

Nai-Tzu Chen, 陳乃慈 Ph.D.

Nai-Tzu Chen, Ph.D.
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EDUCATION

- 09/08--02/13 **Ph.D. of Chemical Biology, Department of Chemistry, National Taiwan University – Taiwan**
- 04/11--02/12 **Visiting Graduate Student, The Comprehensive Cancer Center, The University of Chicago – USA**
- 09/04--06/06 **M.S. Institutes of Molecular Biology, National Chung Hsing University – Taiwan**
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RESEARCH EXPERIENCE

- 08/16--Present **Assistant Professor, Institute of New Drug Development**
China Medical University, Taiwan
- 03/13--06/16 **Postdoctoral Fellow, The University of Chicago – USA**
Department of Radiology and The Comprehensive Cancer Center, The University of Chicago, USA (*Honored by the Dragon Gate Fellowship Award by the National Science Council/Ministry of Science and Technology of Taiwan*)
- 09/08--02/13 **Ph.D. student, Chemical Biology Program, Graduate Institute of Chemistry, National Taiwan University – Taiwan**
Advisor: Prof. Chung-Yuan Mou (牟中原教授), Department of Chemistry, National Taiwan University, Taiwan; Co-Advisor: Dr. Leu-Wei Lo (羅履維研究員), Institute of Biomedical Engineering and Nanomedicine, National Health Research Institutes, Taiwan
- 04/11--02/12 **Visiting Graduate Student, The Comprehensive Cancer Center, The University of Chicago – USA**
Prof. Chin-Tu Chen's (陳津渡教授) Functional and Molecular Imaging Center, Department of Radiology and the Comprehensive Cancer Center, The University of Chicago, USA (*Honored by the Graduated Student Study Abroad Award by the National Science Council/Ministry of Science and Technology of Taiwan*)
- 09/06--08/08 **Research Assistant at Dr. Leu-Wei Lo's (羅履維研究員) Laboratory of Translational Nanomedicine, Institute of Biomedical Engineering and Nanomedicine, National Health Research Institutes (NHRI), Taiwan**
- 09/04--06/06 **M.S. student** under the advisorship of Prof. Wen-Ming Yang (楊文明教授), Institute of Molecular Biology, National Chung Hsing University, Taiwan
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Research Interests:

- Organic-inorganic nanocomposite nanoparticles for precision medicine
- Nanotheranostics for imaging-guided early cancer detection and treatment
- Mesoporous silica nanoparticles for biomedical applications especially in selective photodynamic therapy and targeted drug delivery
- Multi-modality nanoprobe for molecular imaging and targeted nanotherapy

Awards:

- 2015 Chicago Biomedical Consortium (CBC) Postdoctoral research Award, The University of Chicago/The University of Illinois at Chicago/Northwestern University, U.S.A
- 2013 Dragon Gate Fellowship Award (龍門計劃), National Science Council, Taiwan (Visiting Scholar at Prof. Chin-Tu Chen's Functional and Molecular Imaging Center, Department of Radiology and the Comprehensive Cancer Center, The University of Chicago, USA)
- 2012 RA Travel Grand Award, National Health Research Institutes, Taiwan
- 2011 Graduate Student Study Abroad Program (GSSAP/千里馬) Award, National Science Council, Taiwan. (Visiting Scholar at Prof. Chin-Tu Chen's Functional and Molecular Imaging Center, Department of Radiology and the Comprehensive Cancer Center, The University of Chicago, USA)
- 2007 Excellent Research Assistant Award, National Health Research Institutes, Taiwan

Peer-reviewed Journal Publications:

