UPMC Pathology Video Conference Sites and usages

Current Pathology video conference sites (on National ISDN and UPMC IP network):

- UPMC Cancer Pavilion (341 Conference room) – TANDBERG (ISDN and IP)
- UPMC Cancer Pavilion (201 Cytology Conference room) – TANDBERG (IP)
- UPMC Shadyside (Pathology Sign-out room) – TANDBERG (ISDN and IP)
- UPMC Presbyterian (Pathology Sign-out room) - TANDBERG (ISDN and IP)
- UPMC Presbyterian (Pathology Conference room) - TANDBERG (ISDN and IP)
- Scaife Hall (Totten Room) - TANDBERG (ISDN and IP)
- UPMC Montefiore (Transplant Pathology Conference room) – TANDBERG (ISDN and IP)
- Magee Women's Hospital of UPMC – (Pathology Sign-out room) - TANDBERG (ISDN and IP)
- Children's Hospital of Pittsburgh of UPMC – TANDBERG (IP)
- University of Pittsburgh Department of Biomedical Informatics (DBMI) - Parkvale Building - TANDBERG (ISDN and IP)
- UPMC St. Margaret - (Dr. Jagjit Singh office) – POLYCOM PVX (IP)
- UPMC Passavant - (Donor Hall) - Polycom HDX9004 (ISDN and IP)
- UPMC Bedford Memorial - (Video Conference room) - Polycom HDX9004 (ISDN and IP)
- UPMC Horizon-Greenville - (Video Conference room) - Polycom HDX9004 (ISDN and IP)
- UPMC Horizon-Shenango - (Video Conference room) - Polycom HDX9004 (ISDN and IP)

At this moment we have these (below) scheduled events using Tandbergs and Polycoms:

- Every Wed – Pancreas/Liver Conference - between Cancer Pavilion-MUH-Bedford
- Every Thu - CytoPath Slide conference or J urnal club - between PUH-SHY-MWH-STM
- Every Fri – Telepathology Special Interest Group Meeting - between Cancer Pavilion-MWH
- Every Month - AP Supervisors Meeting - between SCF (Totten Room)-SHY

Lots of other unscheduled meetings between PUH-SHY-SCF-MWH that have used TANDBERG systems

UPMC Pathology Department Conference Webcast site

http://teleconference.upmc.edu

Total 2010 Visit:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>3,456</td>
</tr>
</tbody>
</table>

Top 10 visitors came from 71 countries/territories (2010):

- United States – 1,933
- United Kingdom – 352
- Canada – 273
- Egypt – 212
- Saudi Arabia – 160
- India – 52
- Tunisia – 44
- China – 40
- New Zealand – 36
- Turkey – 34

Total number of recorded lectures since February, 2002: ~1600

Types of talks:

- Seminars in Laboratory Medicine/Current Topics in Laboratory Medicine - Selected UPMC AP/CP users - Protected by UPMC network authentication
UPMC Pathology Digital Slide Imaging, Remote Microscopy and Digital Imaging

Digital Slide Imaging:

- **MIRAX LIVE RT**: MIRAX DESK enables remote users to control a motorized microscope and view in real time the camera image.
  
  **Current Users:**
  - DermPath
  
  **Current Install Sites:**
  - UPMC Falk
  
  **Slide scanned:**
  
  **Space used:**

- **MIRAX DESK**: MIRAX DESK is a fast, reliable, and extremely compact turn-key slide scanner. MIRAX DESK is perfectly suitable for small laboratories and as a personal slide scanner for pathologists and researchers. MIRAX DESK is also the ideal solution for remote consultation and education.
  
  **Current Users:**
  - DermPath

  **Current Install Sites:**
  - UPMC Shadyside Place

  **Slide scanned:**
  - 50

  **Space used:**
  - ~10GB

- **MIRAX MIDI**: With MIRAX MIDI Carl Zeiss presents a unique solution for the analysis of histological specimen. MIRAX MIDI combines ease of use, robust automation and leading image quality. Up to 12 glass slides are scanned automatically and can be analysed conveniently on your computer screen. At the same time the complete slide image can be made available to other users via intra- or internet.
  
