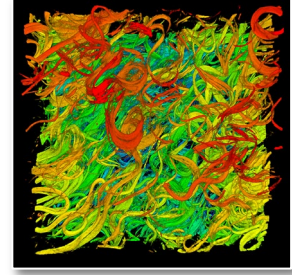




James E. Hayden, RBP, FBCA

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Blue Bell, PA 19422
tel. (215)514-4223
jhayden@wistar.org



January, 2013 to present – **Managing Director, Imaging Shared Resource**
The Wistar Institute, Philadelphia, PA

May, 2002 to January, 2013 – **Manager, Imaging Core Facility**
The Wistar Institute, Philadelphia, PA

The Wistar Institute's Ellen and Ronald Caplan Cancer Center is an NCI Basic Cancer Research Center with approximately 35 individual Laboratories investigating multiple aspects of cancer development and treatment, as well as questions relating to basic biological and genetic functions, including research in immunology, vaccine development, cell biology and regeneration. The Imaging Shared Resource is a multi-user facility with a wide variety of live and fixed microscopy, preclinical and other specialty imaging equipment and expertise that is made available to all internal researchers as well as interested individuals from the greater scientific community.

Responsibilities

- Daily operation and management of a multi-user imaging facility with an annual operating budget of approximately \$500K, servicing over 200 users in 73 laboratories, both internal and external.
- Supervision and training of two assistant employees
- Consultation with researchers on experimental design and equipment requirements
- Support and training for all users on facility microscopy and imaging equipment
- Development of standardized protocols for equipment usage and training
- Planning and production of specialized training videos for all instruments
- Support and training with specialized software for image analysis, image editing, and presentation
- Maintenance of all facility equipment and support for additional microscopes in the Wistar Cancer Center.
- Continued research and development of new microscopy and imaging equipment and techniques
- Grant writing to provide new opportunities and equipment for projected facility needs
- Space planning and design for the Shared Resource
- Design and implementation of an online equipment sign-up system for tracking, billing and equipment usage
- Development of microscopy training workshops and lectures for internal and external clients
- Annual exhibition design and hosting for the International Nikon Small World Competition

Major Equipment and Services

- Nikon NiE fully automated upright microscope for single slide imaging and scanning
- Nikon TiE fully automated inverted microscope with incubation chamber for 3D, multi-channel, multi-point, live cell (6D) and fixed sample imaging

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- Custom 6D Live-cell Time-lapse system built around a Nikon TE300 inverted microscope
- Leica TCS SP5 II Laser Scanning Confocal Microscope with resonant scanner and incubation chamber
- Leica TCS SP8 X White-light Laser Scanning Confocal Microscope with resonant scanner and live-cell hypoxia chamber for flexible live-cell experiments
- Leica TCS SP8 MP 2-photon Intravital Microscope with fixed-stage, upright configuration
- Hamamatsu Nanozoomer S60 Whole Slide Imager for brightfield and fluorescence
- PerkinElmer IVIS SpectrumCT preclinical imaging system with luminescence, fluorescence and microCT for mice
- PerkinElmer Vega whole mouse preclinical ultrasound system with Image Guided Injection
- Xstrahl SARRP (Small Animal Radiation Research Platform) for targeted radiotherapy in mice.
- Basic Upright and Inverted Widefield Microscopes (Nikon 80i, E600, TE2000, SMZ1500)
- Custom Macro Imaging Systems
- Specialized imaging services
 - Live Cell Time-lapse imaging and analysis
 - Automated whole slide scanning and analysis
 - Fixed and live cell confocal imaging
 - Fluorescence and white light photomacrography and specimen photography
 - Fluorescence and white light small animal photography
 - Creative photography, illustration and design for brochures, reports, and journal covers
 - Large group photography

Computer Platforms and Software

Windows 10, Leica LAS AF, Leica LAS-X, Nikon NIS Elements BR and AR with AI, Huygens Deconvolution Software (SVI), ImagePro Plus and 3D, Image J (FIJI), Helicon Focus, Adobe Creative Cloud CS (Photoshop, Premiere Pro, Illustrator, InDesign), GIMP2, Microsoft Office 365 Suite (Word, PowerPoint, Excel), Adobe Acrobat, Concentriq by Proscia.

PREVIOUS EXPERIENCE

August, 2009 to May 2014 – **Adjunct Faculty**
The University of the Sciences in Philadelphia, Philadelphia, PA

As part of the Department of Humanities in the Misher College of Arts and Sciences at the University of the Sciences in Philadelphia, develop and present a class expanding on the topic of photography and imaging in the sciences.

Fall Semester 2009, 2010, 2011 Spring Semester 2013, 2014
Humanities Special Topics Course: Fundamentals of Scientific Photography HU340, 3 Credits.

“Fundamentals of Scientific Photography” is an introductory class covering both theory and techniques in scientific imaging. Students learn the basic mechanics of digital photography with special emphasis placed on scientific applications, including image standardization and reproducibility. Study also includes elements of image composition, telling a story with pictures, ethics and consequences of digital manipulation, and the role of images in scientific communication. Students are instructed in the use of image editing software and prepare a portfolio of specific assignments over the length of the course, reflecting specific application of the coursework.

**September, 1995 to 2004 - President/Owner
BIO-GRAPHICS**

Bio-Graphics began as a part-time freelance venture in 1988 and became full time in September 1995. Bio-Graphics specialized in high quality scientific photography, graphics and imaging for publication and presentations as well as providing image analysis, forensic documentation, legal photography and on-site help and training with specialized imaging needs.

