Johnny P. Su, PhD
Postdoctoral Research Fellow, Casey Eye Institute, Oregon Health & Science University,
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Education

Post-Doctoral Fellow, Biomedical Engineering November 2013
University of Wisconsin-Madison
Directing stem cell differentiation in biologically inspired 3D micro-niche fabricated via multiphoton excited photochemistry
Advisor: Dr. Paul Campagnola,
Biomedical Engineering and Medical Physics

PhD, Physics (Biomedical Concentration) January 2011
National Taiwan University, Taipei, Taiwan
Investigation of Collagen Structure through Second Order Susceptibility Microscopy
Advisor: Dr. Chen-Yuan Dong, Department of Physics and Optoelectronic Medicine

BS, Physics, Chung Yuan Christian University, Chungli, Taiwan July 2002

Professional Appointments

Researcher, Cell and Developmental Biology
Weill Cornell Medical College, New York, NY
The Methodist Hospital, Department of Nano-Medicine, Houston, TX
December 2013---May 2014

Research Associate of Biomedical Engineering
Research Associate of Laboratory for Optical and Computational Instrumentation
University of Wisconsin-Madison, Madison, WI
Feburary 2011---November 2013

Teaching Assistant of Physics
National Taiwan University, Taiwan
July 2005---June 2010

Resarch Assistant of Physics
National Taiwan University, Taiwan
July 2003--- June 2005

Professional Services and Memberships

- Journal Referees: Biomaterials (2013), Journal of Biomedical Optics (2011-2014), Journal of Biophotonics (2013), Journal of Biomedical Materials Research (2014), Optics Express (2015)
- Grant Reviewer: Cancer Research Grants Council of Hong Kong (2014)
- Members: The Association for Research in Vision and Ophthalmology, Materials Rearch Society, International Society of Photonics and Instrumentation (SPIE), Biophysical Society, Japanese Society of Investigative Dermatology, Taiwanese Society of Investigative Dermatology

Honors and Awards

- Travel Grant, Department of Biomedical Engineering, University of Wisconsin-Madison, 2013
- Travel Grant, NSF, MOE, NTU, Taiwan, 2007-2010
- Outstanding Poster Paper Award in Aunnal Metting of Biomedical Engineering, Taiwan, 2009
- Selected Cover Image in Optics Express, March 31th 2008
- Selected Cover Image in Optics Express, June 22th 2009
- Feature Research Articles in Virtual Journal of Biomedical Optics, 2009

EXPERIENCE

06/2014 – present Casey Eye Institute, Oregon Health & Science University, Portland, OR

Postdoctoral Research Fellow

- Development and application of high resolution and high penetration optical coherence tomography (OCT) for the imaging of eye anterior segment
- Development and application of wide field OCT for retina angiography
- Design and fabrication of biomimetic retina capillary through microfluidic technology
- Imaging transplanted stem cell for retina regenerative theraphy via OCT
- Simulation, design and fabrication of hand held laser probe for thermal therapy of conjuctivaplasty

12/2013 – 6/2014 Department of Nanomedicine, The Methodist Hospital Research Institute, Houston, TX

Researcher

- Micro/nano fabrication of microfluidic device to print the stem cells and artificial neuronal tissues
- Engineering the artificial retina tissue to restore the eyesights of blindness
- Experimental design the biomimetical model for the drug screening of degenerate retina tissues

1/2011-11/2013 Department of Biomedical Engineering, University of Wisconsin-Madison, Madison, WI

Research Associate

- Develop innovative real-time monitoring system to quality control of the engineering tissue products
- Develop new methods to massively fabricate the engineering tissue products *via* photochemistry
- Apply multiphoton fluorescence lifetime to study the stem cell-extracellular matrix (ECM) interaction
- 3D micro/nano printing biomaterial for cardidac regeneration via multiphoton photochemistry
- Data processing and analyzing of multiphoton images to reveal the stem cell-ECM interaction
- Lecturer on the Non-linear optical microscopy
- Mentor for the Undergraduate Research Scholars (Jorge Lara, Brendon Wiely)

