I/1499/2022

# ALL INDIA INSTITUTE OF AYURVEDA(AIIA)

## GAUTAMPURI, SARITA VIHAR, MATHURA ROAD, DELHI 110076 (India)

***Website: www.aiia.gov.in***
***Email:*** *central-store@aiia.gov.in*

**Phone Number 011-26950401**

**Notice No.: M-15/2/2022-AIIA** **Dated: 25th, January, 2022**

**Sub:-Notice Inviting Objections/Comments on procurement of Synthetic Human Teaching Model under Proprietary Article Procurement for AIIA, Delhi-reg**

A request has been received from Dr Jonah Sandrepogu, Head of the Department Kayachikitsa, for procurement of 'Synthetic Human Teaching Model', under Proprietary Article Certificate.

2. The specifications of the equipment, PAC certificate from the Department and certificate from the supplier are attached herewith.

3. The above documents as mentioned in para 2 are being uploaded in public domain to submit objections, comments, if any from the manufacturer/supplier regarding proprietary nature of the equipment/items within issue of 15 days (i.e. 10/02/2022) giving the reference No. M-15/2/2022-AIIA and date mentioned above. The comments/objections should be received by office of Stores Officer, AIIA over email address central-store@aiia.gov.in. In case, no objections received, it will be presumed that any other vendor is having no comment to offer and case will be decided on merits to finalize the purchase.

Digitally Signed by Umesh Tagade
Date: 25-01-2022 09:24:17
Reason: Approved

**(Dr Umesh Tagade)**
**Joint Director(Admn)**

Encls:-

PAC Certificate
Certificate from Supplier
Technical Specifications of Simulator

BR BIOMEDICAL (P) LTD.
D-71, Malviya Nagar, New Delhi-110 017 (India)
Tel.: +91-11-4700 0710, Fax : +91-11-4579 3300
Toll Free No.: 1800 212 4669
sales@brbiomedical.com | www.brbiomedical.com

BRBPL/2021-22/18910 Date: 14th January, 2022

To,
The Director,
All India Institute of Ayurveda
New Delhi

**Sub: Submission of Undertaking for Proprietary Article.**

Dear Doctor,

I, Vikas Tyagi (Product Support Manager) Authorized person of M/s BR Biomedical (P) Ltd hereby undertake that:

1. Synthetic Human Teaching Model /Synthetic Human Tissues & Body parts is an article of proprietary nature, and we are the authorized distributors of the said item.
2. This item is solely manufactured by M/s Syndaver Labs., USA and not by any one else in the entire country/ world.
3. Rate quoted by us vide offer No.: NA dated NA against your enquiry No. NA Dated NA
4. Our rates for the said simulator with same specifications will not be higher than those quoted to other Government/ Public Sector/ Private Organization.
5. In case of supplies or quotes with same specifications will found at lower rate to other
6. Government/ Public Sector/ Private organization, the excess amount will be voluntarily pass on (the price difference) to AIIA, Sarita Vihar, Delhi with immediate effect.

We hereby certify that all the statements made and information supplied in the statements are true and correct to the best of my/ our knowledge. We understand that if any information found incorrect, we shall be liable to be banned from doing business with All India Institute of Ayurveda (AIIA), Delhi and/ or prosecuted.

Thanking you,

Yours Sincerely,
**For BR Biomedical (P) Ltd.**

BR Biomedical (P) Pvt. Ltd. New Delhi

Vikas Tyagi
Product Support Manager

10941/2022/KC

# अखिल भारतीय आयुर्वेद संस्थान
# ALL INDIA INSTITUTE OF AYURVEDA (AIIA)
(आयुष मंत्रालय, भारत सरकार के अंतर्गत स्वायत्त संस्थान)
(An Autonomous Organization under the Ministry of AYUSH, Govt of India)

## PROPRIETARY ARTICLE CERTIFICATE

Valid for the Current Financial Year

| | | |
|---|---|---|
| File Number and Date Reference | | |
| 1 | Description of article | Synthetic Human Teaching Model |
| 2 | Forecast of quantity/ annual requirement | 1 (one) |
| 3 | Approximate estimated value for above quanity | Rs. 2,84,57,000.00 + GST 18% |
| 4 | Maker's name and address | SynDaver Labs USA |
| 5 | Name(s) of authorized dealers/ stockiests | BK Biomedical Pvt Ltd D-71 Malviyanagar |
| 6 | The indenter hereby certify that | |
| 6(a) | The indented goods / software are manufactured / developed by M/s. SynDaver Labs USA | |
| 6(b) | No other make or model/software is acceptable for the following reasons: (In a separate sheet, if required) Attached as Annexure 'A' | |
| 6(c) | Concurrence of finance wing to the proposal vide Principally approved in SFC simulator for Kayachikitsa | |
| 6 (d) | Approval of the competent authority vide: As approved in Note#5 in office | |
| 7 | Reference of concurrence of finance wing to the proposal: | Principally approved in SFC Simulator for Kayachikitsa |