Scientific and Technical Photography

- Photomicrography and Image Analysis
- Photomacrography
- Clinical/Patient Photography
- Specimen Photography
- Small Animal Photography
- Infrared, Ultraviolet, Fluorescence Photography
- Scientific Apparatus and Small Laboratory Objects

Consulting

- Equipment Testing and Set-up
- On-site Consultation and Training:
 - Light Microscopy
 - Photomacrography
 - Specimen Photography
 - Effective Presentation Techniques

Other Photography

- Executive and Formal Portraiture
- Location and Public Relations Photography
- Wildlife and Environmental Documentation
- Stock Photography

Computer

- Digital Image Compositing, Retouching and Enhancement
- Computer Illustrations
- Charting and Graphing Services
- Slide Presentations

Illustration and Graphics

- Biomedical Illustration
- Graphic Design (Brochures, Posters, Presentation Graphics)
- Scientific Poster Sessions
- Custom Matting and Framing

November, 1988 to September, 1995 - RESEARCH SPECIALIST I

University of Pennsylvania School of Veterinary Medicine
Department of Pathology, 3800 Spruce St. Philadelphia, PA 19104

Light Microscopy and Photography

- Standardization of Department light microscopy equipment
- Training of Department faculty and staff in proper light microscopy techniques
- Development of training and laboratory manuals for light microscopy and darkroom procedures
- Responsibility for operations of interdepartmental darkroom
- Standardized photographic recording of morphologic changes in research animals
- Reflected light and transmission photomacrography
- Gross specimen photography
- Portraiture
- Graphic artistry and copy work

Electron Microscopy

- Responsibility for all operational aspects of the EM Lab
- Routine preparation and TEM examination of biological tissues for research and clinical diagnosis
- Research involving morphometric variation and trends in electron micrographs taken from animals with mucopolysaccharidosis
- Instructing Pathology faculty and residents in EM techniques
- Scanning electron microscopy

Other Experience

- Video production, including storyboarding, shooting and editing
- Computer experience - Graphics, Word Processing, Billing and Data Base with **Apple Macintosh**, Word Processing with **IBM**, Morphometric Analysis with **Apple IIe**
- Paraffin sectioning and routine histology
- JB-4 (Glycol methacrylate) sectioning for light microscopy
- Cryosectioning and histochemical staining

September, 1984 to Nov., 1988 – Electron Microscopy Technician II

University of Pennsylvania School of Veterinary Medicine
Department of Pathology, 3800 Spruce St. Philadelphia, PA 19104

January, 1984 to June, 1984 - Photographic Analyst

Chesebrough-Pond's Inc. R&D, Trumbull Industrial Park, Trumbull, CT 06611

EDUCATION & HONORS

B.A. 1983 Magna cum laude

Independent Double Major: **Biology/Biophotography**
Quinnipiac College, Hamden, CT 06518

- 2022 – **Presidents Award**, presented by the BioCommunications Association, for efforts in developing a new Association website.
- 2012 – **Louis Schmidt Award**, highest award of the BioCommunications Association, given for outstanding contributions to the progress of communications within the life sciences
- 2012 – **Outstanding Adjunct Teaching Award**, University of the Sciences in Philadelphia
- 2009 – Named as **Misher Visiting Professor of the Humanities**, University of the Sciences in Philadelphia
- 1999 - Named as **Fellow of the BioCommunications Association (FBCA)**
- 1992 - Board Certification as a **Registered Biological Photographer (RBP)** by the Biological Photographic Association, Inc., Atlanta, GA - #393

PROFESSIONAL SOCIETIES & COMMITTEES

1999 - Named to the International Selection Committee for the **Lennart Nilsson Award**

2001 - Named as a judge for the **Nikon International Small World Photomicrography Competition**

BioCommunications Association, Inc. (BCA)
formerly Biological Photographic Association (BPA)

2023 - 25 – President

2019 - 23 – Vice President

2012 - 23 – Louis Schmidt Award Committee

1999 - Board of Governors (Member at Large - COPE Workshops)

1999 - Treasurer, Delaware Valley Chapter

1998 - Board of Registry / Coordinator: Education Sub-Committee

1995 - 1997 - Board of Governors/ Registry

1993 -1997 - Elected to BPA Board of Registry

1995-97 - Chairman

1994-95 - Co-Chairman

1993-94 - Director of Public Relations

1995 - Member, BPA/HeSCA Merger Team - Certification/Accreditation

1993, 94, 95, 99, 2000 - RBP Practical and Oral Examiner

1992 - Registered Biological Photographer, #393

1992, 91, 89, 88, 87, 99 - Chapter Delegate, BPA House of Delegates

1992, 1991 - Member, Professional Exhibition Committee

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1991 - Member, Best Journal Article Sub-Committee,
1988-91 - Chairman, Delaware Valley Chapter
1987 -Vice-Chairman, Delaware Valley Chapter
1986 - Initial Membership

PUBLICATIONS

Brooks R, Monzy J, Aaron B, Zhang X, Kossenkov A, **Hayden J**, Keeney F, Speicher DW, Zhang L, Dang CV. 2022. Circadian lncRNA ADIRF-AS1 binds PBAF and regulates renal clear cell tumorigenesis. *Cell reports* 41:111514 PMC9652615.

