Disclosures

- Aperio
- Apollo PACS
- BioImagene
- Carl Zeiss
- Definiens
- Objective Pathology
- Omnyx
- SlidePath
- Medting
Goal

- Discuss new tools/technologies and potential for use in practice of surgical pathology
- Implications for pathology practice
- Consumer-driven
- Delivery of pathology services/information
What is 2.0?

- Popular suffix attached to a familiar word or concept to signify a major shift or evolution
- Web 1.0 – users following content
- Web 2.0 – users comment, edit and create content
  - “Uploading” one of the most disruptive forces
  - Allows content by users, for users
  - Best content immediately available
  - Harness “collective intelligence”
  - Digital pathology well-suited
## Web 1.0 ➔ Web 2.0

<table>
<thead>
<tr>
<th>Web 1.0 ➔</th>
<th>Web 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portal, like Yahoo ➔</td>
<td>Search, like Google</td>
</tr>
<tr>
<td>Publishing (websites) ➔</td>
<td>Participation (blogs, comments)</td>
</tr>
<tr>
<td>Stickiness, stay on the website ➔</td>
<td>Syndication, RSS, Podcasts, website follows you</td>
</tr>
<tr>
<td>Britannica Online ➔</td>
<td>Wikipedia</td>
</tr>
<tr>
<td>Directories, Favorites ➔</td>
<td>Tags - De.licio.us, Share This</td>
</tr>
<tr>
<td>Ofoto/Kodak Gallery</td>
<td>Flickr</td>
</tr>
<tr>
<td>MS Word</td>
<td>Google docs</td>
</tr>
<tr>
<td>Ads, like DoubleClick ➔</td>
<td>Google AdSense</td>
</tr>
</tbody>
</table>

Source: [What Is Web 2.0](http://www.oreilly.com/whatistweb20/) - Tim O'Reilly, modified
<table>
<thead>
<tr>
<th><strong>Web 1.0</strong></th>
<th><strong>Web 2.0</strong></th>
<th><strong>Web 3.0</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>“the mostly read only web”</td>
<td>“the mostly read-write web”</td>
<td>“the portable personal web”</td>
</tr>
<tr>
<td>45 million global users (1996)</td>
<td>1 billion+ global users (2006)</td>
<td>Focused on the individual</td>
</tr>
<tr>
<td>Focused on companies</td>
<td>Focused on communities</td>
<td>Lifestream</td>
</tr>
<tr>
<td>Home pages</td>
<td>Blogs</td>
<td>Consolidating dynamic content</td>
</tr>
<tr>
<td>Owning content</td>
<td>Sharing content</td>
<td>Semantic web</td>
</tr>
<tr>
<td>Britannica online</td>
<td>Wikipedia</td>
<td>Widgets, drag &amp; drop mashups</td>
</tr>
<tr>
<td>HTML, portals</td>
<td>XML, RSS</td>
<td>User behavior (“me-onomy”)</td>
</tr>
<tr>
<td>Web forms</td>
<td>Applications</td>
<td>iGoogle, NetVibes</td>
</tr>
<tr>
<td>Directories (taxonomy)</td>
<td>Tagging (“folksonomy”)</td>
<td>User engagement</td>
</tr>
<tr>
<td>Netscape</td>
<td>Google</td>
<td>Advertainment</td>
</tr>
<tr>
<td>Pages view</td>
<td>Cost per click</td>
<td>Allows for increased meaning of data</td>
</tr>
<tr>
<td>Advertising</td>
<td>Word of mouth</td>
<td>(semantic web), personalization &amp;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>behavioral advertising</td>
</tr>
</tbody>
</table>
Pathology 2.0

- Biomarkers, targeted therapies, dedicated chemotherapy
- The “tissue is the issue” – remains at the center
- Pathology 2.0 allows for sharing of images, collaborative diagnoses, education forums, tumor boards, etc…
- Convergence of improved pathology and advanced communication
“Never, ever, think outside the box.”
Upon completion of this course, you will become familiar with the topics displayed at the right. Navigating through the entire course is recommended, but if you desire instruction only on certain topics, use the Menu or click a topic on the right to navigate to any portion of the course.

Click Next.