History of PAC purchases of this item for past three years may be given below

| Name of the Supplier | | | |
|---|---|---|---|
| Order/ Tender Reference & Date | Quantity Ordered | Basic Rate on Order (Rs.) | Adverse Performance Reported if Any |
| AIIMS NAGPUR AIIMS_NAG/PROC/Store 1/29/21/PS 22.11.21 | 1 | 2,84,57,000.00 + GST 18% | No |
| AIIMS BIBINAGAR AIIMS/BBN/GEM/CPPP/00 dated 17.6.10 16.10.21 | 1 | 2,84,57,000.00+GST 18% | No |

Name & Signature of Indenter....Dr. Jonah Sandhepagu..... Recommended by:

HOD/HOC/HOS:.....

Signature of Approving Authority ..... Designation of Officer.....

डॉ. जोनाह एस, बी.एस.सी; एम.डी.(आयु); पी.एच.डी.
Dr. JONAH.S, B.Sc; M.D (Ayu); Ph.D
प्रोफेसर एवं विभागाध्यक्ष/Professor & HOD
अखिल भारतीय आयुर्वेद संस्थान, नई दि...
All India Institute of Ayurveda, New D...

गौतमपुरी, सरिता विहार, मथुरा रोड, नई दिल्ली -110076
Gautampuri, Sarita Vihar, Mathura road, NEW DELHI-110076
E-mail: aiianewdelhi@gmail.com Phone: 011-29948658 Fax: 011-29948660

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अखिल भारतीय आयुर्वेद संस्थान
ALL INDIA INSTITUTE OF AYURVEDA (AIIA)
(आयुष मंत्रालय, भारत सरकार के अंतर्गत स्वायत्त संस्थान)
(An Autonomous Organization under the Ministry of AYUSH, Govt. of India)

Annexure A

This Synthetic model bleed, breathe, and use hundreds of replacement muscles, bones, organs, veins, and arteries - all built from materials that replicate the mechanical, thermal, and physicochemical qualities of living tissue. This verified technology is utilised to substitute live human patients in medical device investigations, clinical training, and surgical simulation.

It is for teaching, training and demonstration purposes and were created utilising sophisticated imaging techniques and 3D printing technology.

This is the only product world wide with above mentioned features.

डॉ. जोना.एस, बी.एस.सी; एम.डी.(आयू); पी.एच.डी.
Dr. JONAH.S, B.Sc; M.D (Ayu); Ph.D
प्राध्यापक तथा विभागाध्यक्ष कायचिकित्सा / Professor & HOD Kayachikitsa
अखिल भारतीय आयुर्वेद संस्थान, नई दिल्ली-110076
All India Institute of Ayurveda, New Delhi-110076

गौतमपुरी, सरिता विहार, मथुरा रोड, नई दिल्ली-110076
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10938/2022/KC

SynDaver™
8506 Benjamin Road Suite C, Tampa, Florida 33634 ▪ Main: 813-600-5530 ▪ Fax: 813-600-3235

To Whom it may concern

Date: 5th April 2020

**Proprietary Certificate and Letter of Confirmation**

SynDaver Labs designs and builds the world's most sophisticated Synthetic human Teaching model/ synthetic human tissues and body parts. Our SynDaver Synthetic Human bleeds, breathes, and employs hundreds of replaceable muscles, bones, organs, veins and arteries – all made from materials that mimic the mechanical, thermal, and physicochemical properties of live tissue. This validated technology is used to replace live animals, cadavers and even human patients in medical device studies, clinical training and surgical simulation.

This is to certify that these models are used for demonstration and is generated using advanced Imaging techniques and 3D printing technology is a proprietary Product of Syndaver Labs , 8506 Benjamin Road, Tampa, Florida USA

We hereby verify that the full body educational grade Synthetic human Teaching model/ Human Cadaver SynDaver Anatomy and all SynTissue™ brand products are proprietary technology items.