Vladimirova O, De Leo A, Deng Z, Wiedmer A, **Hayden J**, Lieberman PM (2021) “Phase separation and DAXX redistribution contribute to LANA nuclear body and KSHV genome dynamics during latency and reactivation.” *PLoS Pathog* 17(1): e1009231. <https://doi.org/10.1371/journal.ppat.1009231>

Rajasekharan Somasundaram, Thomas Connelly, Robin Choi, Hyeree Choi, Anastasia Samarkina, Ling Li, Elizabeth Gregorio, Yeqing Chen, Rohit Thakur, Mohamed Abdel-Mohsen, Marilda Beqiri, Meaghan Kiernan, Michela Perego, Fang Wang, Min Xiao, Patricia Brafford, Xue Yang, Xiaowei Xu, Anthony Secreto, Gwenn Danet-Desnoyers, Daniel Traum, Klaus H. Kaestner, Alexander C. Huang, Denitsa Hristova, Joshua Wang, Mizuho Fukunaga-Kalabis, Clemens Krepler, Fang Ping-Chen, Xiangyang Zhou, Alexis Gutierrez, Vito W. Rebecca, Prashanthi Vonteddu, Farokh Dotiwala, Shashi Bala, Sonali Majumdar, Harsh Dweep, Jayamanna Wickramasinghe, Andrew V. Kossenkov, Jorge Reyes-Arbujas, Kenisha Santiago, Tran Nguyen, Johannes Griss, Frederick Keeney, **James Hayden**, Brian J. Gavin, David Weiner, Luis J. Montaner, Qin Liu, Lukas Peiffer, Jürgen Becker, Elizabeth M. Burton, Michael A. Davies, Michael T. Tetzlaff, Kar Muthumani, Jennifer A. Wargo, Dmitry Gabrilovich & Meenhard Herlyn. “Tumor-infiltrating mast cells are associated with resistance to anti-PD-1 therapy” *Nat. Comm.* 2021 doi: 10.1038/s41467-020-20600

Shastrula PK, Sierra I, Deng Z, Keeney F, **Hayden JE**, Lieberman PM, Janicki SM. “PML is recruited to heterochromatin during S phase and represses DAXX-mediated histone H3.3 chromatin assembly”. *J Cell Sci.* 2019 132: jcs220970 doi: 10.1242/jcs.220970

De Leo A, Deng Z, Vladimirova O, Chen H-S, Dheekollu J, Calderon A, Myers K, **Hayden J**, Keeney F, Kaufer B, Yuan Y, Robertson E and Lieberman P. (2019) “LANA oligomeric architecture is essential for KSHV nuclear body formation and viral genome maintenance during latency”. *PLoS Pathog* 15(1): e1007489. <https://doi.org/10.1371/journal.ppat.1007489>

Kaur A, Ecker BL, Douglass SM, Kugel CH, Webster MR, Almeida FV, Somasundaram R, **Hayden J**, Ban E, Ahmadzadeh H, Franco-Barraza J, Shah N, Mellis IA, Keeney F, Kossenkov A, Tang HY, Yin X, Liu Q, Xu X, Fane M, Brafford P, Herlyn M, Speicher DW, Wargo JA, Tetzlaff MT, Haydu LE, Raj A, Shenoy V, Cukierman E and Weeraratna, AT. “Remodeling of the collagen matrix in aging skin promotes melanoma metastasis and affects immune cell motility.” *Cancer Discov.* 2019 Jan;9(1):64-81. doi: 10.1158/2159-8290.CD-18-0193.

Caino MC, Seo JH, Aguinaldo A, Wait E, Bryant KG, Kossenkov AV, **Hayden JE**, Vaira V, Morotti A, Ferrero S, Bosari S, Gabrilovich DI, Languino LR, Cohen AR, Altieri DC. “A neuronal network of mitochondrial dynamics regulates metastasis”. *Nat Commun.* 2016 7, 13730 doi: 10.1038/ncomms13730.

Newhart A, Powers SL, Shastrula PK, Sierra I, Joo LM, **Hayden JE**, Cohen AR, and Janicki SM. 2016 “RNase P Protein Subunit, Rpp29, Represses Histone H3.3 Nucleosome Deposition.” *Mol. Biol. Cell.* 27:1154-1169 PMID26842893. PMC4814222.

Vultur A, Villanueva J, Krepler C, Rajan G, Chen Q, Xiao M, Li L, Gimotty PA, Wilson M, **Hayden J**, Keeney F, Nathanson KL, and Herlyn M. “MEK inhibition affects STAT3 signaling and invasion in human melanoma cell lines.” *Oncogene*, 2014. 33:1850-1861.

Kim KD, Tanizawa H, Iwasaki O, Corcoran CJ, Capizzi JR, **Hayden JE.** and Noma KI. "Centromeric motion facilitates the mobility of interphase genomic regions in fission yeast." *J Cell Science*, 2013. 126:5271-5283.

Dheekollu J, Wiedmer A, **Hayden J**, Speicher D, Gotter AL, Yen T, Lieberman PM, "Timeless links replication termination to mitotic kinase activation," *PLoS One*. 2011 May 6;6(5):e19596.

Villanueva, J., Vultur A, Somasundaram R, Fukunaga-kalabis M, Cipolla A, Wubbenhorst B, Xu X, Gimotty PA, Kee D, Santiago-Walker AE, Letrero R, D'Andrea K, Pushparajan A, **Hayden JE**, Dahlman Brown K, Laquerre S, McArthur GA, Sosman JA, Nathanson KL and Herlyn M. "Acquired resistance to BRAF inhibitors mediated by a RAF kinase switch in melanoma can be overcome by cotargeting MEK and IGF-1R/PI3K." *Cancer Cell*, 2010; 18 (6), 683-695.

Acharya, Pinak S., Majumdar, Sonali, Jacob, Michele, **Hayden, James**, Mrass, Paul, Weninger, Wolfgang, Assoian, Richard K. and Puré, Ellen, "Fibroblast migration is mediated by CD44-dependent TGF β activation," *Journal of Cell Science*, 2008; 121:1393-1402.

Hayden, James E., "Adventures on the Dark Side: An Introduction to Darkfield Microscopy," *BioTechniques*, 2002; 32-6.

Hayden, James E., "The Ethics of Digital Manipulation in Scientific Images," *Network Journal of Biomedical Illustration*, 2000; 5-4: 11-18.

Hayden, James E., "Digital Manipulation in Scientific Images: Some Ethical Considerations," *Journal of Biological Communications*, 2000; 27-1: 11-19.