2005-2010 Department of Physics, National Taiwan University, Taipei, Taiwan

Research Assistant/Teaching Assistant

- Develope and application of label-free optical microscopy to early detection of cancer
- Develope second order susceptibility microscopy (SOSM) to study collagen nano-structure
- Correlate the SOSM optical signatures with pathological and normal tissues
- Apply the SOSM in quality control and label-free imaging of engineered cartilage tissues
- Develop an on-line monitoring microscopy to noninvasively asses the collagen thermal de-naturation
- Apply the functional multiphoton microscopy to study the lung cancer microenvironment
- Build a computational model to process and correct the 3D and large area multiphoton images
- Teaching assistant in graduate levels: Electrodynamics, Quantum Mechanics
- Teaching assistant in undergraduate levels: Quantum physics

2003-2005 Department of Physics, National Taiwan Univeristy

Research Assistant

- Mentor for the high school students with extraordinary ability in science and mathematics
- Design and calibrate the electronics for the multi-anode photomultiplier tubes
- Design and calibrate the Cerenkov detector for the study of high energy nuclear particles
- Design and calibrate the laser-driven proton accelerator for radiation oncology

Selected Publications

1 **J. Su**, G. Liu, D. Huang et al, "Imaging the anterior eye with dynamic-focus swept-source optical coherence tomography", ***Journal of Biomedical Optics*** Under review (2015)

2 **P. J. Su** el al., "Retinal synaptic regeneration via microfluidic guiding channels", ***Scientific Reports*** 5, 13951 (2015)

3 V. Ajeti, C. H. Lien, S. J. Chen, **P. J. Su**, J. M. Squirrell, K. H. Molinarolo, G. E. Lyons, K. W. Eliceiri, B. M. Ogle, and P. J. Campagnola, "Image-inspired 3D multiphoton excited fabrication of extracellular matrix structures by modulated raster scanning", ***Optics Express*** 21, 025346 (2013)

4 **P. J. Su**, Q. A. Tran, J. J. Fong, K. W. Eliceiri, B. M. Ogle, P. J. Campagnola, "Mesenchymal stem cell interactions with 3D ECM modules fabricated via multiphoton excited photochemistry", ***Biomacromolecules***, 13, 2917–2925 (2012)

5 P. S. Hu, C. M. Hsueh, **P. J. Su**, W. L. Chen, V. A. Hovhannisyan, S. J. Chen, T. H. Tsai, C. Y. Dong, "The Use of second-order susceptibility as contrast mechanism for label-free imaging of biological tissue", ***IEEE Journal of Selected Topics in Quantum Electronics*** 18, 1326-1334 (2012)
Invited Paper

6 **P. J. Su**, W. L. Chen, Y. F. Chen, C. Y. Dong, "Determination of collagen nanostructure from second order susceptibility analysis", ***Biophysical Journal*** 100, 2053-2062 (2011)

7 **P. J. Su**, W. L. Chen, T. H. Li, C. K. Chou, T. H. Chen, Y. Y. Ho, C. H. Huang, S. J. Chang, Y. Y. Huang, H. S. Lee, and C. Y. Dong, "Discrimination of type I and type II Collagen and label-free imaging of engineered cartilage tissue", ***Biomaterials*** 31, 9415-9421 (2010)

8 **P. J. Su**, W. L. Chen, J. B. Hong, T. H. Li, R. J. Wu, C. K. Chou, S. J. Chen, C. Hu, S. J. Lin, and C. Y. Dong, "Discrimination of collagen in normal and pathological skin dermis through second-order susceptibility microscopy", ***Optics Express*** 17, 11161-11171 (2009).
Issue Cover selected for Virtual Journal of Biomedical Optics. v4, issue8, (2009)

9 V. A. Hovhannisyan, **P. J. Su**, S. J. Lin, and C. Y. Dong, "Quantifying thermodynamics of collagen thermal denaturation by second harmonic generation imaging", ***Applied Physics Letters*** 94, 233902 (2009).

10 W. L. Chen*, T. H. Li*, **P. J. Su***, C. K. Chou, P. T. Fwu, S. J. Lin, D. Kim, P. T. C. So, and C. Y. Dong, "Second harmonic generation chi tensor microscopy for tissue imaging", ***Applied Physics Letters*** 94, 183902 (2009). ***Co-first authors**

11 V. A. Hovhannisyan, **P. J. Su**, Y. F. Chen, and C. Y. Dong, "Image heterogeneity correction in large-area, three-dimensional multiphoton microscopy", ***Optics Express*** 16, 5107-5117 (2008).
Issue Cover

12 V. A. Hovhannisyan, **P. J. Su**, and C. Y. Dong, "Characterization of optical-aberration-induced lateral and axial image inhomogeneity in multiphoton microscopy", ***Journal of Biomedical Optics*** 13, 044023 (2008).