The said Model with published details and specifications is not manufactured by any other manufacture in the world

We are pleased to confirm that M/S BR Biomedical Pvt Ltd having office at D-71, Malviya Nagar, New Delhi-110017 India is our official Distributor for Products Manufactured by us in India.

This authorization is valid till 31st march 2023 if not renewed.

R. Clark VP of International Business
For Syndaver Labs
Authorised Signatory

SynDaver LIFECAST

10827/2022/KC

## Synthetic Human Teaching Model

Synthetic human teaching lab_Should comprise of the following

### A) Education grade Synthetic Human Model

1. Should be a Full body synthetic Human Model for Comprehensive teaching of medical students
2. Should be possible to be used as an alternative to human cadavers in basic and advanced teaching.
3. The system should include all major skeletal, muscular and cartilaginous structures present in typical human anatomy. Should be a full sized, head-to-toe anatomical model.
4. Tissues of cadaver should mimic mechanical, dielectric and physico-chemical properties of live tissue. It should give look and feel of a live human body.
5. Should be made of real life like tissue material
6. Cadaver should be biohazard and formaldehyde-free and should not pose any health risks to students/faculty. Should allow Realistic anatomy teaching and training without specialized facilities or compromising a live patient.
7. Model should be complete with all bones, joints, muscles, organs and tendons in normal human body. Major nervous system and vascular components should also be present.
8. Should have following feature and components
   i. Structural Features: Skeletal, muscular, fascial and cartilaginous structures of the skull, jaw, cervical spine, rib cage, chest, abdomen, upper and lower back, shoulders, upper arms, forearms, wrists, digits, thoracic spine, lumbar spine, pelvis, thighs, lower legs, feet and toes.
   ii. Anatomical Feature: Every bone, muscle, tendon, fully articulating joints, functioning respiratory system, complete digestive and urinary tracts, visceral organs, reproductive organs, circulatory system and nervous system including the following specifics:
      a) **Nervous Components**: Lateral Cord, Musculocutaneous, Medial Cord, Medial Brachial Cutaneous, Medial Antebrachial Cutaneous, Ulnar, Radial, Superficial Branch, Sciatic, Common, Deep, and Superficial Peroneal, Tibial, Genitofemoral, Iliohypogastric, Ilioinguinal, Lateral Femoral Cutaneous, Obturator, Femoral, Anterior Cutaneous Branches, Saphenous
      b) **Arterial Vasculature**: Aortic arch, Descending thoracic aorta, Renal arteries, Abdominal Aorta, common carotid arteries, Subclavian arteries, Axillary arteries, Brachial arteries, Coronary arteries, Iliac arteries, Radial arteries, Ulnar arteries, Common femoral arteries, Popliteal arteries, Anterior tibial Arteries, Fibular (peroneal) arteries, Posterior tibial arteries
      c) **Venous Vasculature:** Jugular veins, Subclavian veins ,Superior vena cava ,Inferior vena cava , Renal veins ,Common iliac veins ,Internal iliac veins ,External iliac veins ,Cephalic veins, Basilic veins , Cephalic veins ,Great saphenous veins ,Popliteal veins ,Femoral veins ,Anterior tibial veins ,Fibular (peroneal) veins , Posterior tibial veins
9. Construction Materials: Thermoplastic bones with integral fascia sheath. Muscular tissues of organosilicate composite and specialized SynTissue brand synthetic human skeletal muscle, tendon, fibrous fascia, and bone.
10. The manufacturer should have the facility for customization of cadaver with pathologies or custom colour if needed
11. Size of the cadaver should be minimum 165cm and weight not more than 50 kg.
12. Cadaver should have a life expectancy of at least five years.

