

Progress Report – Medical Education Supplementary Fund 2011-12

Project Title : Setting up virtual microscopy – an essential modern tool for teaching histology

1. Introduction

Reasons for making digital image of slides

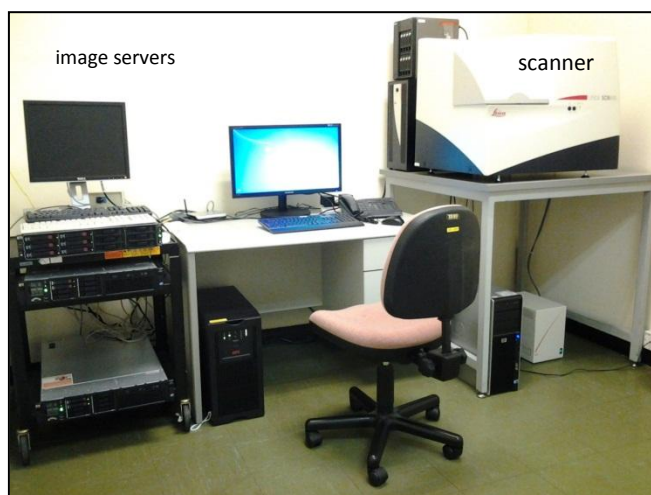
- a. To entertain increasing no. of students, to ease microscope and slide box management
- b. To streamline teaching process with internet, mobile teaching and to enhance interactive teaching

Method to produce digital images of slides and teaching materials

- a. To acquire a digital slide scanner for automatic scanning of slides to obtain a zoom-able image of the whole slide
- b. To be able to associate files and notes onto the slides
- c. To provide access to these teaching materials via the internet or mobile device

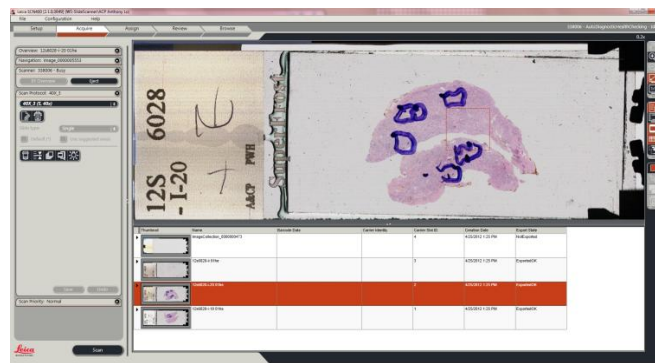
2. Installation and maintenance of the digital scanner and software

- a. Digital slide scanner (Leica SCN 400) was installed in Room 38020, 1/F Clinical Sciences Building, Prince of Wales Hospital on 2nd November, 2011. Servers and software were set up on 11th November, 2011.



- b. The software and servers are installed in two locations: PWH campus consists of computer and network system to control the actual physical scanning process. A server and network storage are located in PWH for slide image distribution through the internet. There is also software for image analyses at PWH campus. At CU MDL campus, there is the server for image storage and the software for the distribution of teaching slide

images (Digital Slidebox). Software at PWH has been upgraded twice in May,



2012 and June, 2012.

Figure 1. Scanner Client.

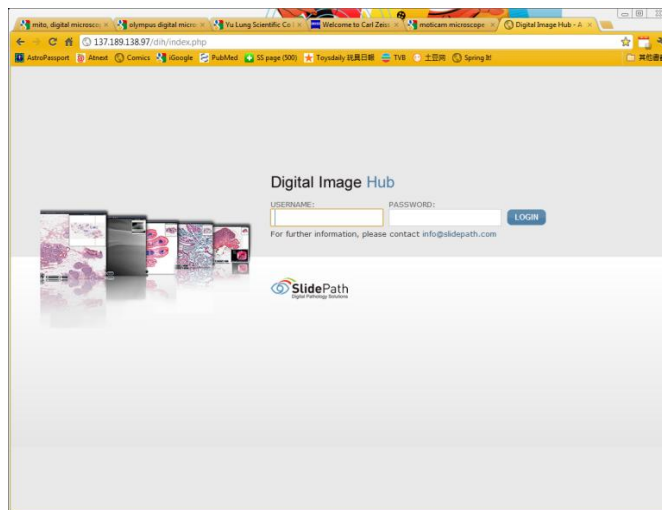


Figure 2. Digital Image Hub webpage.