Hayden, J., "Practical Considerations for Micrography: Getting the Most Out of Technology," *American Laboratory*, 1999; 31-8: 17-24.

Abreu, S., **Hayden, J.**, Berthold, P., Shapiro, I.M., Decker, S., Patterson, D., Haskins, M., "Growth Plate Pathology in Feline Mucopolysaccharidosis VI," *Calcified Tissue Int.* 1995; 15: 185-90.

Callan, Mary Beth, Bennett, Joel S., Phillips, Deborah K., Haskins, Mark E., **Hayden, James E.**, Anderson, Jamie G., Giger, Urs, "Inherited Platelet α -Storage Pool Disease in Dogs Causing Severe Bleeding: An Animal Model for a Specific ADP Deficiency," *Thrombosis and Haemostasis*, 1995; 74: 949-53.

Hayden, J. E., "**Images:** Regenerating Neurons - MPSVII Mouse Brain," *Journal of Biological Photography*, 1995; 63 (4): 92.

Hayden, J. E., "Background Interference and Camera Angles in Wildlife Photography," *Journal of Biological Photography*, 1994; 62 (3): 109-111.

Sheridan, O., **Hayden, J.**, Wortman, J., Harvey, C., Patterson, D., Haskins, M., "Craniofacial Abnormalities in Animal Models of Mucopolysaccharidoses I, VI and VII," *Journal of Craniofacial Genetics and Developmental Biology*, 1994; 14: 7-15.

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Hayden, J. E., "*Images: Methacrylate Sectioning*," *Journal of Biological Photography* 1993; 61 (3): 89.

Hayden, J. E., "Flash Apertures for Improved Specimen Detail in Ultra Close-up and Photomacrography," *Journal of Biological Photography*, 1993; 61 (1): 17-20.

Giger U, Callan JG, Phillips DK, Haskins ME, **Hayden JE**, Anderson JG, Bennet JS, "Inherited Platelet δ -Storage Pool Disease in Dogs Causing Severe Bleeding: An Animal Model," abstract to the American Society of Hematology, 35th Annual Meeting, Dec., 1993

Haskins ME, Otis EJ, **Hayden JE**, Jezyk PF, Stramm LE, "Hepatic Storage of Glycosaminoglycans in Feline and Canine Models of Mucopolysaccharidoses I, VI and VII," *Journal of Veterinary Pathology*, 1992; 29: 112-119.

BOOK CHAPTERS

Hayden, James E. "Ethical Practices." *Natural Science Imaging and Photography (Applications in Scientific Photography - Chapter 4)*. By Michael R. Peres. New York, NY: Routledge, 2021. 86-106. Print.

Hayden, James E. "Ethical Considerations in Scientific Photography: Why Ethics?" *Laboratory Imaging and Photography: Best Practices for Photomicrography and More (Chapter 12)*. By Michael R. Peres. New York, NY: Routledge, 2017. 269-290. Print.

Hayden, James E. "Confocal Microscopy." *Laboratory Imaging and Photography: Best Practices for Photomicrography and More (Chapter 10)*. By Michael R. Peres. New York, NY: Routledge, 2017. 223-247. Print.

ORAL PRESENTATIONS

- January, 2023, 2nd Annual Forensic Photography Symposium (Virtual), **“Ethical Considerations in Scientific Photography”**
- July, 2022, BCA Host Presenter for BIOCOMM 2022 **International Symposium on Biomedical and Scientific Photography (2-Day Symposium)**
- July, 2021, Virtual BIOCOMM 2021, **“Confocal Microscopy Workshop Part 2: 2D Acquisition and Rendering”**
- June, 2021, Virtual BIOCOMM 2021, **“Confocal Microscopy Workshop Part 1: 2D Acquisition and Spectral Separation”**
- June, 2019, BIOCOMM 2019, Pacific Grove, CA. **“Ethical Practices in Scientific Photography”**
- June, 2018, BIOCOMM 2018, Savannah, Georgia. **“2-Photon Microscopy: How Deep Can You Go?”**
- June, 2018, BIOCOMM 2018, Savannah, Georgia. **“Basic Photomicrography”** (lecture and workshop)
- November, 2017, Photographic Society of Philadelphia, Invited speaker, The Plastic Club, Philadelphia, PA. **“Avian Acquisitions: Photographing Birdlife.”**
- October, 2017, University of the Sciences, Invited speaker, Lake Lacawac, PA. **“Practical Scientific Photography.”**
- June, 2017, BIOCOMM 2017, Portland, Oregon. **“Challenges in Multidimensional Microscopy.”**
- June, 2017, BIOCOMM 2017, Portland, Oregon. **“Creative Public Relations Microscopy.”**
- May, 2017, Chemglass National Sales Meeting, Invited Speaker, Vineland, NJ. **“Microworlds: Art and Science Through the Microscope”**
- April, 2017, The Right Angle Club, Invited Speaker, Philadelphia, PA. **“Microworlds: Art and Science Through the Microscope”**
- April, 2016, University of the Sciences Honors Program Spring Colloquium, Invited speaker, Philadelphia, PA **“Scientific Imaging: Blurring the Lines Between Science and Art.”**
- April, 2016, Science on Tap, Philadelphia, PA **“Microworlds: Art and Science Through the Microscope”**
- June, 2015, BIOCOMM 2015, Santa Fe, New Mexico. **“Modern Methods in Microscopy.”**
- June, 2015, BIOCOMM 2015, Santa Fe, New Mexico. **“Macro Madness Workshop: Playing with LEGOs.”**