### B) Specialized table/Tank for storage of the cadaver in preservation medium

1. Cadaver tank should be made of rust proof stainless steel SS 304 grade
2. Should have a height adjustable tray with minimum size 180 x 70 cm.
3. The tank should have depth of at least 40 cm
4. Height adjustment should be possible using crank mechanism
5. The table/tank should be equipped with covers
6. Should have lockable wheels for ease of mobility

## C) Education Grade Life like synthetic Organs workstation as follows

### 1. Lung Organ

1. Lung model should be realistic synthetic organ made of real life like tissue material
2. Should be possible to be used as an alternative to human organ in basic anatomy classes.
3. Tissues of organ should mimic mechanical, dielectric and physico-chemical properties of live tissue. It should give look and feel of a live human organ.
4. The structural design of lung should be based on an amalgam of CT and MRI images from actual patients.
5. The synthetic tissues used in construction should be validated against the mechanical, physicochemical, thermal and dielectric properties of living tissue.
6. Organ should be able to be incorporated into complex model systems for testing breathing circuits, bronchoscopes and respiratory devices.
7. It should be possible to select left or right lung.
8. Should be compatible with all known imaging equipment including x-ray, fluoroscopy, MRI and CT scanners.
9. Should be compatible with all known surgical devices including breathing circuits, lasers, RF ablation, bipolar, monopolar and harmonic devices.
10. Synthetic human tissues should be made from salt, water and fibre, which should feature realistic tactility.
11. Synthetic human tissues should match the acoustical characteristic of real human tissue.
12. Should be biohazard and formaldehyde-free and should not pose any health risks to students/faculty Should allow Realistic anatomy teaching and training without specialized facilities or compromising a live patient.

### 2. Prostate Organ

1. Prostate model should be realistic synthetic organ made of real life like tissue material
2. Should be possible to be used as an alternative to human organ in basic anatomy classes.
3. Tissues of organ should mimic mechanical, dielectric and physico-chemical properties of live tissue. It should give look and feel of a live human organ.
4. The structural design should be based on CT and MRI images from actual patients
5. The synthetic tissues used in construction should be validated against the mechanical, physicochemical, thermal and dielectric properties of living tissue.
6. The prostate gland should be available in several sizes and should include various pathologies (fluid filled cysts, fibrous cysts, calcified nodules, benign prostate hyperplasia).
7. It should be possible to be incorporated into model systems for manual digital exam training, radiological imaging acquisition training and device testing.
8. It should be compatible with all known imaging equipment including ultrasound, x-ray, fluoroscopy, MRI and CT scanners.
9. Should be compatible with all known surgical devices including needles, scalpels, lasers, RF ablation, bipolar, monopolar and harmonic devices.
10. Synthetic human tissues should be made from salt, water and fibre, which should feature realistic tactility.
11. Synthetic human tissues should match the acoustical characteristic of real human tissue.
13. Should be biohazard and formaldehyde-free and should not pose any health risks to students/faculty. Should allow Realistic anatomy teaching and training without specialized facilities or compromising a live patient.

### 3. Uterus

1. Uterus model should be realistic synthetic organ made of real life like tissue material
2. Should be possible to be used as an alternative to human organ in basic anatomy classes.
3. Tissues of organ should mimic mechanical, dielectric and physico-chemical properties of live tissue. It should give look and feel of a live human organ.
4. The structural design should be based on an amalgam of CT and MRI images from actual patients
5. The synthetic tissues employed in construction should be validated against the mechanical, physicochemical, thermal and dielectric properties of living tissue.

6. It should complex multi-component structure with cervix, inner and outer os, fallopian tubes and ovaries.
7. The organ should be available with patent arterial and venous vasculature, a variety of pathologies and states of pregnancy.
8. It should be able to be incorporated into complex model systems for hysterectomy and pelvic sling surgery training.
9. It should be compatible with all known imaging equipment including MRI, CT, fluoroscopy and ultrasound.
10. Should be compatible with all known surgical devices including lasers, RF ablation, bipolar, monopolar and harmonic devices.
11. Synthetic human tissues should be made from salt, water and fibre, which should feature most realistic tactility.
12. Synthetic human tissues should match the acoustical characteristic of real human tissue.
13. Should be biohazard and formaldehyde-free and should not pose any health risks to students/faculty. Should allow Realistic anatomy teaching and training without specialized facilities or compromising a live patient.

**4. Esophagus**

1. Esophagus model should be realistic synthetic organ made of real life like tissue material
2. Should be possible to be used as an alternative to human organ in basic anatomy classes.
3. Tissues of organ should mimic mechanical, dielectric and physico-chemical properties of live tissue. It should give look and feel of a live human organ.
4. The structural design should be based on an amalgam of CT and MRI images from actual patients
5. The synthetic tissues employed in construction should be validated against the mechanical, physicochemical, thermal and dielectric properties of living tissue.
6. Should be Moist pink mucosa, submucosa, muscularis externa, and adventitia, approximately 25 cm long.
7. It should be able to be incorporated into complex model systems for the testing of esophageal dilators and stents.
8. Should be compatible with all known imaging equipment including x-ray, fluoroscopy, MRI and CT scanners.
9. Should be compatible with all known surgical devices including dilators, stents, sutures, lasers, RF ablation, bipolar, monopolar and harmonic devices.
10. Synthetic human tissues should be made from salt, water and fibre, which should feature most realistic tactility.
11. Synthetic human tissues should match the acoustical characteristic of real human tissue
12. Should be biohazard and formaldehyde-free and should not pose any health risks to students/faculty. Should allow Realistic anatomy teaching and training without specialized facilities or compromising a live patient.