- c. Anthony Lo of ACP serves as system administrator for the image server at Prince of Wales Hospital. Miss Cecilia Y.S. Ho (RA, ACP) and Mr. Ivan Kong (IT support, ACP), are both trained to operate the scanner (the physical scanning process). New users will obtain one training session before usage.
 - d. Raw data of all scanned images are saved within the scanner network. Compressed images are all uploaded to the image server and can be accessed via the internet.
3. Education
- a. Building of histopathology library in PWH image server (Digital Image Hub DIH) and CUHK image server (Digital Slidebox). Scanning of the current histopathology tutorial slides collection and uploaded onto both PWH server and CUHK server were completed on 12th January, 2012. Explanatory notes of each slide have been added to each of these images. MCQ-type of question will be added in future to enhance self-learning.

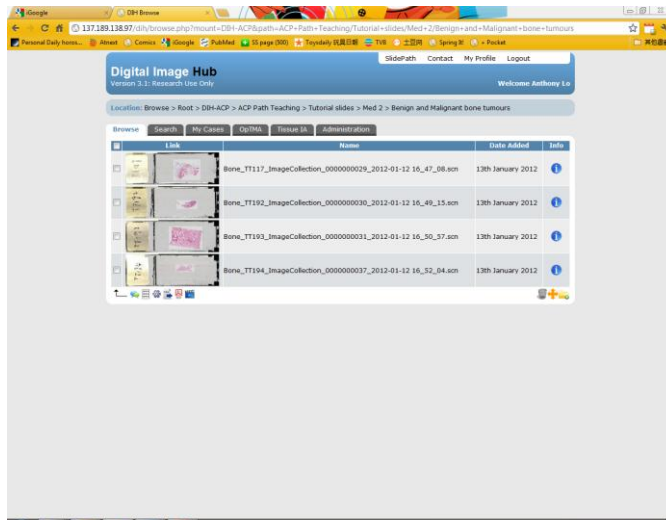


Figure 3. Collection of tutorial slides at DIH.

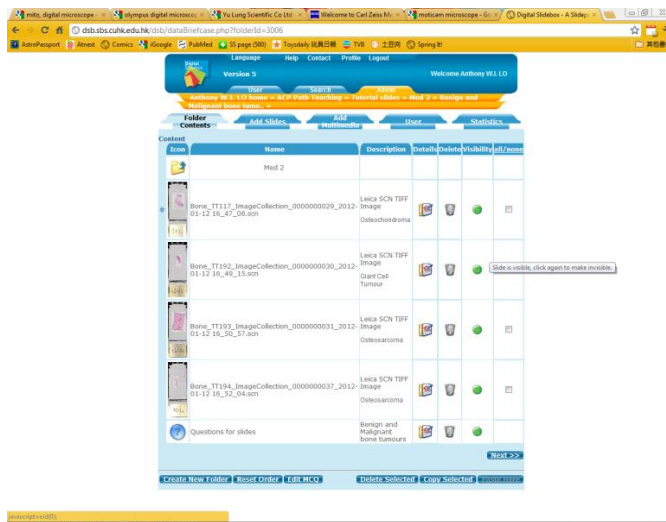


Figure 4. Collection of tutorial slides at Digital Slidebox.

