

Cantilever Bending of Murine Femoral Necks

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Materials

Name	Company	Catalog Number	Comments
¼" x ¼" square aluminum tubing	Grainger	48KU67	Cut to lengths of 1/2" to 1" lengths
1 kN load cell	Instron	2527-130	Any load cell with sub 1 N resolution can be used.
3.5x-45x Zoom Stereo Boom Microscope	Omano	OM2300S-GX4	Microscope used to precisely line up samples with loading platen.
3D printed guides	Custom made		Angled slots at 73.13°, with diameters between 1.9 mm and 2.2 mm
3D printed mount	Custom made		Tapped with M10 threads to fit the mount attachment and with 2 M4 threaded holes adjacent sides to hold the aluminum tubing with sample in place.
Acrylic Base Plate Material Kit	Keystone Industries	921392	Mix 3.5 g of powder with 2 mL of liquid. This will be enough for approximately 8 samples, and will begin to harden quickly.
Amira	ThermoFisher Scientific		Used to compile µCT scans
Biaxial stage	Custom made		Used to center femoral head of sample under the loading platen.
BioMed Amber Resin	formlabs	RS-F2-BMAM-01	Any resin from formlabs could be used for this project.
Bluehill 3	Instron	V3.66	Software used to set up loading protocol and collect load, displacement and time data.
ElectroPuls 10000	Instron	E10000	Mechanical testing system
Faxitron UltraFocus	Faxitron BioOptics	2327A40311	X-ray imaging system
Form 2	formlabs	F2	Used to print the mount and guides
Form 2 Resin Tank LT	formlabs	RT-F2-02	LT Tank was used to be compatible with the BioMed Resin
ImageJ	National Institutes of Health	ImageJ	Used to assess µCT and X-ray images
Laxco iLED Series LED Light Source	ThermoFisher Scientific	AMPSILED30W	Light source used in conjunction with microscope.
Loading platen	Custom made		This can be any metal rod that is tapered to a diameter of

			approximately 2.5 mm. We used an M6 screw that was tapered on a lathe.
Mount attachment	Custom made		To secure the 3D printed mount to the load cell. We used a M10/M6 threaded rod
Phosphate Buffer Saline (PBS)	ThermoFisher Scientific	10010031	Need to rehydrate the samples once acrylic base plate material has set.
Plumber's putty	Oatey	31174	Used to seal the end of the aluminum tubing when pouring acrylic base plate material in. Any clay or putty could be used.
PreForm	formlabs	Preform 3.15.2	Formlabs software
Tissue Culture Dish	Corning	353003	Samples can be laid flat in culture dish and covered in PBS to rehydrate.
vivaCT 40	Scanco	μ CT 40	Representative set or actual samples can be scanned prior to printing of guides to calculate femoral shaft angle and diameter.