  **Current Users:**
  - Cytopath, Neuropath, Histopath, Transplant Pathology

  **Current Install Sites:**
  - UPMC Cancer Pavilion, UPMC Montifiore

  **Slide scanned:**
  - ~14,000 (Cancer Pavilion), ~6,500 (Montifiore)

  **Space used:**
  - ~2TB (Cancer Pavilion), ~836GB (Montifiore)

- **Aperio - CS**: Create high-quality digital slides with Aperio's five-slide ScanScope CS. ScanScope CS has a compact footprint perfect for desktop use, and comes standard with 20X and 40X scanning magnification capabilities.
  
  **Current Users:**
  - Cytopath, Neuropath, Histopath

  **Current Install Sites:**
  - UPMC Cancer Pavilion

  **Slide scanned:**
  - 8,300

  **Space used:**
  - ~1.5TB
- **Aperio - XT** - Ultra-fast, high-capacity scanning with our powerful, 120-slide capacity ScanScope XT system for 1 x 3" slides, 20X and 40X scanning magnification capabilities.
  - **Current Users:** Cytopath, Neuropath, Histopath
  - **Current Install Sites:** UPMC Cancer Pavilion
  - **Slide scanned:** ~700
  - **Space used:** ~400GB

- **Aperio - T2** - A virtual microscopy systems that deliver integrated digital slide creation, viewing, management, and analysis capabilities to pathologists. Using 200 DVD Jukebox with EMC ArchiveXtender to automatically store data on optical media with seamless access.
  - **Current Users:** Cytopath, Neuropath, Histopath, GU Labs
  - **Current Install Sites:** UPMC Cancer Pavilion
  - **Slide scanned:** ~8,764
  - **Space used:** ~2 TB

- **Trestle - SL50** - Allows remote, unattended access to up to 50 glass slides concurrently. This provides remote users with the ability to review multiple slides without the need for an attendant at the MedMicro device location. By automating the slide loading and unloading process, the pathologist has the flexibility to work with a large virtual catalog of slides at any time.
  - **Current Users:** Dermpath, Neuropath
  - **Current Install Sites:** UPMC Cancer Pavilion, Magee-Womens Hospital of UPMC, Children's Hospital of Pittsburgh
  - **Slide scanned:** ~11,477
  - **Space used:** ~2 TB

- **Hamamatsu - NanoZoomer** - Offers the flexibility of both brightfield and fluorescence imaging in one reliable, easy to use, robust system. Up to 210 slides are automatically scanned at 20x or 40x using a 4096 x 64 pixel CCD continuous scan technology.
  - **Current Users:** Cytopath
  - **Current Install Sites:** UPMC Shadyside
  - **Slide scanned:** ~600
  - **Space used:** ~240GB

- **CRi's Nuance - Multispectral Imaging System** - is a breakthrough system that converts any brightfield or fluorescent microscope into a multispectral imaging workstation. It can also be used for larger specimens, such as embryos, zebrafish, plants, or micortiter plates when mounted on a fluorescence microscope.
  - **Current Users:** Cytopath, Cellular & Molecular Pathology, Breast and Gynecologic Pathology
  - **Current Install Sites:** UPMC Shadyside, UPMC Montifiore, Magee-Womens Hospital of UPMC
  - **Slide scanned:** ~2,700
  - **Space used:** ~17GB

[http://telepathology.upmc.edu](http://telepathology.upmc.edu)
[http://dpig.upmc.com](http://dpig.upmc.com)

Ishtiaque Ahmed, Jon Duboy & Ralph Anderson
2011
- **Applied Imaging Ariol SL-50** - Quantifies genetic markers and protein expression through automated image analysis, which characterizes labeled cells through color and morphometric analysis. The system features the company's Ariol software and the SL-50 slide loader, which offers the pathologist high throughput and automated slide scanning for objective and accurate quantification of stained cells.
  