Section Progress:

Back Next

Futurescape 2009
WE’LL DO AN MRI TO BE SURE, BUT I’M FAIRLY CERTAIN IT’S A SWANNOMA
Image Analysis

- Image analysis for quantitative immunohistochemical stains
  - Machines are good at counting
  - They are not very good at thinking
  - Good reproducibility
  - Better information
  - Associated increase in billing codes relative to manual IHC
<table>
<thead>
<tr>
<th>Preanalytic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to fixation</td>
</tr>
<tr>
<td>Method of tissue processing</td>
</tr>
<tr>
<td>Time of fixation</td>
</tr>
<tr>
<td>Type of fixation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analytic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assay validation</td>
</tr>
<tr>
<td>Equipment calibration</td>
</tr>
<tr>
<td>Use of standardized laboratory procedures</td>
</tr>
<tr>
<td>Training and competency assessment of staff</td>
</tr>
<tr>
<td>Type of antigen retrieval</td>
</tr>
<tr>
<td>Test reagents</td>
</tr>
<tr>
<td>Use of standardized control materials</td>
</tr>
<tr>
<td>Use of automated laboratory methods</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Postanalytic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpretation criteria</td>
</tr>
<tr>
<td>Use of image analysis</td>
</tr>
<tr>
<td>Reporting elements</td>
</tr>
<tr>
<td>Quality assurance procedures</td>
</tr>
<tr>
<td>Laboratory accreditation</td>
</tr>
<tr>
<td>Proficiency testing</td>
</tr>
<tr>
<td>Pathologist competency assessment</td>
</tr>
</tbody>
</table>

Abbreviation: HER2, human epidermal growth factor receptor 2.
Conclusions

- CPT 88360 – Morphometric analysis, tumor immunohistochemistry (e.g. HER2, estrogen/progesterone receptor), quantitative, semi quantitative, each antibody; manual
  - PC+TC=$147.95

- CPT 88361 – Morphometric analysis, tumor immunohistochemistry (e.g., HER2 estrogen/progesterone receptor), quantitative, semiquantitative, each antibody; using computer assisted technology
  - 88361 PC+TC=$229.16 \Delta (TC+PC)=$81.21
Flowchart:

- IA Workstation:
  - Order HER2
    - Perform IA
      - 1 & 2+
        - Transcribe Results
          - 0 or 3+
            - Perform FISH?
              - Sign out case

Medicine 2.0 and Digital Pathology
Source: Social media demographics – RapLeaf Study July 2008
250 Hospitals Now Using Social Media

A big batch of updates this week.

Stats and Graphs

We now have 250 hospitals on the list!

- 160 on Twitter
- 131 on YouTube
- 94 on Facebook
- 24 using Blogs

I wonder if any the newcomers were motivated by the Swine Flu crisis, and were looking for better communications tools.

Hospital Social Media Update for May 24, 2009

24 updates this week to the Hospital Social Network List - lot's of activity on Twitter.

Current stats are:

- 277 Hospitals total
- 135 YouTube Channels
- 101 Facebook pages
- 201 Twitter Accounts
- 25 Blogs

Full list is here
How Facebook is taking over our lives

President Obama used it to get elected. Dell will recruit new hires with it. Microsoft's new operating system borrows from it. No question, Facebook has friends in high places. Can CEO Mark Zuckerberg make those connections pay off?

By Joesi Rampel, writer
Last Updated: March 11, 2009 9:36 AM ET

(Fortune Magazine) – Facebook held no appeal for Peter Lichtenstein. The New Paltz, N.Y., resident had checked out so-called social networking sites before, and he wasn't impressed. ("MySpace," he recalls, "was ridiculous.")

A chiropractor and acupuncturist, Lichtenstein was already a member of a few professional web-based user groups. The last thing he needed was another message box to check. Then a buddy posted a link to photos from a trip to Thailand and India on his Facebook page and flatly refused to distribute them any other way. The friend's assumption: Dun - everyone's on Facebook.
## What a difference a year makes

A look at Facebook’s growth in users and usage of the site.

<table>
<thead>
<tr>
<th></th>
<th>FEB. 2008</th>
<th>FEB. 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total daily minutes of use</td>
<td>1.1 billion</td>
<td>More than 3 billion</td>
</tr>
<tr>
<td>Users who update status daily</td>
<td>4 million</td>
<td>15 million</td>
</tr>
<tr>
<td>Users who become “fans” each day</td>
<td>250,000</td>
<td>More than 3.5 million</td>
</tr>
<tr>
<td>Photos uploaded each month</td>
<td>250 million</td>
<td>More than 850 million</td>
</tr>
<tr>
<td>Pieces of content shared each month</td>
<td>13 million</td>
<td>More than 24 million</td>
</tr>
</tbody>
</table>