Invention Disclosure

1. D. Huang, G. Liu, **P. J. Su** and Y. Lee "Imaging whole eye anteriror segment by dynamic focus swept source optical coherence tomography ", Oregon Health & Science University, IP disclosure ID # 2112, April 28th 2015
2. **P. J. Su** and L. Qin. "Biomimetic neuronal connection chip for retina synaptic regeneration", Houston Methodist Hospital, 2014

Invited Presentations

1 **P. J. Su** "Determination of collagen nanostructure from nonlinear microscopy", (Invited) talk at the International Biomedical Optics Conference (BiOS), SPIE Photonics West, San Francisco, CA, January, 2011

2 **P. J. Su** "Imaging the Collagen in Normal and Pathological Dermis through Polarization Second Harmonic Generation", (Invited) talk at the Taiwanese Society 4th Annual Meeting for Investigative Dermatology, Chang-Hua, Taiwan, May, 2009

Conference Proceedings

1 **Ping-Jung Su**, Gangjun Liu, Yan Li, Maolong Tang, David Huang, "Imaging of whole anterior segment with dynamic focusing swept source OCT", Imaging Conference of the Association for Research in Vision and Ophthalmology (2015), ID 2228281.

2 Paul J. Campagnola, Visar Ajeti, **Ping-Jung Su**, Quyen Tran, Jayne Squirrell, Brenda Ogle, "Image-inspired fabrication of 3D biomimetic models of the extracellular matrix via multiphoton-excited photochemistry" 6 February 2014 Part of SPIE BiOS

3 **Ping-Jung Su**, Quyen A. Tran, Jimmy J. Fong, Kevin W. Eliceiri, Brenda M. Ogle, and Paul J. Campagnola, "Interactions of human mesenchymal stem cell interactions with 3D ECM modules fabricated via multiphoton excited photochemistry", in Material Research Society (2013), pp. 1556243.

4 Paul J. Campagnola, **Ping-Jung Su**, Quyen A. Tran, Jimmy Fong, Kevin W. Eliceiri, Brenda M. Ogle, "Mesenchymal stem cell interactions with 3D ECM modules fabricated via multiphoton excited photochemistry ", in SPIE BiOS (2013), Vol. 8587.

5 Quyen A. Tran, **Ping-Jung Su**, Jimmy Fong, Kevin W. Eliceiri, Paul J. Campagnola, Brenda M. Ogle, "Differentiation of human mesenchymal stem cells in response to whole proteins 3D micro-tissue by micro/nano multiphoton fabrication", in Annual Meeting of Biomedical Engineering (Atlanta, Gerogia, 2012), pp. OP-Fri-1-21.

6 Vladimir A. Hovhannisyan, **Ping-Jung Su,** Chen-Yuan Dong, "Dynamic multiphoton imaging of reversible and irreversible thermal changes in collagen tissues", Proceedings of SPIE Vol. 8087, 808710 (2011)

7 **Ping-Jung Su**, Wei-Liang Chen, Tsung-Hsien Li, Chen-Kuan Chou, Te-Hsuen Chen, Yi-Yun Ho, Chi-Hsiu Huang, Shwu-Jen Chang, Yi-You Huang, Hsuan-Shu Lee, Chen-Yuan Dong, "Discrimination of Type I and Type II Collagen by Nonlinear Microscopy", in Photonics West, Multiphoton Microscopy in the Biomedical Sciences XI, SPIE Proceedings (San Francisico, 2011), Vol. 7897-47

8 **Ping-Jung Su**, Wei-Liang Chen , Yang-Fang Chen, Chen-Yuan Dong, "Determination of collagen nanostructure from nonlinear microscopy", in Photonics West, Multiphoton Microscopy in the Biomedical Sciences XI, SPIE Proceedings (2011), Vol. 7903-5.

