

Jerry (Gerald) Sedgewick Curriculum Vitae

Sedgewick Initiatives, 965 Cromwell Avenue, St. Paul, MN 55114: 651-788-2261;
jerrysedgewick@gmail.com

Education/Employment:

1998 – Present

Scientific Consultation & Training:

- **Quantitative** results provided via image analysis.
- **Training** provided for use of quantitative software.
- Assistance/Training for use of **microscopes**.
- Imaging **instrumentation design** for specific needs.

Experience with fluorescence imaging devices, single- and multi-photon confocal, standard microscopes, densitometry scanning devices, conventional photography, machine vision, Image Pro Plus, MetaMorph, Image J, Photoshop, Excel, MatLab, Imaris, Volocity, Amira and other related software programs.

2009 – Present

Director Digital Imaging, Quantum Catch, LLC (Co-Owner). Includes creation of stand alone software to identify and measure lesions associated with diabetic retinopathy and age-related macular degeneration, and then to grade the severity of the condition and recommend (or not) treatment. Software provides means for diagnosing in remote areas where doctors are largely unavailable for the two leading causes of blindness in which lesions are asymptomatic.

1996 - 2009

Program Director Biomedical Image Processing Lab (BIPL), Department of Neuroscience, University of Minnesota. Managed and set vision for a self-supporting, core microscopy facility at the University of Minnesota, one of the largest of its kind in the United States. Tasks included management of personnel; grant writing; administrative duties; understanding both software and hardware of equipment in fluorescent and brightfield light microscopy and genomics; training users; development of custom systems (see “Instrumentation” below); use of image analysis and I/O control programs which included Image J, Image Pro Plus, MetaMorph, Imaris (3D modeling), Huygens (deconvolution), Photoshop, Excel, and numerous image acquisition programs; assistance in the development of experimental protocol and methods; and implementation of cutting

edge equipment for both life sciences and engineering.

1985 - 1998 Principal Photographer, Department of Cell Biology and Neuroanatomy, University of Minnesota.

1983 - 1985 Commercial Photographer, Gerald Sedgewick Photography, St. Paul, Minnesota

1977 – 1983 Photography Technician, Department of Zoology, University of Iowa
Public Relations, City of Flint, Flint, MI

1973 to 1977 B.A. Journalism/English
University of Iowa

Consulting

Angioslide, Tel Aviv, Israel (2007 – 2010). Developed, implemented and provided services for collecting data from human samples (embolic material from vessel walls as a result of angioplasty): provided image analysis, and completed reports for subsequent inclusion in FDA approval process. Good Laboratory Practices (GLP) was implemented as part of data collection. Data analysis portion given to FDA was immediately approved for their embolic device.

Lumenbio, Inc., Minneapolis, MN (2006 – 2010). Services similar to Angioslide provided for subsequent FDA approval for Lumenbio's embolic device.

Boston Scientific, Minneapolis, MN (2009). Developed microscopy method for analysis of large samples (stents); created automated means for visualizing and measuring image features labeled with fluorescent markers.

EcoLab, Minneapolis, MN (2009). Trained engineers in lighting and photographic methods for obtaining images from which objective measurements could be made for Quality Assurance (QA). Images included glass, sprays, dyed polymers and discolored metal. Trained, as well, in use of software and statistical techniques to obtain measurements from free and commercial analysis software.

St. Jude Medical, Minneapolis, MN (2009). Developed imaging method using Second Harmonic Generation (SHG) from custom built device to image collagen in heart slices.

Medtronic, Minneapolis, MN (2003 - 2008). Developed automated methods for measuring from standard H&E microscope samples. Trained personnel on use of light microscopy devices and scientific cameras. Measured manufactured samples for legal purposes.

Hewlett-Packard (via Microscopy, Marketing & Education), Corvallis, OR (2003). Color & contrast correction, along with calibration methods training provided to

engineering staff.

Imaging Device Invention Consultation, Blizzard Genomics, Minneapolis, MN (2001-2002). Acted as consultant for invention and development of genomics imaging device.

Digital Analysis Consultant, Paul Termin and Associates, Inc. (pathological analysis company), St. Paul, MN (1999-2001).