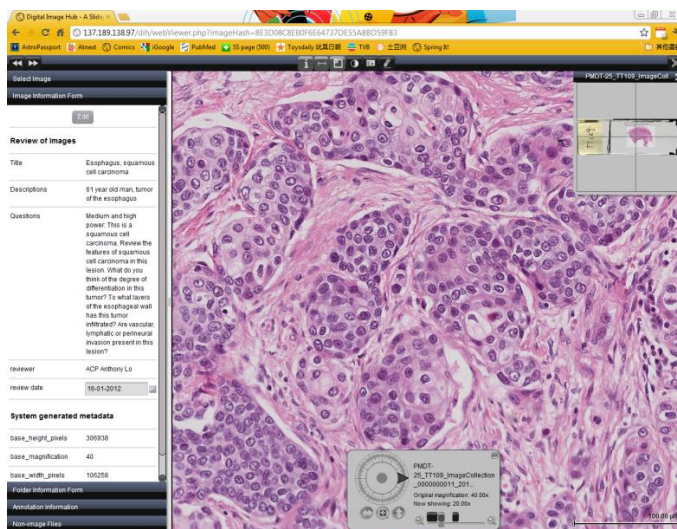


Figure 5. Digital image with tutorial notes.

- Implementation on web-teaching, trial for teaching in one PMDT tutorials

(4th January, 2012) and on orthopedic teaching (web page for current term in 2012). MB ChB students at orthopedic module PMUS were informed about the availability of these digital teaching materials at the introductory lecture. For the trial of web-teaching, the tutorial notes and link to digital images were posted on the website of ACP (<http://www.acp.cuhk.edu.hk/Med2/mcq/>). Students were informed during the tutorials and two of the instructors (Dr. Anthony Lo and Dr. Chan Kui Fat) have used this website during the tutorial lesson.

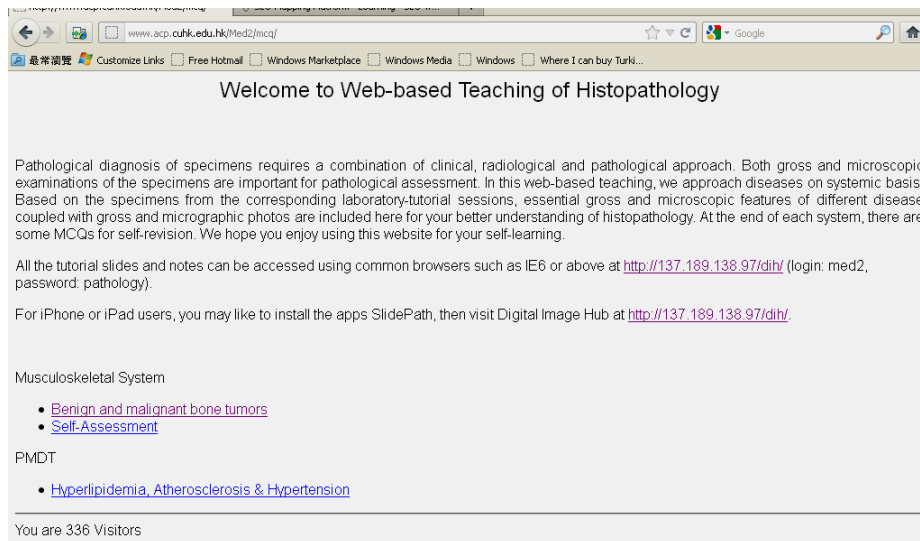


Figure 6. Trial website for PMDT.