  **Current Users:**
  - Dermpath
  
  **Current Install Sites:**
  - UPMC Shadyside
  
  **Slide scanned:**
  - ~166
  
  **Space used:**
  - ~675GB

- **OMNYX** - 1-Diagnostic Archive Server, 1- Work Flow Server, 1-DB Server, along with 4 Pathologist Cockpit and Histology Workstations
  
  **Current Users:**
  - Pathology
  
  **Current Install Sites:**
  - UPMC Shadyside
  - UPMC Presbyterian South Tower
  - UPMC Montifiore
  - Magee-Womens Hospital of UPMC

  **Slide scanned:**
  - 

  **Space used:**
  - 

**Remote Microscopy:**

- **Coolscope** - In an all-in-one design that combines a microscope with a digital camera and network functions into the tower unit.
  
  **Current Users:**
  - Neuropath
  
  **Current Install Sites:**
  - UPMC Shadyside

- **Trestle - SL4** - Microscopy product, allows multiple physicians and scientists to remotely view, navigate, and share high fidelity microscope images at sub-micron resolution over standard Internet connections in real-time. Also allows remote, unattended, high volume access to microscope images over standard Internet/LAN lines.
  
  **Current Users:**
  - Dermpath, Neuropath
  
  **Current Install Sites:**
  - UPMC Shadyside
  - Children's Hospital of Pittsburgh
  - UPMC Presbyterian
  - Magee-Womens Hospital of UPMC
  - VA Pittsburgh Healthcare System

- **DN100 Digital Network Camera** - Platform-independent, Internet-capable digital camera system that can be utilized to deliver live or captured images to a local computer in the laboratory or to a remote computer anywhere in the world.
  
  **Current Users:**
  - Dermpath, Neuropath
  
  **Current Install Sites:**
  - UPMC Shadyside
  - UPMC Presbyterian

- **Olympus DP71 Netcam** - Designed for use with the Olympus DP71 cameras, and Olympus-Soft Imaging Solutions’ FireWire cameras (FVII, CC12, CVII, and CVIII) and Altra 20 CMOS camera, NetCam uses TCP/IP to broadcast a live image over the Internet via an assigned static IP address.
  
  **Current Users:**
  - Hematopathology, Cytology x2 (1 on wheels)
  
  **Current Install Sites:**
  - UPMC Shadyside
  - UPMC Presbyterian

---

http://telepathology.upmc.edu
http://dpig.upmc.com

Ishtiaque Ahmed, Jon Duboy & Ralph Anderson
2011
Digital Microscopic and Gross Imaging:

- **Nikon DS-5M-L1** - Combines a camera head (DS-5M), based on a 5-megapixel Bayer-masked color matrix CCD detector, with a camera control unit (CCU, DS-L1) that incorporates a 6.3-inch LCD monitor to display high-resolution images in progressive or interlaced mode.
  
  - **Current Users:**
  - **Current Install Sites:**
  - UPMC Presbyterian South Tower

- **QuickCam Pro 9000** - Webcam image-perfect detail and clarity. Carl Zeiss optics and autofocus keep images razor-sharp, even in extreme close-ups.
  
  - **Current Users:**
  - **Current Install Sites:**
  - UPMC Shadyside

Digital Microscopic and Gross Imaging:

- **Nikon DS-2MV (7)** - The DS-2MV features a 2-megapixel color CCD with a high frame rate. This camera head enables the smooth display of live images and high quality still images
  
  - **Current Users:**
  - Surgical Pathology Gross Labs, Morgue (PUH)
  - **Current Install Sites:**
  - UPMC Presbyterian
  - UPMC Shadyside
  - Magee-Womens Hospital of UPMC
  - Children's Hospital of Pittsburgh
  - UPMC Mercy

- **Nikon DS-Vi1 (12)** - Features a 2.0-megapixel CCD, which balances smooth live image movement and high resolution
  
  - **Current Users:**
  - Surgical Pathology Gross Lab, Lymph Node Grossing area
  - **Current Install Sites:**
  - UPMC Presbyterian

- **Nikon DS-Fi1** - A 5-megapixel CCD captures microscopic images with resolution as high as 2560 x1920 pixels. It can be universally used for brightfield, darkfield and phase contrast.
  
  - **Current Users:**
  - Neuropath
  - **Current Install Sites:**
  - UPMC Presbyterian

- **Diagnostic Instruments (DI) Spot Digital Cameras** - This camera is widely used in the Department of Pathology for photo documentation of microscopic image files with high speed and real time viewing capability.
  
