orientation choices.
- Screw Insertion Strain Relief — In orthopedic models, create regions for screw entry so you can place screws without cracking the model.
- Long Bone Manipulation — Autogenerate the intricate, unique structures of bone in each region: proximal, distal, cortical, cancellous and the medullary canal.
- Myocardium Consistency — Experience the same non-directional behavior as human tissue when force is applied in any direction.

The power to print with physician-tested, validated presets.

Digital Anatomy printer software was developed and refined over years of expert testing in partnership with top academic medical centers and hospitals across the globe.

The power to control Radiopacity values

The Digital Anatomy printer software enables easy control over the desired values to mimic different tissues under CT/X-ray.

Visual model
for demonstration

This heart model printed with rigid Vero™ materials highlights the J850 Digital Anatomy printer's ability to produce anatomical models with fine details ,multiple colors, texture gradients, transparencies, durometers and radiopacity.

Functional model
for surgeon training and device testing

This heart model features functioning cords, annulus and valves with leaflets, created with the J850 Digital Anatomy printer's cardiac application. It combines the ultra-soft TissueMatrix material with Agilus30™ to mimic the feel and response of myocardium, giving realistic haptic feedback during device insertion and deployment.

J850
Digital Anatomy printer

Create in a few simple clicks.

The preset anatomy menu offers more than 100 options that allow you to print accurate, lifelike models by simply choosing the desired anatomy.

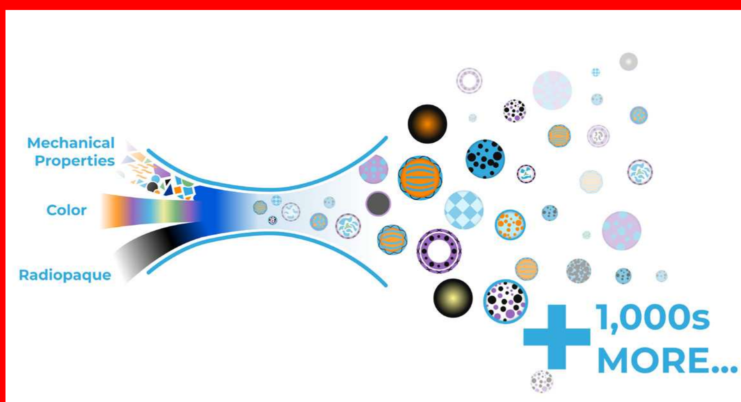
- Adjust attributes to mimic healthy or diseased tissue.
- Make post-processing quick and easy.
- Remove gel support material from complex vessels with little to no effort.

Access advanced design tools when you need them.

Advanced design tools allow you to choose from more than 500,000 colors when full-color capabilities are needed, define transparencies, and determine textures and finishes.

Save valuable resources.

Minimize the need for animal and cadaver labs so you can test and train anywhere, cut procurement costs and improve ethical practices.



Product Specifications	
Model Materials	Vero family of opaque materials including neutral shades and vibrant VeroVivid™ colors Agilus30, TangoPlus™ and TangoBlackPlus™ flexible materials VeroClear, VeroUltra™ Clear transparent materials TissueMatrix, BoneMatrix, GelMatrix Biocompatible Clear
Digital Materials	**Unlimited number of composite materials, including:** Over 500,000 colors Digital ABS Plus and Digital ABS2 Plus in ivory and green Rubber-like materials in a variety of Shore A values Ultra-soft rubber-like material with a Shore 00 value Translucent color tints User-developed digital materials with GrabCAD Voxel Print™
Support Materials	SUP705 (waterjet removable) SUP706B (soluble) GelMatrix (waterjet removable)
Build size	490 x 390 x 200 mm (19.3 x 15.35 x 7.9 in.)
Layer Thickness	Horizontal build layers down to 14 microns (0.00055 in.)
Workstation Compatibility	Windows 7 and 8.1
Network Connectivity	LAN – TCP/IP
System Size and Weight	1400 x 1260 x 1100 mm (55.1 x 49.6 x 43.4 in.); 430 kg (948 lbs.)
Material Cabinet	670 x 1170 x 640 mm (26.4 x 46.1 x 25.2 in.); 152 kg (335 lbs.)
Operating Conditions	Temperature 18 – 25 °C (64 – 77 °F); relative humidity 30 – 70% (non-condensing)
Power Requirements	100 – 120 VAC, 50 – 60 Hz, 13.5 A, 1 phase 220 – 240 VAC, 50 – 60 Hz, 7 A, 1 phase
Regulatory Compliance	CE, FCC, EAC
Software	GrabCAD Print Digital Anatomy software. Optional add-on GrabCAD Voxel Print and/or Digital Anatomy Creator software
Build Modes	High Quality (HQ) – 7 different materials / 14µm layers High Mix (HM) – 7 materials / 27µm High Speed (HS) – 3 materials / 27µm, x2 speed Super High Speed(SHS)- 1 material / 54 µm, x4 speed
Accuracy	Typical deviation from STL dimensions, for models printed with rigid materials, based on size: under 100 mm: ±100µ; above100 mm: ±200µ or ± 0.06% of part length, whichever is greater. Please refer to material-specific spec sheets for accuracy estimates.

1 Severseike, Leah et al., "Polyjet 3D Printing of Tissue-Mimicking Materials: How Well Can 3D Printed Synthetic Myocardium Replicate Mechanical Properties of Organic Myocardium?," bioRxiv, 2019, doi.org/10.1101/825794.
2 Sparks, Adam et al., "Digital Anatomy Printing (DAP): A Direct Characterization of DAP Materials for Use as Compliant 3D-Printer Arteries Using Intravascular Ultrasound (IVUS)," The Jacobs Institute, Submitted for publication, 2020.
3 Dahan, Gal, "Synthetic Bones vs. Human Bones for Screws Testing: A Literature Survey," In progress, 2020.
4 Barak, Yaron, "Biomechanical Evaluation of a Printed Digital Anatomy Lumbar (L3-S1 Spine Model), Technion Institute of Technology Materials Science and Engineering Laboratory, Final Report (2020).

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