**5. Gall Bladder**

1. Gall Bladder model should be realistic synthetic organ made of real life like tissue material
2. Should be possible to be used as an alternative to human organ in basic anatomy classes.
3. Tissues of organ should mimic mechanical, dielectric and physico-chemical properties of live tissue. It should give look and feel of a live human organ.
4. The structural design should be based on an amalgam of CT and MRI images from actual patients
5. The synthetic tissues employed in construction should be validated against the mechanical, physicochemical, thermal and dielectric properties of living tissue.
6. Should have Muscular outer shell with inner mucosal lining.
7. It should be able to be incorporated into complex model systems for the investigation of gallstone treatments.
8. Should be compatible with all known imaging equipment including MRI, CT, fluoroscopy and ultrasound.

9. Should be Compatible with all know surgical devices including lasers, RF ablation, bipolar, monopolar and harmonic devices.
10. Synthetic human tissues should be made from salt, water and fibre, which should feature most realistic tactility.
11. Synthetic human tissues should match the acoustical characteristic of real human tissue.
12. Should be biohazard and formaldehyde-free and should not pose any health risks to students/faculty. Should allow Realistic anatomy teaching and training without specialized facilities or compromising a live patient.

## 6. Kidney

1. Kidney model should be realistic synthetic organ made of real life like tissue material
2. Should be possible to be used as an alternative to human organ in basic anatomy classes.
3. Tissues of organ should mimic mechanical, dielectric and physico-chemical properties of live tissue. It should give look and feel of a live human organ.
4. The structural design should be based on an amalgam of CT and MRI images from actual patients
5. The synthetic tissues employed in construction should be validated against the mechanical, physicochemical, thermal and dielectric properties of living tissue.
6. Should have skinned outer structure with separate adrenal glands.
7. The organ should be available with patent and functional renal pelvis, ureter, renal artery and renal veins.
8. Should select left or right kidney and organ complexity.
9. It should be able to be incorporated into complex model systems for kidney transplant training and urinary device testing.
10. Should be compatible with all known imaging equipment including ultrasound, x-ray, fluoroscopy, MRI and CT scanners.
11. Should be compatible with all known surgical devices including lasers, RF ablation, bipolar, monopolar and harmonic de-vices.
12. Synthetic human tissues should be made from salt, water and fibre, which should feature most realistic tactility.
13. Synthetic human tissues should match the acoustical characteristic of real human tissue.
14. Should be biohazard and formaldehyde-free and should not pose any health risks to students/faculty. Should allow Realistic anatomy teaching and training without specialized facilities or compromising a live patient.

## 7. Pancreas

1. Pancreas model should be realistic synthetic organ made of real life like tissue material
2. Should be possible to be used as an alternative to human organ in basic anatomy classes.
3. Tissues of organ should mimic mechanical, dielectric and physico-chemical properties of live tissue. It should give look and feel of a live human organ.
4. The structural design should be based on an amalgam of CT and MRI images from actual patients
5. The synthetic tissues employed in construction should be validated against the mechanical, physicochemical, thermal and dielectric properties of living tissue.
6. Should have textured surface with pancreatic notch, head, body and uncinate process.
7. The organ should also be available with bile ducts and the primary arterial and venous trunks.
8. It should be able to be incorporated into complex model systems for pancreatic tumor removal and testing gallstone treatment devices.
9. Should have select organ complexity.
10. Integration with the larger biliary system should be available on the liver.
11. It should be compatible with all known imaging equipment including MRI, CT, fluoroscopy and ultrasound
12. Should be compatible with all known surgical devices including harmonic scalpel, lasers, RF ablation, bipolar, monopolar and harmonic devices.
13. Synthetic human tissues should be made from salt, water and fibre, which should feature most realistic tactility.
14. Synthetic human tissues should match the acoustical characteristic of real human tissue.

 be biohazard and formaldehyde-free and should not pose any health risks to students/faculty. Should allow Realistic anatomy teaching and training without specialized facilities or compromising a live patient.