- March, 2015 – Philadelphia, PA. “**Standardization, Quantitation and Ethics in Scientific Imaging**” Invited speaker, Pharmaceutical Science Department Seminar Series, University of the Sciences in Philadelphia.
- September, 2014, Misher Festival of Fine Arts and Humanities, University of the Sciences, Philadelphia, PA. “**Creative Compositions with James Hayden: Photography Workshop.**”
- June, 2013, BIOCOMM 2013, Pacific Grove, CA. “**Quantitative Imaging: Standardizing Fluorescence Microscopy**”
- June, 2013, BIOCOMM 2013, Pacific Grove, CA. “**Qualitative Microscopy: “Imaging for Art and Science”**”
- June, 2013, BIOCOMM 2013, Pacific Grove, CA. “**3D Timelapse Imaging of Gene Loci in Yeast**”
- May, 2013, Microscopy Interest Group Seminar, The Wistar Institute, Philadelphia, PA. “**Is the Signal Real? Standardization and Background Interference in Fluorescence Microscopy**”
- July, 2012 – Pomona, NJ, “**The Practical Use of Point-and-Shoot Cameras for Scientific Documentation**” – invited speaker for the 2012 Stockton Summer Sustainability & Environmental Academy (SSSEA)
- June, 2012, BIOCOMM 2012, Bar Harbor, ME. Association of Biomedical Communications Directors (ABCD) Keynote Address “**Scientific Image Manipulation: Exposing the Photoshop Generation**”
- June, 2012, BIOCOMM 2012, Bar Harbor, ME. “**Creating and Detecting Digital Manipulation in Scientific Images**”
- March, 2012 – Philadelphia, PA. “**Imaging Melanoma: Seeing the Beauty and the Beast**” – invited speaker for the Karabots Junior Fellows program of the College of Physicians of Philadelphia
- February, 2012 – Ambler, PA. “**Careers in Scientific Imaging**” – invited speaker for Wissahickon High School gifted program
- July, 2011 – Pomona, NJ, “**The Practical Use of Point-and-Shoot Cameras for Scientific Documentation**” – invited speaker for the 2011 Stockton Summer Sustainability & Environmental Academy (SSSEA)
- July, 2010 – Pomona, NJ, “**The Practical Use of Point-and-Shoot Cameras for Scientific Documentation**” – invited speaker for the 2010 New Jersey Governor’s School on the Environment
- April, 2010 – Philadelphia, PA. “**Flash Fun: Digital Camera Workshop**” Invited speaker, 2010 Misher Festival of Fine Arts and Humanities, University of the Sciences in Philadelphia.

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- April, 2010 – Philadelphia, PA. “**Photoshopping Science: Data Manipulation Through Pictures**”
Invited speaker, Pharmaceutical Science Department Seminar Series, University of the Sciences in Philadelphia.
- February, 2010 – Gladwyne, PA, “**Art and Science Through the Microscope**” – invited speaker for 5th Grade Class, Gladwyne Elementary School.
- July, 2009 – Pomona, NJ, “**The Practical Use of Point-and-Shoot Cameras for Scientific Documentation**” – invited speaker for the 2009 New Jersey Governor’s School on the Environment
- April, 2009 – Philadelphia, PA. “**The Dangers of Digital Manipulation in Scientific Images**”
Invited speaker, Biology Seminar Series, University of the Sciences in Philadelphia.
- January, 2009 – Philadelphia, PA, “**The Art of Science**” – Misher Visiting Professor of Humanities lecture, Misher Festival of Fine Arts and Humanities, University of the Sciences in Philadelphia.
- January, 2009 – Philadelphia, PA, “**Using Your Digital Camera**” – Misher Festival of Fine Arts and Humanities, University of the Sciences in Philadelphia.
- January, 2009 – Philadelphia, PA, “**Telling a Story with Pictures**” – Misher Festival of Fine Arts and Humanities, University of the Sciences in Philadelphia.
- July, 2008 – Pomona, NJ, “**The Practical Use of Point-and-Shoot Cameras for Scientific Documentation**” – invited speaker for the 2008 New Jersey Governor’s School on the Environment
- July, 2007 – Pomona, NJ, “**The Practical Use of Point-and-Shoot Cameras for Scientific Documentation**” – invited speaker for the 2007 New Jersey Governor’s School on the Environment
- March, 2007 – Recife, Brazil, “**1a Oficina Sobre Microscopia e Imagens Digitais**” – a 3 day microscopy workshop presented for the US and Brazilian Departments of Agriculture.
- May, June, July, August, 2006 – Columbia, Maryland, “**From Microscopes to Photoshop: A Workshop on Scientific Imaging in USDA-APHIS**” – a 3 day workshop on microscopy and imaging, presented 4 times.
- January - March, 2001, 1st Annual Global Neuroscience Summit, “**A Crash Course in PowerPoint**” presented in Cancun (Mexico), Hong Kong (China), Laguna Niguel (CA) and Seville (Spain)
- July, 2000, BIOCComm 2000, Rochester, MN, “**The Ethics of Digital Manipulation in Scientific Images- Update 2000.**”
- July, 1999, BIOCComm '99, Phoenix, Arizona, “**The Ethics of Digital Manipulation in Scientific Images.**”
- July, 1999, BIOCComm '99, Phoenix, Arizona, “**The Theory and Use of Filters in Scientific Imaging**” -with Joseph Mentrikoski, RBP -Half day Workshop - Registry Workshop Series #2