### Facebook members

**In millions**

- 2005:
  - 175
- 2006-2007:
  - 150
- 2008:
  - 120
- 2009:
  - 100
- 2010:
  - 75
- 2011:
  - 50
- 2012:
  - 25
- 2013:
  - 20
- 2014:
  - 15
- 2015:
  - 10
- 2016:
  - 7.5
- 2017:
  - 5
- 2018:
  - 2.5
- 2019:
  - 1

**SOURCE: FACEBOOK**

## The race to the mass market

Facebook reached 150 million users in January. Here’s how other technologies stack up:

<table>
<thead>
<tr>
<th>Year item or service is introduced</th>
<th>Time to reach 150 million users or units sold</th>
<th>Year reached</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004 Facebook</td>
<td>5 years</td>
<td>2009</td>
</tr>
<tr>
<td>2001 iPod</td>
<td>7 years</td>
<td>2008</td>
</tr>
<tr>
<td>1983 Cellphone</td>
<td>14 years</td>
<td>1997</td>
</tr>
<tr>
<td>1928 Television</td>
<td>38 years</td>
<td>1966</td>
</tr>
<tr>
<td>1876 Telephone</td>
<td>89 years</td>
<td>1965</td>
</tr>
</tbody>
</table>

**SOURCE: PORTIC RESEARCH**
thinking?
What about twittering diagnoses?
The Industry Standard has pointed to its lack of revenue as limiting its long-term viability.

"Twitter: Fanatical users help build the brand, but not revenue"
CORRECT: Health Data Proves Contagious On Social Media

(Hed Data Proves Contagious On Social Media) published at 11:54 a.m. PDT, stated the wrong location for the Mayo Clinic where a couple was shown in a YouTube video. The corrected version fixes:

The Mayo Clinic

Swine flu triggered a pandemic of posts on Twitter and Facebook and in the process marked the coming age of social media as a way to distribute and share both public and personal health information.

Health and technology innovators say the social media trends are indeed healthy, having the potential to spread health and accurate consumers against misinformation. But they also caution that not every early effort is warranted and that privacy concerns remain an issue.

On the morning of April 24, John Oquiri had what he described as a "high" and enthusiastic meeting with members of the New York City Department of Health and Mental Hygiene to discuss SickCity, which launched in a beta test in early March, the online application aims to track real-time disease outbreaks in a variety of 155 global cities using social media-related keywords in tweets from the Twitter site.

Part of a larger Internet-based open-source effort, Oquiri and colleagues hope to make cities work better through the use of Web technologies, the

5/14/2009 31

Futurescape 2009
Mayo Clinic and Word of Mouth

- 91% of patients surveyed say they have said “good things” to an average of 40 people following a Mayo visit.
- 85% say they have recommended Mayo to a friend.
  - Advised an average of 16 to come.
  - 5 actually came.
Social Media/Blogging Guidelines

Personal Participation as Individuals

The following are guidelines for Mayo Clinic employees and students who participate in personal blogs and other websites, including social networking sites like Facebook and MySpace or others. These guidelines apply whether employees and students are posting to their own sites or commenting on other sites:

1. Follow all applicable Mayo Clinic policies. For example, you must not share confidential or proprietary information about Mayo Clinic and you must maintain patient privacy. Among the policies most pertinent to this discussion are those concerning government affairs, mutual respect, political activity, Computer, E-mail & Internet Use, the Mayo Clinic Integrity Program, photography and video, release of patient information to media and patient confidentiality.

2. Write in the first person. Where your connection to Mayo Clinic is apparent, make it clear that you are speaking for yourself and not on behalf of Mayo Clinic. In those circumstances, you may want to include this disclaimer: “The views expressed on this [blog, website] are my own and do not reflect the views of my employer.” Consider adding this language in an “About me” section of your blog or social networking profile.

3. If you communicate in the public internet about Mayo Clinic or Mayo Clinic-related matters, disclose your connection with Mayo Clinic and your role at Mayo. Use good judgment and strive for accuracy in your communications; errors and omissions reflect poorly on Mayo, and may result in liability for you or Mayo Clinic.

4. Use a personal email address (not your mayo.edu address) as your primary means of identification. Just as you would not use Mayo Clinic stationery for a letter to the editor with your personal views, do not use your Mayo Clinic email address for personal views.

5. If your blog, posting or other online activities are inconsistent with, or would negatively impact Mayo Clinic’s reputation or brand, you should not refer to Mayo Clinic, or identify your connection to Mayo Clinic.

6. Be respectful and professional to fellow employees, business partners, competitors and patients. Avoid using unprofessional online personas.

