COMPOSITE ANATOMY LAB

Composite anatomy Lab for comprehensive anatomy teaching and training .Anatomy lab should comprise of the following

a) PACS Based Virtual Anatomy and Visualization Workstation

1 PACS Based Virtual Dissection and visualization Workstation for Complete Anatomy teaching from basic to advance level

2 Table should contain a fully labeled interactive body atlas with atleast 2000 body structures as a reference for classes.

3 It should contain 3D models for anatomy education with full 3D functionality like rotating, zoom in and out, identify individual structure with full information and clinical application of that structure, and also the ability to do a layer by layer dissection even to smallest structures.

4 Interactive Atlas should also have cross section anatomical views with corresponding radiological images and cadaveric section for comprehensive Anatomy teaching

5 Should have ability of Complete Anatomical Educational Curriculum from introduction , surface anatomy, dissection guide and self assessment quizzes etc and also facility to program sequence /lessons to conduct structured classes

6 It should contain tutorials for Anatomical guidance to find the clinical basis of many pathological cases in details with animations

7 Should Offer cadaver based 3D models with the ability to identify and dissect any part of the body

8 Should offer freedom to use any method of dissection that appeals to the student/anatomist like structure by structure or layer by layer or by finding the specific structure without going through the whole layers

9 Should have the facility to cut the Cadaver in transverse, sagittal, and coronal planes and a unique tool to correlate the 3D model with the sectional anatomy (transverse, sagittal, and coronal sections) displayed on same screen

10 Should also have facility to correlate 3D models in all these three planes with radiological images from CT,MR, X-ray, and Ultrasound.

11 Should be capable of 3D reconstruction and visualization from CT and MRI Images

12 Should have a inbuilt Picture Archiving and Communication system (PACS) based Visualization workstation with specialized PACS software for 3D medical Imaging

13 It should allow the users to import own cases based on CT and MRI data and automatically reconstruct 3D models from Raw DICOM Files without any format conversion of the file

14 The 3D rendering should feature advanced real-time surface rendering with a selectable and individually positionable illumination feature in order to cast light and shadows on structures

15 Virtual Dissection table and workstation should run on full DICOM compatibility , enabling the workstation to connect through LAN to servers in PACS Domain or DICOM Based.

16 software should feature a touch based user interface as well as mouse & keyboard support for advanced tools.

17 The workstation should offer connectivity to an internet cloud platform database with real life anatomical CT and MR Library - allowing professors and students to access cases from any location , save their work and share their cases with other users

18 It should contain Educational portal with access to hundreds of cases prepared and authorized by specialist from around the world containing full detailing and labeling of pathological conditions and anatomical variations.

19 It should have a bookmarking feature. Allowing the Professor to prepare cases before the class and saving the work/bookmarks for a home work or next class.

20 System should allow access to table from anywhere via faculty/student licenses allowing faculty to prepare classes remotely from office/home. System should be supplied with login rights for atleast 10 faculty 50 students

21 It should be possible to segment structures from real cases, all bones should be saved separately in bookmarks on any case from data base and real cases . It should also have a manual segmentation tool aided by mouse available in workstation

22 The workstation/table should have the facility of viewing any DICOM image as well as clinical images and film clips from any source

23 The 3D body structure should freely rotate in all 3 axis (X,Y,Z)for comprehensive views of the anatomy

24 For the radiology students, It should have all the 2D tools used by the radiologists such as contrast, zoom, inversion ,measurements including area , angle, cardiothoracic ratio , cine loop, Histogram etc.

25 Should have the facility to move tools and presets at any corner/location of the table as per convenience of user

26 Should have single piece High resolution LED Touch screen with Minimum screen size of 65 inches and width not less than half of the screen size

27 Screen should be based on latest capacitative technology with minimum 12 touch points for effective group learning.

28 It should be possible to use workstation as a Black Board as well a Table for effective classroom teaching environment

29 The workstation should have electrical adjustment of height to accommodate students &Teachers of all height and should have Electrical tilting from180 to 90 degree for achieving board position

30 Table should also have two user specific programmable positions which can be stored in memory for quick positioning .

31 Should have the facility to be connected To a single Normal Projector available in Institute for Classroom Teaching without any additional computer/connections

32 The workstation should be on 4 lockable castor wheels for easy maneuverability within the department. It should pass easily in standard classroom doors and most elevators

33 Table should be supplied with license for Internet Cloud based education portal for five years .

34 The product operating system/ software Should conform to international quality standards USFDA and European CE

b) Full Body Education grade Synthetic Human Cadaver

1. Full body synthetic Human Cadaver for Comprehensive anatomy teaching of medical students
2. Should be possible to be used as an alternative to human cadavers in basic anatomy classes.
3. The Cadver 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
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. Cadaver should be complete with all bones, joints, muscles, organs and tendons in normal human anatomy. 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. System should be supplied complete with specialized table for storage of the cadaver in preservation medium
12. Size of the cadaver should be minimum 165cm and weight not more than 50 kg.

c. The vendor should undertake to provide operation of the anatomy lab through trained Anatomy Professionals for a period of three years including all consumables and services needed to run the anatomy teaching lab .

14/3/18

Dr. JITENDRA Kr LON

डॉ. हैन्दर कौर / Dr. Sohinder Kaur
निदेशक आचार्य एवं विभागाध्यक्ष
Director Professor & Head
शरीर रचना विज्ञान विभाग / Deptt. of Anatomy
ले.हा.मे.का. व श्रीमती सु. कृ. अस्पताल, नई दिल्ली-1