9 Wei-Liang Chen, Tsung-Hsian Li, **Ping-Jung Su**, Chen-Kuan Chou, Peter Tramyeon Fwu, Sung-Jan Lin, Daekeun Kim, Peter T. C. So, Chen-Yuan Dong, "Second-order susceptibility imaging with polarization-resolved second harmonic generation microscopy", in Photonics West Multiphoton Microscopy in the Biomedical Sciences X, edited by Ammasi Periasamy; Peter T. C. So; Karsten König (Proceedings of SPIE San Francisico, USA, 2010), Vol. 7569, pp. 75691P

10 **Ping-Jung Su**, Wei-Liang Chen, Jin-Bon Hong, Tsung-Hsien Li, Ruei-Jr Wu, Chen-Kuan Chou, Sung-Jan Lin, Chen-Yuan Dong, "Discrimination of collagen in normal and pathological dermis through polarization second harmonic generation", in Photonics West Multiphoton Microscopy in the Biomedical Sciences X, edited by Ammasi Periasamy; Peter T. C. So; Karsten König (SPIE Proceedings San Francisico, USA, 2010), Vol. 7569, pp. 75692A.

11 **Ping-Jung Su**, Wei-Liang Chen, Jin-Bon Hong, Tsung-Hsien Li, Ruei-Jr Wu, Sung-Jan Lin, Chen-Yuan Dong, "Discrimination of collagen in normal and pathological skin dermis through polarization-resolved second harmonic generation microscopy", in *Annual Meeting of Japanese Society for Investigative Dermatology* (Fukuoka, Japan, 2009), Vol. P13-18.

12 **Ping-Jung Su**, Wei-Liang Chen, Jin-Bon Hong, Tsung-Hsien Li, Ruei-Jr Wu, Sung-Jan Lin, Chen-Yuan Dong, "Imaging the Collagen in Normal and Pathological Dermis through Polarization Second Harmonic Generation", in Taiwanese Society 4th Annual Meeting for Investigative Dermatology (Chang-Hua, 2009), Vol. 2009-2.

13 **Ping-Jung Su**, Wei-Liang Chen Tsung-Hsien Li, Ruei-Jr Wu, Jin-Bon Hong, Vladimir Hovhannisyan, Sung-Jan Lin, Chen-Yuan Chen, "Imaging Collagen for Normal and Pathological Skin Dermis through Polarization-Resolved Second", in Biophysical Society 53rd Annual Meeting, Imaging & Optical Microscopy II (Boston, Massachusetts, 2009), Vol. 09-A-3650-BPS.

14 **Ping-Jung Su**, Vladimir Hovhannisyan, Chen-Yuan Dong, "Thermal decomposition of collagen fibers: real-time multiphoton imaging," NIH Inter-Institute Workshop on Optical Diagnostic and Biophotonic Methods from Bench to Bedside NIH09-NIH01-3 (2009).

15 **Ping-Jung Su**, Chi-Hsiao Huang, Yi-You Huang, Hsuan-Shu Lee, and Chen-Yuan Dong, "Utilizing two-photon fluorescence and second harmonic generation microscopy to study human bone marrow mesenchymal stem cell morphogenesis in chitosan scaffold - art. no. 68580H," Optics in Tissue Engineering and Regenerative Medicine II 6858, H8580-H8580,8100 (2008).

16 **Ping-Jung Su**, Tsung-Hsien Li Wei-Liang Chen, Ruei-Jr Wu, Chen-Yuan Dong, "Discrimination of Type I and II Collagen through Polarization Second Harmonic Generation", in International Conference on Laser Applications in Life Sciences (2008), Vol. BP-005.

17 **Ping-Jung Su**, V. Hovhannisyan, C.Y. Dong, "Thermal decomposition of collagen fibers: real-time multiphoton imaging", in International Conference on Laser Applications in Life Sciences (2008), Vol. BP-009.

18 Chun-Chin Wang, **Ping-Jung Su**,Chiao-Yin Lin, Ray-Jr Wu, Sung-Jan Lin, Chen-Yuan Dong, "Selective imaging of tumor microenvironment by funtional multiphoton microscopy", in Annual Conference on Biomedical Engineering (2008), Vol. CPA71.
Outstanding Poster Paper Award

19 **Ping-Jung Su**, P. T. Fwu, V. Hovhannisyan, and C. Y. Dong, "Refractive index determination by index-mismatch-induced spherical aberration - art. no. 66300C," Confocal, Multiphoton, and Nonlinear Microscopic Imaging III 6630, C6300-C6300, 6215 (2007).

20 Keng-Chi Cho, Hsuan-Teng Hung, Chieh Hu, **Ping-Jung Su**, Chen-Yuan Dong, and Shean-Jen Chen, "Applications of adaptive optics in multiphoton microscopy", in 2007 Taiwan Conference on Optoelectronics (2007), Vol. 2007.