7. Ensure that your blogging and social networking activity does not interfere with your work commitments.

8. Ask the Department of Public Affairs (774)-5005 if you have any questions about what is appropriate to include in your blog or social networking profile. Remember that if you wouldn’t want your manager or others at Mayo to see your comments, it is unwise to post them to the Internet. Failure to follow this policy can have consequences similar to violations of other Mayo Clinic policies.
Mayo Clinic Social Media Progression

- Reach people directly
  - *Medical Edge*

- Provide platforms for sharing
  - Create outposts on popular sites (podcasts on iTunes)
  - Energize word of mouth

- Leverage social media with mass media and vice versa

- Sharing Mayo Clinic
Cost and Potential

- Twitter, Facebook & YouTube: $0
- Sharing Mayo Clinic Blog: $75
- Marketing potential that exceeds budget to do so otherwise
  - 500,000 annual unique visitors
  - 50,000 employees as ambassadors
- More efficient care delivery
  - Patient support groups
  - Chronic disease management
  - Workplace collaboration
- Free versions allow you to prove concept
Why is this important?

- **mayoclinic.org** receives 1 million visitors a month
- **e-Cleveland Clinic website** receives about 1 million visitors per year
- **DailyKos** has nearly that many page views on an average day
- **About 10-15% of users** become patients
  - Getting the word out for Centers of Excellence
  - Attracting e-consumers to patients

Source: [Hospitals use websites to attract out-of-town patients](https://www.usatoday.com/health/medical/2005-11-14-medical_websites_x.htm) – USA Today 11/14/2005
What does it all mean?

- Information publishing technologies
  - Ways to interact
  - CDC – Twitter – H1N1 tweets with 160K views

- Speeds the news cycle
  - Hudson River plane landing
  - TwitPic from iPhone to Twitter from ferry
  - NYT slower to get on website
  - MSNBC interviewed photographer 30 minutes later
Question of the Day
Register to check out all of the previous questions in our question archives.

This punch biopsy is from a 23 year old Caucasian female 14 weeks pregnant with uncontrolled DM presenting with multiple lesions on her extremities. All of the following are true regarding this nodular lesion except?

- This disease can be classified as a palisading granulomatous process.
- Muco is an appropriate stain to aid in the differential diagnosis.
- Rare reports associate this lesion with diabetes mellitus.
- This lesion is sometimes accompanied by a vasculitis.

Submit

Recent Uploads

Contributor: Tissuepathology
On: 5/8/2009 5:38 PM
Viewed: 9 Times

Contributor: Tissuepathology
On: 5/8/2009 5:38 PM
Viewed: 5 Times

Contributor: Tissuepathology
On: 5/8/2009 5:36 PM
Viewed: 5 Times

Welcome!
Welcome to Pathologypics.com.
Don’t forget to view our Terms Of Use.

Subscribe
RSS feeds are now available!
- Question of the Day
- Comments
- What’s New?

QOD Stats
Question contributed by: iago
Times Answered: 22
Percent Correct: 45%
Show Answer

Recent Comments
apple green birefringence - arrow #1 (pathologists and food - I know) ... More

CD3 ... More

CD20 ... More

Nice image (best I've seen of this process). FNH: a benign hyperplastic process associated with oral contraceptive use (controversial? - comments?) ... More

A little blurb from the Great Big Book... a PathDoc15, GiPathDoc. BiddyDaddy joint (Now know as the 'Stanford' residents board review)... PRIMARY BLI. ... More

kyoungs (4/30/2009 6:20 AM)
I think the most suspicious feature is the 'normal' size... More
Q: Looking at the image attached, what is the most likely diagnosis?

Single-choice question.
21 respondents have answered this question 0 skipped.

Results

- Abnormal small acinar proliferation, suspicious for but not diagnostic of adenocarcinoma: 43% (9/21)
- Adenocarcinoma, Gleason Pattern 3+3: 38% (8/21)
- Abnormal small acinar proliferation, benign: 10% (2/21)
- Abnormal focus, insufficient material for diagnosis, suggest repeat biopsy: 10% (2/21)

View full results for this posting
Institute for Medical Informatics, announces iPhone application for virtual microscopy

Wednesday, 07 January 2009 04:01

The Institute for Medical Informatics, Rikshospitalet, Oslo University Hospital, announces it has developed what it believes to be the first remote application for review of pathology images for the Apple iPhone.