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- April, 1999, BCA Regional Meeting, Hershey, Pennsylvania, "**The Ethics of Digital Manipulation in Scientific Images.**"
- June, 1998, BIOCOMM '98, Portland, Maine, "**Practical Photomacrography.**" (Full day Workshop – Registry Workshop Series #1)
- March, 1998, BCA Regional Meeting, Philadelphia, Pennsylvania, "**Documenting Plant Circumnutation: An Inexpensive Approach to Producing a Home-Made Intervalometer.**"
- August, 1997, BIOCOMM '97, Reno, Nevada, "**Documenting Plant Circumnutation: An Inexpensive Approach to Producing a Home-Made Intervalometer.**"
- August, 1997, BIOCOMM '97, Reno, Nevada, "**Gross Specimen Photomacrography.**"
- November, 1995, BPA Regional Meeting, Baltimore, Maryland, "**Gross Specimen Photomacrography.**"
- June, 1994, World Congress on Biomedical Communications, Orlando, Florida, "**Comparative Clinical Photography of the Feline Head and Face.**"
- July, 1993, BIOCOMM '93, Stamford, CT, "**Weekend Wildlife Photography.**"
- October, 1992, BPA Chapter/Regional Meeting, "**Weekend Wildlife Photography.**"
- July, 1992, BPA Delaware Valley Chapter Meeting, "**Comparative Clinical Photography of the Feline Head and Face.**"
- October, 1989, BPA Delaware Valley Chapter Meeting, "**Variable Asymmetric Contrast Microscopy.**"

IMAGE and PRESENTATION AWARDS

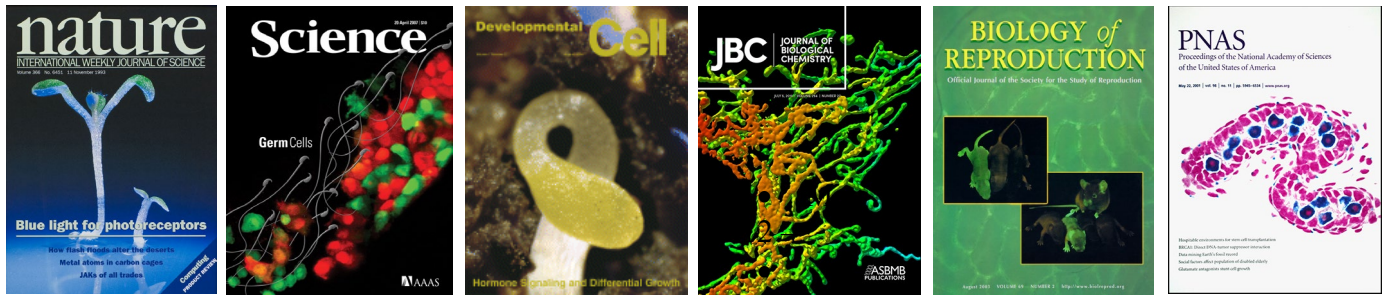


- May, 2020, BIOCOMM 2020, - Professional Exhibition (virtual),
 - **Citation of Merit – Photomicrograph** "PC3 Tumor Infiltrating into Bone"
 - **Citation of Merit – Photomicrograph** "Cortical Mitochondria (PC3 cells)" with Dr. Ekta Agarwal
- June, 2019, BIOCOMM 2019, Pacific Grove, CA, - Professional Exhibition,
 - **Citation of Merit – Natural Science:** "Barn Swallows – Hold Your Ground!"
 - **Citation of Merit – General Illustrative:** "Total Lunar Eclipse – January 20, 2019."
- October 2018 - **Nikon International Small World Competition,**
 - **Image of Distinction** - "Dandelion Pappus (Fluff) Fibers (2-photon)."
- October 2017 - **Nikon International Small World Competition,**
 - **Image of Distinction** - "3D Mouse Skin Collagen (2-photon)."
 - **Image of Distinction** - "Prostate Cancer Cells (Confocal)."
- June, 2017, BIOCOMM 2017, Portland, OR, - Professional Exhibition,
 - **Charles Foster Memorial Citation - Photomicrograph:** " Prostate Cancer Tree."
 - **Award of Excellence - Photomicrograph:** " Prostate Cancer Tree."
 - **Citation of Merit - Photomicrograph:** "CMY Prostate Cancer Cells."
 - **Citation of Merit - Photomicrograph:** "Air Bubbles in Tequila."
- October 2016 - **Nikon International Small World Competition,**
 - **Image of Distinction** – “Air Bubbles in Tequila (DIC)”
- June, 2013, BIOCOMM 2013, Pacific Grove, CA, - Professional Exhibition,
 - **Citation of Merit,** "Oral Cancer Spheroid."
- October 2012 - **Nikon International Small World Competition,**
 - **Image of Distinction** – “Down and Belly Feather from Yellow-bellied Sapsucker (DIC and Reflected Light Illumination)”
- October 2009 - **Nikon International Small World Competition,**
 - **4th Place** – “Anglerfish Ovary (Fluorescence)”
- October 2008 - **Nikon International Small World Competition,**
 - **Image of Distinction** “Thrips (Fluorescence)”