1. Chen, N.T., Leoni L., Cheng, S.H., Chu C.H., Souris, J.S., Chen, C.T., Aydogan B., Lo, L.W. Deoxyglucose-Labeled Gold Nanoparticle-enhanced X-ray Computed Tomography for *In Vivo* Cancer Imaging. (In Preparation)
2. Chen, N.T., Barth, E.D., Cheng, S.H., Epel, B., Chen, C.T., Halpern, H.J., Lo, L.W. Mesoporous silica nanoparticle (MSN) as a nano-carrier of Trityl Radicals for EPR oxygen images. (In Preparation)
3. Cheng, S.H.†, Chen, N.T.†, Chu C.H., Souris, J.S., Chen, C.T., Lo, L.W. X-ray Activated Nanoscintillators for Potential Radioluminescence-Guided Cancer Photodynamic Therapy. († Equally contributing authors) *Theranostics* (Submitted)
4. Cheng, S.H., Chu C. H., Chen, N.T., Leoni L., Chen, C.T., Lo, L.W. Magnetic Resonance Imaging of Hyaluronic Acid-modulated Drug Controlled Release of Mesoporous Silica-Coated Manganese Oxide Nanoparticles. *Int. J. Mol. Sci.* (Submitted)
5. Cheng, S.H., Chen, N.T., Huang, C.M., Liu, C.P., Souris, J.S., and Lo, L.W. (2016) Clinical translation of nanoparticle-mediated cancer theranostics. *Nanoscale* (Invited Feature Article; Under Review) (**SCI: 7.394; Ranking: 19/157 in Multidisciplinary Chemistry; 21/259 in Multidisciplinary Materials Science; 10/79 in Nanoscience and Nanotechnology**)
6. Chen, N.T., Souris, J.S., Cheng, S.H., Konda, V., Dougher, U., Bissonnette, B.M., Mou, C.Y., Chen, C.T., Lo, L.W. Lectin-functionalized mesoporous silica nanoparticles for endoscopic detection of premalignant colonic lesions *Nanomedicine: Nanotechnol. Biol. Med.* (In press) (**SCI: 6.115; Ranking: 15/79 in Nanoscience and Nanotechnology**)
7. Souris, J.S., Cheng, S.H., Pelizzari C., Chen, N.T., La Riviere P., Chen C.T., and Lo L.W. (2014) Radioluminescence characterization of in situ X-ray nanodosimeters: Potential real-time monitors and modulators of external beam radiation therapy. *Applied Physics Letters* 105, 203110-5. (**SCI: 3.142; Ranking: 28/145 in Applied Physics**)
8. Cheng, S.H., Chu C.H., Chen, N.T., Souris, J.S., Chen C.T., and Lo L.W. (2014) Significant Inhibition of Tumor Growth Following Single-dose Nanoparticle-enhanced Photodynamic Therapy. *Int. J. Photoenergy* vol. 2014, Article ID 297129, 11 pages. (**SCI: 1.226; Ranking: 57/90 in Optics; 26/35 in Atomic, Molecular and Chemical Physics**)
9. Hsieh, F.S., Chen, N.T., Yao, Y.L., Wang, S.Y., Chen, J., Lai, C.C., Yang, W.M. (2014). The transcriptional repression activity of STAF65 γ is facilitated by promoter tethering and nuclear import of class IIa histone deacetylases. *Biochimica et Biophysica Acta*. 1839(7):579-91. (**SCI: 5.373, Ranking: 42/289 in Biochemistry and Molecular Biology; 8/73 in Biophysics**)
10. Chen, N.T., Tang, K.C., Chung, M.F., Cheng, S.H., Huang, C.M., Chu, C.H., Chou, P.T., Souris, J.S.,