  - **Current Users:**
  - Widespread usage in every Pathology divisions
  - **Current Install Sites:**
  - UPMC Health System-wide
UPMC Digital Pathology Imaging Group Site, Publications and Presentations

http://dpig.upmc.com/

Publications:
- **Primary histologic diagnosis using automated whole slide imaging: a validation study**, April 2006. John R. Gilbertson1,5, Joonhan Ho1, Leslie Anthony2, Drazen M. Jukic3,4, Yukako Yagi1 and Anil V. Parwani3. 1Center for Pathology Informatics, University of Pittsburgh Medical Center, Pittsburgh, PA, 15232, USA, 2Center for Biomedical Informatics, University of Pittsburgh, Pittsburgh, PA, 15213, USA, 3Department of Pathology, University of Pittsburgh School of Medicine, UPMC Presbyterian/Shadyside, Pittsburgh, PA, 15232, USA, 4Department of Dermatology, University of Pittsburgh School of Medicine, UPMC Presbyterian/Shadyside, Pittsburgh, PA, 15232, USA, 5Benedum Center for Oncology Informatics, University of Pittsburgh Medical Center, Pittsburgh, PA, 15232, USA


Presentations:
- **Applications of Telepathology and Whole-Slide Imaging in Pathology**, October, 2008. Anil Parwani, MD, University of Pittsburgh Medical Center, Pittsburgh, PA

- **Telepathology and Whole-Slide Imaging in Pathology**, September, 2007. Anil Parwani, MD, University of Pittsburgh Medical Center, Pittsburgh, PA

- **Whole Slide Image Based Interpretation of Immunohistochemistry Stains in Challenging Prostate Needle Biopsies**, October 2006. Jeffrey L Fine MD1, Finejl@upmc.edu; Joonhan Ho MD1; Yukako Yagi1; Drazen Jukic MD PhD1,2; John R Gilbertson MD3; Sheldon I. Bastacky MD2; Dana M. Grzybicki MD PhD1; Leslie Anthony1; Robb Wilson1; Anil V. Parwani MD PhD1,2; Centers for Pathology and Oncology Informatics, University of Pittsburgh; 2Department of Pathology, University of Pittsburgh Medical Center; 3Department of Pathology, Case Western Reserve University School of Medicine

- **Evolution of Tele-neuropathology Intra-operative Consultation at an Academic Medical Center**, October 2006. Jeffrey L. Fine, MD1, Finejl@upmc.edu; Craig Horbinski, M.D., Ph.D. 2, Rafael Medina-Flores, M.D. 2, Yukako Yagi1, and Clayton A. Wiley, M.D., Ph.D. 2; 1Department of Pathology, Center for Pathology Informatics, 2Division of Neuropathology, University of Pittsburgh Medical Center, Pittsburgh, PA

- **Design and Implementation of a Clinical Whole Slide Imaging System for Diagnostic Anatomic Pathology Applications**, October 2006. Joonhan Ho MD1, Hoj@upmc.edu; Jeffrey L Fine MD; Anil V. Parwani MD PhD1,2; Drazen Jukic MD PhD1,2; John R Gilbertson MD3; Centers for Pathology and Oncology Informatics, University of Pittsburgh; 2Department of Pathology, University of Pittsburgh Medical Center; 3Department of Pathology, Case Western Reserve University School of Medicine.

- **September 2006. Poster 22. Pathology Errors Detected through Clinical-Pathologic Conferences**, September 2006. Ronald Balassanian, MD, Colleen M. Vrbin, BS, Stephen S. Raab, MD, Pathology, University of Pittsburgh, School of Medicine, Pittsburgh, PA, USA.

Poster 25. Design and Implementation of a Clinical Whole Slide Imaging System for Diagnostic Anatomic Pathology Applications, September 2006. J ohan Ho, MD1, Drazen J ukic, MD2, Anil Parwani, MD3, Jeffrey Fine, MD1, J ohn Gilbertson, MD4, 1Pathology Informatics, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 2Dermatology, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 3Pathology, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 4Pathology Informatics, Case Western Reserve University, Cleveland, OH, USA.