Angiogard, Inc. (bought by Johnson & Johnson, Inc.), Plymouth, MN (1998). Provided similar consulting services as those provided to Angioslide (above). FDA approval granted for this embolic device.

Books/Book Chapters

Sedgewick, J. (2002). Quick Photoshop for Research: A Guide to Digital Imaging for Photoshop 4x, 5x, 6x, & 7x. *Kluwer Academic/Plenum Publishers*.

Sedgewick, J. (2007). Considerations When Altering Digital Images. *Essential Methods and Protocol*. Wiley Press.

Sedgewick, J. (2009). Post-Processing Confocal Images. (Book Chapter) *Confocal Microscopy: Methods & Protocols*. Humana Press (in publication).

Sedgewick, J. (2008). Scientific Imaging with Photoshop: Methods, Measurement and Output. *Peachpit Press*, Berkeley, CA.

Selected Publications

A. T. Haase, K. Henry, M. Zupancic, **G. Sedgewick**, R. A. Faust, H. Melroe, W. Cavert, K. Gebhard, K. Staskus, Z-Q Zhang, P. J. Dailey, H. H. Balfour Jr., A. Erice, A. S. Perelson. (1996) Quantitative Image Analysis of HIV-1 Infection in Lymphoid Tissue. *Science* Vol 274: 885-1048.

G. Sedgewick, Z-Q Zhang, and N. Pham. (1996) Cover Image, *Science* Vol 274

J. Sedgewick. (1997) Cover image, *Science* Vol. 276

Z-Q Zhang, D. W. Notermans, **G. Sedgewick**, W. Cavert, S. Wietgreffe, M. Zupancic, K. Gebhard, K. Henry, L. Boies, Z. Chen, M. Jenkins, R. Mills, H. McDade, C. Goodwin, C. M. Schuwirth, S. A. Danner, A. T. Haase. (1997) Kinetics of CD4+ T Cell Repopulation of Lymphoid Tissues After Treatment of HIV-1 Infection. *Proc Natl Acad Sci U S A*. Vol 95(3): 1154-9.

Fatemi SH, Sidwell R, Kist D, Akhter P, Meltzer HY, Bailey K, Thuras P, **Sedgewick J.** (1998) Differential expression of synaptosome-associated protein 25 kDa [SNAP-25] in

hippocampi of neonatal mice following exposure to human influenza virus in utero. *Brain Res.* Vol. 800(1):1-9.

Setiadi H, **Sedgewick G**, Erlandsen SL, McEver RP. (1998) Interactions of the cytoplasmic domain of P-selectin with clathrin-coated pits enhance leukocyte adhesion under flow. *J Cell Biol.* Vol. 142(3): 859-71.

Dombek PE, Cue D, **Sedgewick J**, Lam H, Ruschkowski S, Finlay BB, Cleary PP. (1999) High frequency intracellular invasion of epithelial cells by serotype M1 group A streptococci: M1 protein-mediated invasion and cytoskeletal rearrangements. *Mol Microbiol.* Vol. 31(3): 859-70.

Wild R, Ramakrishnan S, **Sedgewick J**, Griffioen AW. (2000) Quantitative assessment of angiogenesis and tumor vessel architecture by computer-assisted digital image analysis: effects of VEGF-toxin conjugate on tumor microvessel density. *Microvasc Res.* Vol. 59(3): 368-76.

Rudney JD, Chen R, **Sedgewick GJ**. (2001) Intracellular *Actinobacillus actinomycetemcomitans* and *Porphyromonas gingivalis* in buccal epithelial cells collected from human subjects. *Infect Immun.* Vol. 69(4): 2700-7.

Grube E, Gerckens U, Yeung AC, Rowold S, Kirchhof N, **Sedgewick J**, Yadav JS, Stertz S. (2001) Prevention of distal embolization during coronary angioplasty in saphenous vein grafts and native vessels using porous filter protection. *Circulation.* 2001 Vol. 104(20): 2436-41.

Fatemi SH, Earle JA, Stary JM, Lee S, **Sedgewick J**. (2001) Altered levels of the synaptosomal associated protein SNAP-25 in hippocampus of subjects with mood disorders and schizophrenia. *Clinical Neuroscience and Neuropathology.* Vol. 12(15): 3257-62.