- Chen, C.T., Mou, C.Y., and Lo, L.W. (2014) Enhanced plasmonic resonance energy transfer in mesoporous silica-encased gold nanorod for two-photon-activated photodynamic therapy. *Theranostics* 4(8): 798-807. (SCI: 8.854; Ranking: 9/124 in Medicine, Research and Experimental)
11. Chen, N.T., Cheng, S.H., Souris, J.S., Chen, C.T., Mou, C.Y., and Lo, L.W. (2013) Theranostic applications of mesoporous silica nanoparticles and their organic/inorganic hybrids. *J. Mater. Chem. B* 1(25): 3128-3135. (SCI: 4.872; Ranking: 4/33 in Materials Science, biomaterials)
 12. Chen, N.T., Wu, C.Y., Chung, C.Y., Hwu, Y.K., Cheng, S.H., Yang, C.S., Mou, C.Y., Lo, L.W. (2012) Probing the dynamic monitoring of doxorubicin-DNA intercalation during apoptotic initiation using fluorescence lifetime imaging microscopy. *PLoS One* 7(9): e44947. (SCI: 3.057; Ranking: 11/63 in Multidisciplinary sciences)
 13. Chen, N.T., Cheng, S.H., Liu, C.P., Souris, J.S., Chen, C.T., Mou, C.Y., and Lo, L.W. (2012) Recent advances in nanoparticle-based Förster resonance energy transfer for biosensing, molecular imaging, and drug release profiling. *Int. J. Mol. Sci.* 13: 16598-16623. (SCI: 3.257; Ranking: 51/163 in Multidisciplinary Chemistry)
 14. Liu, C.P., Cheng, S.H., Chen, N.T., and Lo, L.W. (2012) Intra/inter-particle energy transfer of luminescence nanocrystals for biomedical applications. *J. Nanomaterials* vol. 2012, Article ID 706134, 9 pages, 2012. doi:10.1155/2012/706134. (SCI: 1.758; Ranking: 123/271 in Multidisciplinary Materials Science; 50/83 in Nanoscience and Nanotechnology)
 15. Cheng, S.H., Hsieh, C.C., Chen, N.T., Chu, C.H., Huang, C.M., Chou, P.T., Tseng, F.G., Yang, C.S., Mou, C.Y., and Lo, L.W. (December, 2011) Well-defined mesoporous nanostructure modulates three-dimensional interface energy transfer for two-photon activated photodynamic therapy. *Nano Today* 6(6): 552-563. (SCI: 13.157; Ranking: 9/163 in Multidisciplinary Chemistry; 10/271 in Multidisciplinary Materials Science; 5/83 in Nanoscience and Nanotechnology)
 16. Cheng, S.H.†, Chen, N.T.†, Wu, C.Y., Chung, C.Y., Hwu, Y., Mou, C.Y., Yang, C.S. and Lo, L.W. (2011) Recent advances in dynamic monitoring of drug release of nanoparticle using Förster resonance energy transfer and fluorescence lifetime imaging *J. Chin. Chem. Soc.-TPA*, 58(6):798-804; († Co-first author; **Selected as the Special Issue Cover**) (SCI: 0.879; Ranking: 124/163 in Multidisciplinary Chemistry)
 17. Lin, S.Y., Chen, N.T., Sum, S.P., Chang, C.H., Wang, Y.C., Yang, C.S., and Lo, L.W. (2010) The protease-mediated nucleus shuttle of sub-nanometer gold quantum dot for real-time monitoring of apoptotic cell death. *J. Am. Chem. Soc.* 132: 8309–8315 (SCI: 13.038; Ranking: 10/163 in Multidisciplinary Chemistry)
 18. Lee, C.H., Cheng, S.H., Wang, Y.J., Chen, Y.C., Chen, N.T., Souris, J.S., Chen, C.T., Mou, C.Y., Yang, C.S., and Lo, L.W. (2009) Near-infrared mesoporous silica nanoparticles for optical imaging: characterization and *in vivo* biodistribution. *Adv. Funct. Mater.* 19(2): 215-222. (SCI: 11.382; Ranking: 12/163 in Multidisciplinary Chemistry; 12/271 in Multidisciplinary Materials Science; 7/83 in Nanoscience and Nanotechnology)
 19. Lin, S.Y., Chen, N.T., Sum, S.P., Lo, L.W., and Yang, C.S. (2008) Ligand-exchanged photoluminescent gold quantum dots functionalized with leading peptide for nuclear targeting and intracellular imaging. *Chem. Commun.* 39: 4762-4764. (SCI: 6.567; Ranking: 21/163 in Multidisciplinary Chemistry)