- March 2003 – Winner of BioTechniques 2002 Cover Photo Contest for
 - **“Oblique section through gill branches of a zebrafish, *Danio rerio*.”**
- August 2000 - **Nikon International Small World Competition,**
 - **3rd Place** - "Iris, Ciliary Body and Lens in Canine Eye (Darkfield)"
 - **6th Place** - "Gill Branches in a Zebrafish (Darkfield)"
 - **8th Place** - "Canine Papillary Muscle (Darkfield)"
- July, 2000, BIOCOMM 2000, Rochester, MN, - Professional Exhibition,
 - **"Best Oral Paper** for BIOCOMM '99, "The Ethics of Digital Manipulation in Scientific Images."
- July, 2000, BIOCOMM 2000, Rochester, MN, - Professional Exhibition,
 - **Citation of Merit**, "Iris, Ciliary Body and Lens in Canine Eye."
 - **Citation of Merit**, "Cross Section Through the Gills of a Zebrafish."
 - **Citation of Merit**, "Canine Papillary Muscle (Heart)."
- August 1999 - **Nikon International Small World Competition,**
 - **20th Place** - "Cross Section Through Zebra Fish Head (Darkfield)"
- August 1998 - **Nikon International Small World Competition,**
 - **7th Place** - "*Anoplocephala perfoliata* in Equine Cecum (Darkfield)"
- August, 1997, BIOCOMM '97, Reno, Nevada,
 - **"Best Infoshare Presentation,"** "Documenting Plant Circumnutation: An Inexpensive Approach to Producing a Home-Made Intervalometer."
- August 1997 - **Nikon International Small World Competition,**
 - **Honorable Mention** - "Canine Endochondrial Bone (Darkfield)"
- August 1996 - **Nikon International Small World Competition,**
 - **15th Place** - "Transgenic Rat Seminiferous Tubules (Darkfield, Oblique Illumination)"
- August 1995 BIOCOMM '95, San Antonio, Texas - Professional Exhibition,
 - **Award of Excellence**, Digital Imaging - "Regenerating Neurons - MPSVII Mouse Brain"
- August 1994 - **Nikon International Small World Competition,**
 - **Honorable Mention** - "Compound Hair Follicle (Rheinberg Illumination)"
- April, 1994 - Bio-Imaging '94, Del. Val. Chap. BPA Regional Meeting
 - **BEST OF SHOW** - "Compound Hair Follicle - Rheinberg Illumination"
 - **First Place**, Natural Science - "Immature Green-backed Heron"
 - **Second Place**, Natural Science - "Tri-colored Heron"
 - **Second Place**, Medical/Laboratory/Scientific - "Intestine - Rheinberg Illumination"

- July 1993 - BIOCOMM '93, Stamford, CT - Professional Exhibition
 - **BEST OF SHOW** (Still Media) - "Arabidopsis thaliana - Comparison of Blue Light Sensitivity"
 - **1st Place**, Natural Science - "Arabidopsis thaliana - Comparison of Blue Light Sensitivity"
 - **Loersch Single Transparency Award** - "Arabidopsis thaliana - Comparison of Blue Light Sensitivity"
 - **BPA Medical Education Award, Microscopy** - Ostertagia ostertagia
 - **Honorable Mention**, Microscopy - Portion of Canine Adnexal Nevus
 - **Honorable Mention**, Microscopy - Demitaceous Mold on Cultured Root Tip
- April 17, 1993 - Bio-Imaging '93, Del. Val. Chap. BPA Regional Meeting
 - **BEST OF SHOW** - "Arabidopsis thaliana - Comparison of Blue Light Sensitivity"
- October 3, 1992 - Bio-Imaging '92, Del. Val. Chap. BPA Regional Meeting
 - **1st Place**-Scientific/Medical/Laboratory - Portion of Canine Adnexal Nevus
 - **2nd Place**-Scientific/Medical/Laboratory - Infiltrating Melanoma (Van Gogh)
- August 1992 - **Nikon International Small World Competition**,
 - **Honorable Mention** - Portion of Canine Adnexal Nevus (Darkfield)
- August 1992 BIOCOMM '92, Portland, Oregon - Professional Exhibition
 - **Honorable Mention**, General Illustrative - "Methacrylate Sectioning"
 - **Honorable Mention**, Microscopy - "Muscle Degeneration - Nomarski DIC"
- December 1991 Delaware Valley Chapter BPA - Bio-Imaging '91
 - **BEST OF SHOW** - Flying Pelican
 - **2nd place** Medical/Laboratory - Erylenmyer Flasks with Sep. Funnel
- August 1991 - **Nikon International Small World Competition**,
 - **7th Place** - "Canine Epidermis with Compound Hair Follicles (Darkfield)"
- August 1991 BPA Annual Meeting - Tampa
 - **Canadian Natural Science Award** - "Burrowing Owl"
- October 1990 meeting - Chesapeake Chapter BPA
 - **3rd Place**, Medical/Scientific - "Burrowing Owl"
- February 1989 - Valley Forge Chapter National Audubon Society
 - **1st Place**, Wildlife "Barred Owl in Flight"

JOURNAL, NEWSLETTER & BOOK COVER IMAGES



- December, 2019 – *Molecular and Cellular Biology*, Volume 39, Number 24 “Three-dimensional rendering of mitochondrial redistribution to the cortical cytoskeleton of prostate adenocarcinoma PC3 cells”. (See related article in July 2019, vol. 39, no. 14, [e00109-19](#).)
- July, 2019 – *Journal of Biological Chemistry*, Volume 294, No. 27 “3D Mitochondria with color depth coding”
- July 2018 – *Biology of Reproduction*, Volume 99, No. 1 “Review: Spermatogonial Stem Cells.”
- April 2018 – *Genes & Development*, Volume 32, Nos. 3-4 “PC3 cancer cells containing the R72 variant of TP53 infiltrating bone trabeculae.”
- April 2016 – *Genes & Development*, Volume 30, No. 8 “Histiocytic sarcoma cells infiltrating murine liver.”
- August 2015 – *Science Signaling*, Volume 8, Issue 389 Online Cover, “PC3 Prostate Cancer Cells.”
- May 2012 - *Molecular Therapy*, Vol 20 no 5. “Control vs MPS Cats.”
- September 2008 – *Methods in Cell Biology*, Volume 86, “Stem Cell Culture.”
- April 2007 – *Science*, Volume 316, “Male Germline Stem Cells.”
- October 2004 - *Developmental Biology*, Volume 274, Number 2, October 15, 2004. “Gonocytes.”
- November 2003 - *Developmental Biology*, Volume 263, Number 2, November 15, 2003. “Seminiferous Tubules, Darkfield.”
- August 2004 – *Developmental Cell*, Volume 7 Number 2, “Apical Hook Development in Arabidopsis Seedlings.”
- 2004 – *Current Topics in Microbiology and Immunology 280, Regeneration: Stem Cells and Beyond* by E. Heber-Katz (Ed.) Springer-Verlag Berlin Heidelberg, ISSN 0070-217X, ISBN 3-540-02238-4. “Excised Ear Tissue Autofluorescence.”
- August 2003 – *Biology of Reproduction*, Volume 69, Number 2, “GFP Mice.”