**8. Penis**

1. Penis model should be realistic synthetic organ made of real life like tissue material
2. Should be possible to be used as an alternative to human organ in basic anatomy classes.
3. Tissues of organ should mimic mechanical, dielectric and physico-chemical properties of live tissue. It should give look and feel of a live human organ.
4. The structural design should be based on an amalgam of CT and MRI images from actual patients
5. The synthetic tissues employed in construction should be validated against the mechanical, physicochemical, thermal and dielectric properties of living tissue.
6. Should have shaft with patent urethra, glans, meatus and foreskin.
7. Should incorporated into complex model systems for the testing of medical devices and equipment.
8. Should be compatible with all known imaging equipment including x-ray, fluoroscopy, MRI and CT scanners.
9. Should be compatible with all known surgical devices including lasers, RF ablation, bipolar, monopolar and harmonic devices.
10. Synthetic human tissues should be made from salt, water and fibre, which should feature most realistic tactility.
11. Synthetic human tissues should match the acoustical characteristic of real human tissue.
12. Should be biohazard and formaldehyde-free and should not pose any health risks to students/faculty. Should allow Realistic anatomy teaching and training without specialized facilities or compromising a live patient.

**9. Small Intestine**

1. Small Intestine model should be realistic synthetic organ made of real life like tissue material
2. Should be possible to be used as an alternative to human organ in basic anatomy classes.
3. Tissues of organ should mimic mechanical, dielectric and physico-chemical properties of live tissue. It should give look and feel of a live human organ.
4. The structural design should be based on an amalgam of CT and MRI images from actual patients
5. The synthetic tissues employed in construction should be validated against the mechanical, physicochemical, thermal and dielectric properties of living tissue.
6. Should have Duodenum, Jejunum and Ileum and should be preloaded with waste matter.
7. Should have select organ size and color.
8. Should be able to be incorporated into complex model systems for the testing of medical devices and equipment.
9. Should be compatible with all known imaging equipment including x-ray, fluoroscopy, MRI and CT scanners.
10. Should be compatible with all known surgical devices including atraumatic bowel graspers, laparoscopic scissors, harmonic scalpels, scalpels, suction devices, GIA endostaplers, trocars, 30 degree scopes, sutures, various clamps and scissors, hand ports and TA staplers.
11. Synthetic human tissues should be made from salt, water and fiber, which should feature most realistic tactility.
12. Synthetic human tissues should match the acoustical characteristic of real human tissue.
13. Should be biohazard and formaldehyde-free and should not pose any health risks to students/faculty. Should allow Realistic anatomy teaching and training without specialized facilities or compromising a live patient.

**10. Spleen**

1. Spleen model should be realistic synthetic organ made of real life like tissue material
2. Should be possible to be used as an alternative to human organ in basic anatomy classes.
3. Tissues of organ should mimic mechanical, dielectric and physico-chemical properties of live tissue. It should give look and feel of a live human organ.
4. The structural design should be based on an amalgam of CT and MRI images from actual patients

5. The synthetic tissues employed in construction should be validated against the mechanical, physicochemical, thermal and dielectric properties of living tissue.
6. Should have skinned outer structure. Should also be available with the splenic vein and artery.
7. Should have anatomy and pathology options.
8. It should incorporated into complex model systems for transplant training and medical device testing.
9. Should be compatible with all known imaging equipment including ultrasound, x-ray, fluoroscopy, MRI and CT scanners.
10. Should be compatible with all known surgical devices including needles, scalpels, lasers, RF ablation, bipolar, monopolar and harmonic devices.
11. Synthetic human tissues should be made from salt, water and fiber, which should feature most realistic tactility.
12. Synthetic human tissues should match the acoustical characteristic of real human tissue.
13. Should be biohazard and formaldehyde-free and should not pose any health risks to students/faculty. Should allow Realistic anatomy teaching and training without specialized facilities or compromising a live patient.