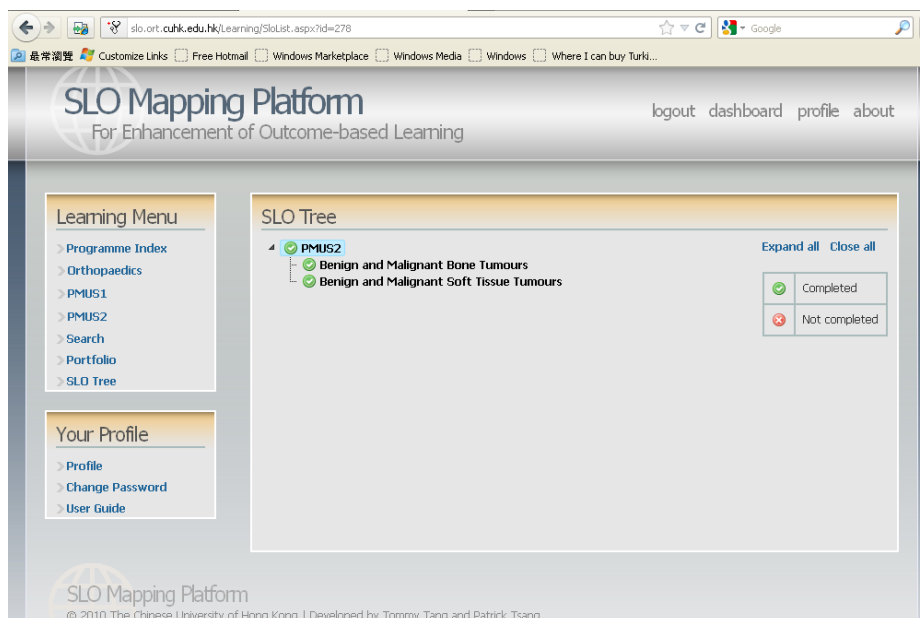


Figure 7. PMUS2 student learning website.

- c. Tutorials slides for Hematology session of Master of Med Lab Sci (31st January, 2012). Dr. Natalie Chan had used the digital images on big screen

to allow easier viewing by students during big tutorial group sessions.

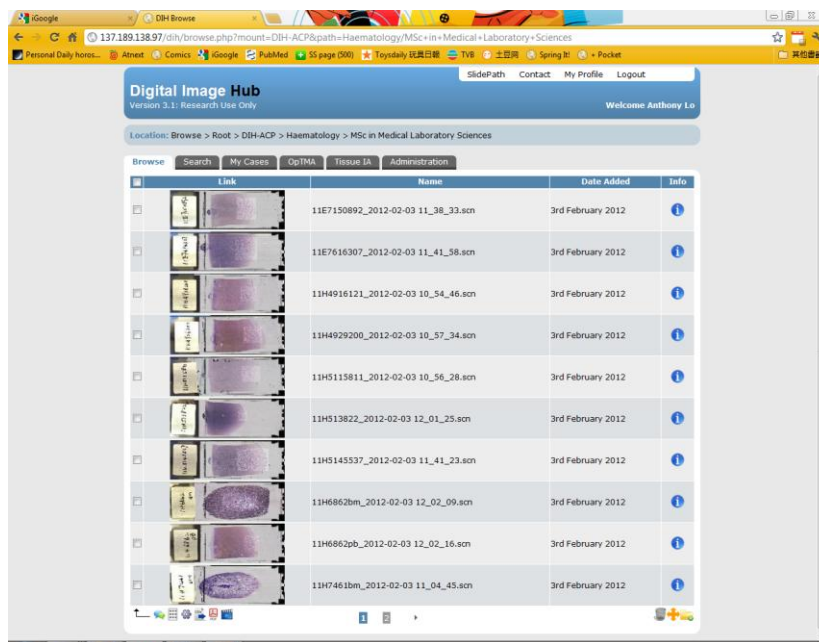


Figure 8. Digital images of blood smear collection for hematology teaching.

- d. Building cytopathology library (since February, 2012 and on-going). Cytology section of ACP has expressed interested in hosting their collection of teaching slides onto their own website and for the training of medical technologists for their cytotechnologist qualification examinations.