Dr. B. Risberg, Pathologist at the Rikshospital, Oslo says "Telkpathology applications have been around for many years now and have shown their use in patient care. The portability combined with the image quality of this virtual microscopy system is a unique solution to providing input into the treatment of a patient regardless of my or the treating hospital's location. I can even provide input while on vacation."
Recent paper on legal aspects of teleconsultation

May 30, 2009

One of our recent GSUer pathology fellows completed a manuscript that addresses the legal aspects of teleconsultation in pathology. The paper will appear in an upcoming issue of Human Pathology. A pdf of the accepted manuscript can be downloaded here.

Summary

A pathologist may practice telepathology in another room from the original slide using a video link. In this case, both the radiologist and pathologist must be familiar with the limitations of video as a medium for communication. As telepathology continues to grow in popularity, there are likely to be more legal issues related to this technology. The legal issues surrounding telepathology are complex and require careful consideration.

Thoughts on HIMMS meeting

May 17, 2009

Attended the HIMMS meeting in Chicago a few weeks ago. Ole Echbroen of The Daily Scap has a very nice report as well (with better pictures). Enjoyed Ole’s talk (one of the few related specifically to pathology). Lot of interest among hospital IT folks about capacity, bandwidth, security, archiving image and other data issues as well as DICOM compliance for whole slide images in pathology. From my perspective, they seem to understand this is technology they need to support in their institution's.

www.tissuepathology.com
www.digitalpathologyblog.com

Futurescape 2009
Why do I blog?

- Suggestion by a colleague
- Cover digital pathology
- Academic blogging
  - Educate & inform
- Less personal
- Social marketing and networking tool
- White noise
- Timely & relevant content – RSS
- Independent voice
- Impact
Why do MDs Blog?

- Amplify MDs perspective on devices, tests, rules, regulations in medicine
- Personal reflections on practicing medicine
  - Patient encounters – “Doctor stories”
  - A Piece of My Mind
  - Personal reflections – death of parent or patient
- Expose fraudulent practices or ideas/propose and propagate new ideas or concepts in practice of medicine or subspecialty
Academic Blogging

- Workspace to explore and share new ideas, technologies, practices
  - University/hospital employees afforded an independent voice
  - Constraints with clinical duties and respect for institution
Academic Blogging

- Disseminate new ideas for discussion
  - Short form of journalism/medical publication
  - # of people helped may outweigh peer-reviewed manuscripts published on esoterica (1 day/1 year)

- Synergy between industry and academia for collaboration
  - Mainstream media companies will master blogs and other forms of social media as an advertising tool – hospitals advertising on Facebook – services, new technologies, jobs, ratings, etc…
Academic Blogging

- Scan horizon for worthy items within your personal interests and expertise
- Filter and interpreter for other laboratory professionals & digital pathology community
- Re-post items from sources not available to public, patients, industry or researchers outside domain
Pathologist Blogs

- Creepy Dreadful Wonderful  Bobbi Pritt MD
- Parasites
- Lab Soft News          Bruce Friedman MD
- Neuropathology Blog    Brian Moore MD
- Oncopathology          Prashant Jani MD
- Pathology Informatics  Alexis Carter MD

from the Trenches

- pathtalk.org     15 authors
- Specified Life   Jules Berman MD PhD
- The 1x Objective Karl Robstak MD
- The Daily Sign-Out Mark Pool MD
Pathology and the Internet

The Blog Phenomenon Hits Pathology

Brian E. Moore, MD

Pathology has been immune to the allure of the blog, and has served as a creative and interactive outlet for pathologists around the world.

One of my favorite pathology blogs is published by Ole Eichhorn, Chief Technical Officer of Aperio Technologies, a digital pathology company in San Diego. Eichhorn's blog, The Daily Scan (blog.auperio.com), covers news and offers opinions on pathology, technology, and the interface between the two. A related blog, Digital Pathology Blog (www.drawpathology.com), addresses issues pertaining to telemedicine and image technology.

Online Slide Presentations

Darren Wheeler, MD

In both community and academic practice, pathologists are often called upon to deliver a slide presentation. Slide World has created a web site that seeks to catalog those slide presentations and share them with the world. Their stated goal is to establish a digital library where worldwide academic and community practice clinicians can share their presentations and communicate their ideas to those with similar interests. The freely available slide presentations, maintaining acknowledgment of authorship, also serve as a venue for promoting various institutions and practices.
Bene diagnoscitur, bene curatur.

"Something that is well diagnosed can be cured well."

www.virtualpathology.leeds.ac.uk
“Well, yes, we could fix it in Photoshop, but your arm would still be broken.”