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3D Printing: Surgical Planning, Education, and Research

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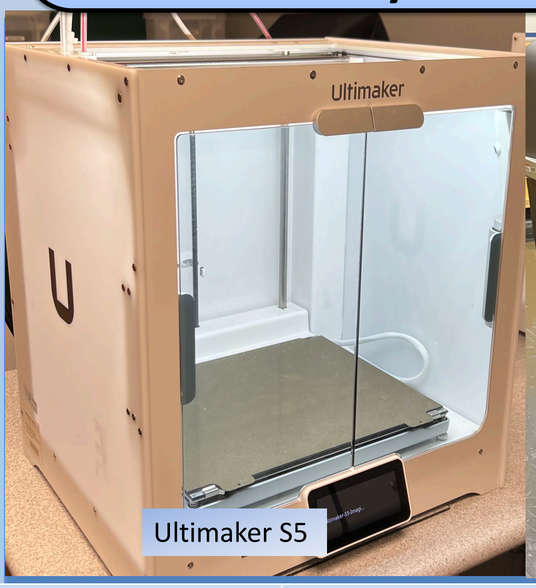
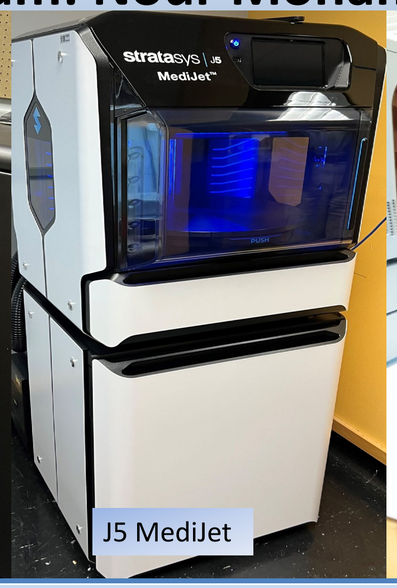
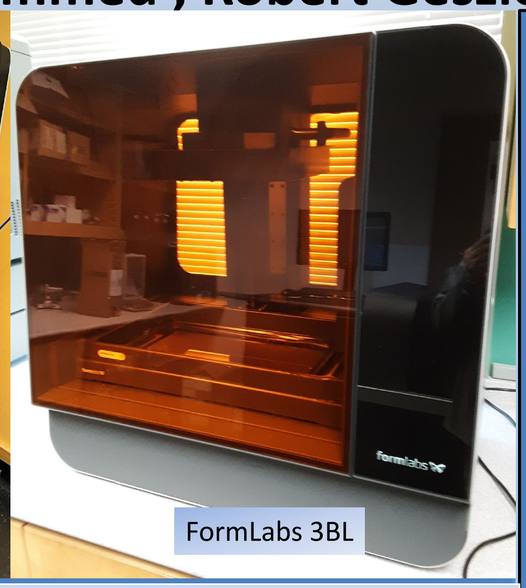


Ultimaker S5


J850 Digital Anatomy



J5 MediJet

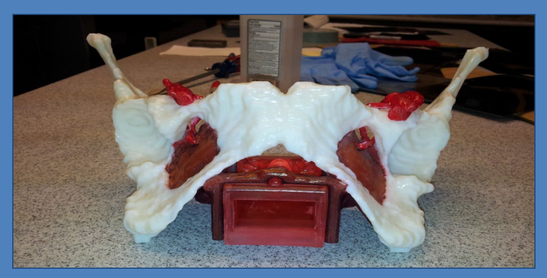


FormLabs 3BL

PRINTER	HORIZONTAL BUILD RESOLUTION	DIMENSIONAL ACCURACY	BUILD VOLUME	TYPES OF STERILIZATION
J850 Digital Anatomy Printer	14µ microns	±100µ- ±200µ microns	19.3 x 15.35 x 7.9 in.	A vaporized hydrogen peroxide sterilization method with the Specialty Cycle was used to evaluate sterilization, biocompatibility and material compatibility of select Formlabs and Stratasys materials. The test results, and a comparison to other relevant sterilization methodology results, support the use of low temperature vaporized hydrogen peroxide to sterilize 3D printed surgical guides and anatomical models. The test result data was used in support of regulatory validation and clearance [1].
J5 MediJet Printer	18µ microns	±150µ microns	5.51 x 7.87 x 7.48 in.	
Form Labs 3BL Printer	25µ–300µ microns	±50-±100µ microns	13.2 × 7.9 × 11.8 in.	
Ultimaker S5 Printer	0.25mm-nozzle 60-150µ 0.4mm nozzle 20-200 µ 0.8mm nozzle 20-600µ	±200µ microns	13 x 9.4 x 11.8 in.	Ethylene oxide is actually the sterilizing agent of choice for materials that cannot be heated to the common autoclaving temperature (121 degrees or, for prion inactivation, 134 degrees).

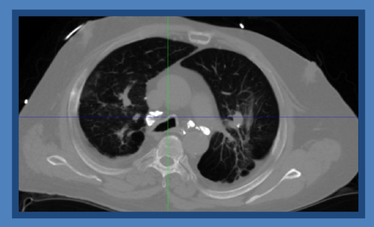
Education

Research Bench Testing

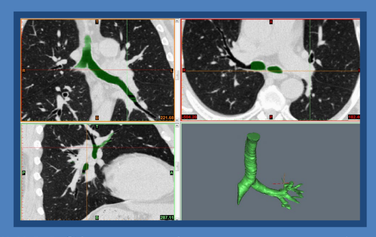


Surgical/Procedure Planning

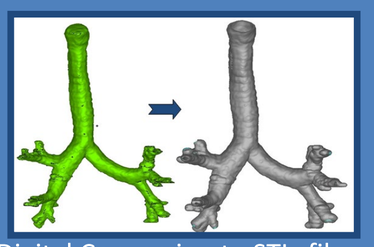
Medical Imaging to 3D Printed Model



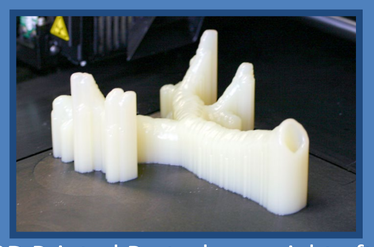
CT/MRI Scans are saved as: (DICOM Files)-Digital Imaging and Communications in Medicine



DICOM files are then converted using MIMICS Software for Anatomical Reconstruction



Digital Conversion to STL. files for 3D Printing



3D Printed Part, shown right after build, Illustrating support material used during the build process

Post Processing: Support Material Washed Away