**11. Stomach**

1. Stomach model should be realistic synthetic organ made of real life like tissue material
2. Should be possible to be used as an alternative to human organ in basic anatomy classes.
3. Tissues of organ should mimic mechanical, dielectric and physico-chemical properties of live tissue. It should give look and feel of a live human organ.
4. The structural design should be based on an amalgam of CT and MRI images from actual patients
5. The synthetic tissues employed in construction should be validated against the mechanical, physicochemical, thermal and dielectric properties of living tissue.
6. Should have Multi layered structure with thin muscular outer jacket, thick muscle middle layer and lubricious mucosal lining. Organ includes fundis and anchor points for pyloric and cardiac sphincters.
7. Should have option for Attaching esophagus
8. It should be able to be incorporated into complex model systems for the testing of gastrointestinal devices.
9. Should be compatible with all known imaging equipment including ultrasound, x-ray, fluoroscopy, MRI scanners and CT scanners.
10. Should be compatible with all known surgical devices including endoscopes, lasers, RF ablation, bipolar, monopolar and harmonic devices.
11. Synthetic human tissues should be made from salt, water and fiber, which should feature most realistic tactility.
12. Synthetic human tissues should match the acoustical characteristic of real human tissue.
13. Should be biohazard and formaldehyde-free and should not pose any health risks to students/faculty. Should allow Realistic anatomy teaching and training without specialized facilities or compromising a live patient.

**12. Trachea**

1. Trachea model should be realistic synthetic organ made of real life like tissue material
2. Should be possible to be used as an alternative to human organ in basic anatomy classes.
3. Tissues of organ should mimic mechanical, dielectric and physico-chemical properties of live tissue. It should give look and feel of a live human organ .
4. The structural design should be based on an amalgam of CT and MRI images from actual patients
5. The synthetic tissues employed in construction should be validated against the mechanical, physicochemical, thermal and dielectric properties of living tissue.
6. Should have D-shaped lumenal superstructure, individual hyaline cartilage rings with trachealis muscles, lubricious mucosal layer and muscular jacket material.
7. It should be compatible with all known imaging equipment including x-ray, fluoroscopy, MRI scanners and CT scanners.
8. Should be compatible with all know surgical devices including bronchoscopes, lasers, RF ablation, bipolar, monopolar and harmonic devices.

9. Should be able to be incorporated into complex model systems for the testing of endotracheal tubes, bronchoscopes and drug delivery devices.
10. Should have select construction type, branch complexity and tissue hue below.
11. Synthetic human tissues should be made from salt, water and fiber, which should feature the world's most realistic tactility.
12. Synthetic human tissues should match the acoustical characteristic of real human tissue.
13. Should be biohazard and formaldehyde-free and should not pose any health risks to students/faculty. Should allow Realistic anatomy teaching and training without specialized facilities or compromising a live patient.

**13. Liver**

1. Liver model should be realistic synthetic organ made of real life like tissue material
2. Should be possible to be used as an alternative to human organ in basic anatomy classes.
3. Tissues of organ should mimic mechanical, dielectric and physico-chemical properties of live tissue. It should give look and feel of a live human organ.
4. The structural design should be based on an amalgam of CT and MRI images from actual patients
5. The synthetic tissues employed in construction should be validated against the mechanical, physicochemical, thermal and dielectric properties of living tissue.
6. Should have skinned outer shell with lobed structure. Should also be available with the primary arterial and venous trunks, complete biliary system and a variety of pathologies.
7. Should be available with biliary system options.
8. It should be able to be incorporated into complex model systems for liver transplant training and biliary stent testing.
9. Should be compatible with all known imaging equipment including MRI, CT, fluoroscopy and ultrasound.
10. Should be compatible with all known surgical devices including lasers, RF ablation, bipolar, monopolar and harmonic devices.
11. Synthetic human tissues should be made from salt, water and fiber, which should feature the world's most realistic tactility.
12. Synthetic human tissues should match the acoustical characteristic of real human tissue.
13. Should be biohazard and formaldehyde-free and should not pose any health risks to students/faculty. Should allow Realistic anatomy teaching and training without specialized facilities or compromising a live patient.

F) Audio and visual system for Anatomy Lab should be supplied complete with
   i) Ceiling Mounted Camera system with pan tilt zoom
   ii) Digital Video Recording system ,
   iii) Wireless Mike, Collar Mike
   iv) Overhead Projector
   v) 50" high resolution LED Screens-4nos for simultaneous display and recording of class and teaching activities

G) Maintenance Kit- with consumables for maintenance of Synthetic cadaver and organs for a minimum period of three years

H) The vendor should undertake Operation and maintenance of the lab through trained professional for a period of three years from date of installation