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- Winter 2002 – *Bellweather*, Newsmagazine of the University of Pennsylvania School of Veterinary Medicine “First Successful Multi-Organ Gene Therapy.”
- December 2002 – *Fertility and Sterility*, Volume 78, Number 6, “Human Stem Cell Transplantation.”
- October 2002 – *American Biotechnology Laboratory*, Volume 20 Number 11. “*Danio rerio* (zebrafish) gill branches.”
- October 2002 – *PNAS*, Vol. 99, No. 20, “Tootsie and Artic: Bone Marrow Transplantation in MPSVII Dogs.”
- June 2002 – *Science*, Vol. 296, No. 5576, “Reproductive Biology.”
- June 2002 – *BioTechniques*, Vol 32, No 6, “Oblique Section Through Gill Branches of a Zebrafish, *Danio rerio*.”
- November 2001 – *PNAS*, Vol. 98, No. 23, “Ear Punch with Hair from Transgenic Mouse.”
- May 2001 – *PNAS*, Vol. 98, No. 11, “Transplanted Spermatogonia, Brightfield.”
- April 2001 – *Tissue & Cell*, Volume 33, Number 2, “Transplanted Mouse Spermatogonia.”
- July 2000 – *PNAS*, Vol. 97, No. 15, “Surface of Mouse Testis.”
- April 2000 – *Developmental Biology*, Volume 230 Number 2, “Mouse Seminiferous Tubules with Sertoli Cells at the Rete Testis.”
- October 1999 – *Tissue & Cell*, Volume 31 Number 5, “Rat to Rat and Mouse to Rat Spermatogonial Transplants.”
- August 1999 – Gene Therapy Entering the Clinic, Special Report from the Muscular Dystrophy Association, "James Wilson."
- April 1999 – *Science*, Volume 284, Number 5415, "Signal Transduction: Blue Light Sensitivity." (partial)
- April 1999 – *American Laboratory*, Volume 31, Number 8, "*Anoplocephala perfoliata* (tapeworm) in Equine Cecum."
- Special Issue 1998 – *International Journal of Developmental Biology*, Volume 42, Number 7, “Transgenic Stem Cell Transplanted Testis.”
- October 1998 – *Genes & Development*, Volume 12, Number 23, "Ethylene Signaling in Arabidopsis."
- August 1998 – *Tissue & Cell*, Volume 30 Number 4, “Rat Rete Testis.”

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- August 1998 – *Seminars in Cell and Developmental Biology*, Volume 9, Issue 4, “Transgenic Stem Cell Transplantation Cycle.”
- May 1997 – *American Clinical Laboratory*, "Mouse Seminiferous Tubules with Sertoli Cells at the Rete Testis."
- February 1997 – *International Journal of Developmental Biology*, Volume 41, Number 1, “Cross Sections of Injected Seminiferous Tubules.”
- June 1996 – *Nature Medicine*, Vol. 2, No. 6, “Immortal Sperm.”
- April 1996 – *Current Opinion in Neurology*, Volume 9, Number 2, "Mouse Brain Composite: Mucopolysaccharidosis VII."
- May 1995 – *Science*, Volume 268, "Emerging Plant Science: Frontiers in Biotechnology." (partial)
- January/February 1994 – *NCRR Reporter*, Volume XVII, Number 1, "John Wolfe: Animal Models for Gene Therapy – Sly Syndrome."
- January 1994 – *Journal of Biological Photography*, Volume 62, No 1, "Arabidopsis thaliana - Comparison of Blue Light Sensitivity."
- November 1993 – *Nature*, Volume 366, Number 6451, "Arabidopsis thaliana - Comparison of Blue Light Sensitivity."
- October 1991 – **RDH**, "Jamie Anderson, RDH, DVM."

GALLERY EXHIBITS

- March 2020 – “Images from Science 3: An Exhibition of Scientific Photography,” Rochester Institute of Technology, Rochester, NY and Johns Hopkins School of Medicine. “**3D Collagen Matrix *In Vitro*, 2016.**”
- October 2014 – ASCB (American Society for Cell Biology) Art in the Airport Series. Philadelphia International Airport display “Larger than Life: Cells Made Visible”, “**Anglerfish Ovary,**” “**Yellow-bellied Sapsucker Feather,**” and “**Male Stem Cells.**”
- June 2014 – ASCB (American Society for Cell Biology) Art in the Airport Series. Dulles International Airport display “Larger than Life: Cells Made Visible”, “**Anglerfish Ovary.**”
- April 2014 – Edinburgh International Science Festival, “Living Lights” series. “**GFP Mouse Pups.**”
- April 2013 – Edinburgh International Science Festival, “Patterns in Nature” series. “**Yellow-bellied Sapsucker Feather.**”
- 2008 – “Images from Science 2: An Exhibition of Scientific Photography,” Rochester Institute of Technology, Rochester, NY. “**GFP Mouse and Offspring, 2003**” and “**Iris, Ciliary Body and Lens in Canine Eye, 2000.**”
- 2002 – “Images from Science: An Exhibition of Scientific Photography,” Rochester Institute of Technology, Rochester, NY. “**Arabidopsis thaliana: Comparison of Blue Light Sensitivity, 1993.**”
- December 2000 – Nikon Microscopy U website: **Featured Microscopist**
<http://www.microscopyu.com/featuredmicroscopist/hayden/index.html>