Poster 27. Validation Study of Whole Slide Images for Interpretation of Immunohistochemistry Stains in Challenging Prostate Needle Biopsies, September 2006. J efrey L. Fine, MD1, J ohan Ho, MD1, Yukako Yagi, None/NA1, Drazen J ukic, MD1, J ohn R. Gilbertson, MD2, Sheldon I. Bastacky, MD3, Dana M. Grzybicki, MD1, Leslie Anthony, None/NA1, Robb Wilson, None/NA1, Anil V. Parwani, MD1, 1Center for Pathology Informatics, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 2Department of Pathology, Case Western Reserve University, Cleveland, OH, USA, 3Department of Pathology, University of Pittsburgh Medical Center, Pittsburgh, PA, USA.

Poster 28. Synoptic/Checklist Reporting of Radical Prostatectomy Specimens Using a Synoptic Tool: A Two Year Experience with 557 Specimens, September 2006. Anil Parwani, None/NA1, Anthony Piccoli, BA1, Susan Urda, None/NA2, Sharon Winters, None/NA2, William Gross, None/NA1, Rajiv Dhir, None/NA1, Michael Becich, None/NA1, 1Pathology Informatics, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 2Registry Information Services, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 3Department of Pathology, University of Pittsburgh Medical Center, Pittsburgh, PA, USA.

Poster 29. Comparison of Virtual Slides with Traditional Glass Slides for Primary Diagnosis in Anatomic Pathology, September 2006. Anil Parwani, MD1, Ann Cecil, None/NA2, Drazen J ukic, MD3, 1Pathology, UPMC, Pittsburgh, PA, USA, 2N/A, Trestle Corporation, Pittsburgh, PA, USA, 3Dermatology and Pathology, UPMC, Pittsburgh, PA, USA.

Use of Whole Slide Imaging in Surgical Pathology Quality Assurance: Design and Pilot Validation Studies, September 2006. J ohan Ho, MD, Anil Parwani, MD, PhD, Drazen J ukic, MD, PhD, Yukako Yagi, Leslie Anthony, MA, J ohn Gilbertson, MD, University of Pittsburgh, School of Medicine, Department of Pathology

Impact of Internet Based Resources on Resident Teaching and Educational Conferences: Experience at a University Affiliated Hospital Network Comprising Academic and Community Based Pathology Practices, September 2006. J. L. Fine1, Y. Yagi1, A. V. Parwani1, M. J. Becich1 and J. R. Gilbertson1, 1Center for Pathology Informatics, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, United States.

Clinical Applications of Telepathology and Whole Slide Imaging, September 2006. Anil V Parwani, MD., PhD., Department of Pathology, Anatomic Pathology Laboratory Information Systems, UPMC Shadyside Hospital, University of Pittsburgh Medical Center, Pittsburgh, PA.

Digital Imaging in Pathology, September 2006. Anil V Parwani, MD., PhD., Department of Pathology, Anatomic Pathology Laboratory Information Systems, UPMC Shadyside Hospital, University of Pittsburgh Medical Center, Pittsburgh, PA.

Picture Perfect: Imaging Strategies in Pathology, October 2005, Cerner Health Conference Orlando, FL. Ralph Anderson, Center for Pathology and Oncology Informatics, UPMC.

The Pittsburgh Telepathology Experience, December 2005, Michael J. Becich, MD PhD - becich@pitt.edu, Vice-Chairman of Pathology Informatics, Chairman of Pathology Informatics, University of Pittsburgh Medical Center - Shadyside/Hillman Cancer Center. Director, Centers for Pathology and Oncology Informatics Director, Professor of Pathology, Information Sciences & Telecommunication Professor of Pathology, University of Pittsburgh School Medicine. Centers for Pathology and Oncology Informatics

Multi Spectral Imaging in Pathology Digital Stain, June 2002. Yukako Yagi. Center for Pathology Informatics, University of Pittsburgh Medical Center

Mobile Devices for Anatomic Pathology, February 2002. Yukako Yagi, John Gilbertson, MD University of Pittsburgh Medical Center

http://telepathology.upmc.edu
http://dpig.upmc.com

Ishiaque Ahmed, Jon Duboy & Ralph Anderson
2011