Rudney JD, Chen R, **Sedgewick GJ**. (2005) *Actinobacillus actinomycetemcomitans*, *Porphyromonas gingivalis*, and *Tannerella forsythensis* are components of a polymicrobial intracellular flora within human buccal cells. *J Dent Res.* 2005 Jan;84(1):59-63.

Henry M, Polydorou A, Henry I, Liasis N, Polydorou A, Polydorou V, Demesticha T, Skandalakis P, Kotsiomitis E, Hugel M, **Sedgewick J**, Ruth G. (2007). New distal embolic protection device the FiberNet 3 dimensional filter: first carotid human study. *Catheter Cardiovasc Interv.* 2007 Jun 1;69(7):1026-35

Yokoyama Y, **Sedgewick G**, Ramakrishnan S. (2007) Endostatin binding to ovarian cancer cells inhibits peritoneal attachment and dissemination. *Cancer Res.* 2007 Nov 15;67(22):10813-22

Reilly C, Wietgreffe S, **Sedgewick G**, Haase A. (2007) Determination of simian immunodeficiency virus production by infected activated and resting cells. *AIDS.* 2007 Jan 11;21(2):163-8

Sedgewick, J. (2002). Resolution Confusion. *Microscopy Today*. Vol 9 18.

Sedgewick, J. (2003). Use Adobe Acrobat to Keep Original Resolutions and to Make TIFF Files From Any Program. *Microscopy Today*. Vol 10: 16 -18.

Sedgewick, J. (2003). Segmentation Before Quantization By Using Photoshop: Darkfield Images. *Microscopy Today*. Vol. 11 Number 1: 18 - 22.

Sedgewick, J. (2003). Photoshop Tutorials: Selecting ROIs from Brightfield Images. *Microscopy Today*. Vol. 11 Number 2: 16 - 20.

Professional Certification

Computer-Assisted Image Analysis, North Carolina State University, 1996. John Russ, Ph.D., instructor.

Applications of Unbiased Stereology to Neural Systems Course, 1997. Peter R. Mouton, Ph.D. and Mark West, Ph.D., instructors.

Teaching

University of Minnesota (1999 - 2009)

Graduate Courses:

Light and Electron Microscopy. Co-taught with Stan Erlandsen, Ph.D.

Undergraduate Courses:

Tissue Engineering and Microscopy. Co-taught with Allison Hubbel, Ph.D.

Training Workshops Given:

1st Annual Images in Research Course, University of Minnesota, MN (2010).

Image integrity with scientific images and best practices. Histochemical Society, Woods Hole, MA (2010).

Image integrity in scientific research. Keynote Speaker, University of Puerto Rico – San Piedras. (2010).

Digital Imaging Workshops. University of Wisconsin (Madison), University of Michigan, University of Indiana/Purdue, University of Iowa (2005)

Digital Imaging Workshop. University of Arizona, Tucson, AZ (2003)

Photoshop for Research. McCrone Research Institute, Chicago, IL (2002)

Streamlining Digital Imaging Applications. Microscopy Society of America, Long Beach, CA (2001)

Funded Projects

Sedgewick, J. (2000). Inverted Light Microscopy system for Live Cell Analysis. Minnesota Medical Foundation (\$24,000).

Sedgewick, J. (2002). Ultra-Low Light Video Rate Imaging Camera. Minnesota Medical Foundation (\$25,000).

Sedgewick J. (2003). Inverted Microscope for improved imaging of live tissue on a multi-photon confocal system. Grant-in-Aid of Research, Artistry and Scholarship Program (\$25,000).

Instrumentation:

Completion of a video-rate, multiphoton microscope according to Sanderson-Parker design: Included power supply and electronic control box for Photomultiplier Tubes (PMTs); video signal matching to board from line scans; housings and connectors for devices; optics; optical bench set up; optimization of pulsed, femtosecond Ti:Sapphire laser; development of isolation and live cell chambers, heating controls, etc. Microscope outperformed those on market (sold for over 1 million) at the time of completion (2006 – 2008).

Completion of a Second Harmonic Generation (SHG) multiphoton confocal microscope using an Olympus Fluoview 300 unit with 3 external detectors, electronics control box, optics, optical bench set up, etc. (2007).

Construction of custom made metal-halide lamps for microscope illumination, along with additional, experimental light sources (2008).