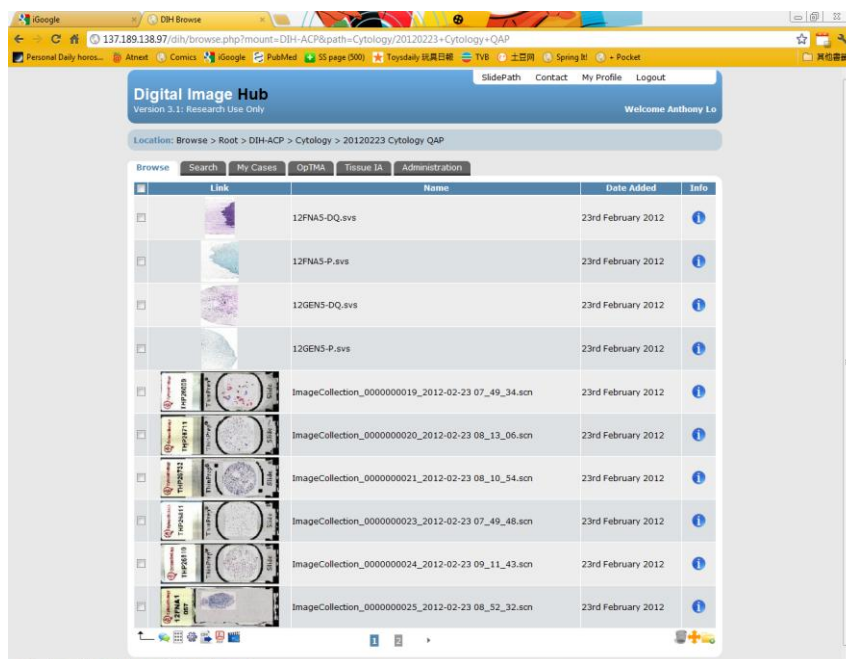


Figure 9. Images for cytology quality assurance.

- e. Slide seminars for post-graduate teaching. Some of the slides used for the slides seminars held in ACP are being uploaded prior to the event to allow

trainees to review the slides. Relevant x-ray images and gross photos are also provided in some cases. Clinical histories of the cases are being attached to the slides.

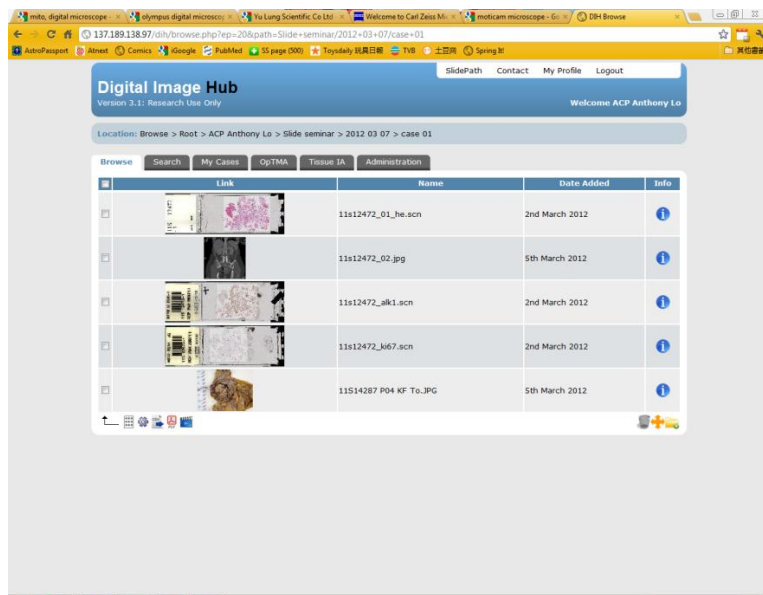


Figure 10. A case for slide seminar with relevant gross photo and x-ray images.

- f. Tumor board meeting for uropathology, colorectal cancer and medical endocrinology teaching round (since February, 2012). Digital images of cases to be discussed in the meeting were uploaded and to be presented during the meeting.



Figure 11. Slide collections for a case to be presented in clinico-pathological meeting.

4. Training activities

- a. Announcement to members of the Medical Faculty on 2012 Curriculum Day, 22nd October, 2012.
 - b. Software training at MDL on 8-9th December, 2012.
 - c. Hardware training at PWH on 14-15th December, 2012.
 - d. Seminar for Medical Technologists PWH on 26th April, 2012.
 - e. HA commissioned training seminar in coming November, 2012.
5. Research
- a. ACP Anthony Lo – Optimization for Cytology Slide scanning.
 - b. ACP Anthony Chan – QAP fatty liver.
 - c. ACP Amy Chan – Storage for digital images for slides review request.
 - d. PolyU Eric Tam – GRF-funded Skeletal muscle damage project.
 - e. ACP Ben Ko, ACP KM Lau, ACP May Yu, O&G Ronald Wang – various small scale trial scanning of their research and service slides.