Book Chapter

1. Souris, J.S., Chen, N.T., Cheng, S.H., Chen, C.T., and Lo, L.W. (March 27, 2014) “Silica nanoparticle platform” in *Cancer Theranostics* Ch. 20: 363-391, Shawn Chen and Stephen Wong, Ed., San Diego/London/Waltham: Academic Press is an imprint of Elsevier (ISBN: 978-0-12-407722-5)
2. Hsia, Y., Sivasubramanian, M., Chen, N.T., Lo, L.W. (2013) Nanomaterials for Tumor Targeting Theranostics. Ch. 5, Mingqian Tan and Aiguo Wu, World Scientific publishing. (In press)

Conference and Technical Reports:

1. Chen, N.T., Barth, E.D., Cheng, S.H., Chen, C.T., Halpern H.J. and Lo, L.W. (2016) Highly Sensitive Trityl-loaded Mesoporous Silica Nanoparticles (MSNs) for *In Vivo* Tumor Oxygen Measurements Using Electron Paramagnetic Resonance Imaging (EPRI) *World Molecular imaging*

- Congress (WMIC)*, Sep. 7-9, New York, U.S.A
2. Souris, J.S., Chen, N.T., Cheng, S.H., Dougherty, U., Konda, V., Lo, L.W., Bissonnette, M. and Chen, C.T. (2016) Assessment of Aberrant Glycoprotein Expression in Novel Murine Models of Colon Polyp Formation, Progression, and Malignancy Transformation *World Molecular imaging Congress (WMIC)*, Sep. 7-9, New York, U.S.A
 3. Souris, J.S., Cheng, S.H., Pelizzari, C., Chen, N.T., Quigley, B., La Riviere, P., Lo, L.W. and Chen, C.T. (2016) Radioluminescence Characterization of Europium-doped Yttrium Oxide Nanoparticles for X-ray Dosimetry at Therapeutic Energies *World Molecular imaging Congress (WMIC)*, Sep. 7-9, New York, U.S.A
 4. Souris, J.S., Chen, N.T., Cheng, S.H., Konda, V., Bissonnette, M., Lo, L.W., Chen, C.T. (2015) A Modified Clinical Endoscope for Fluorescence-based Colonoscopies using Pathology-targeted Nanoplatfroms. *World Molecular imaging Congress (WMIC)*, Sep. 2-5, Honolulu, U.S.A
 5. Souris, J.S., Cheng, S.H., Pelizzari, C., Chen, N.T., LaRiviere, P., Lo, L.W., Chen, C.T. (2015) Radioluminescence Characterization of Europium-doped Yttrium Oxide Nanoparticles for X-ray Dosimetry. *World Molecular imaging Congress (WMIC)*, Sep. 2-5, Honolulu, U.S.A
 6. Cheng, S.H., Chen, N.T., Chu, C.H., Souris, J.S., Chen, C.T., Lo, L.W. (2015) X-ray Activated Nanoscintillators for Potential Radioluminescence-Guided Cancer Photodynamic Therapy, *World Molecular imaging Congress (WMIC)*, Sep. 2-5, Honolulu, U.S.A
 7. Chen, N.T., Leoni L., Cheng, S.H., Chu C.H., Souris, J.S., Chen, C.T., Aydogan B., Lo, L.W. Deoxyglucose-Labeled Gold Nanoparticle-enhanced X-ray Computed Tomography for *In Vivo* Cancer Imaging. *World Molecular imaging Congress (WMIC)*, Sep. 17-20, 2014, Seoul, South Korean.
 8. Cheng, S.H., Leoni L., Roman B. B., Souris, J.S., Chen, N.T., Lo, L.W., Chen, C.T. Magnetic Resonance Imaging of Hyaluronic Acid-modulated Drug Controlled Release of Mesoporous Silica-Coated Manganese Oxide Nanoparticles *World Molecular imaging Congress (WMIC)*, Sep. 17-20, 2014, Seoul, South Korean.
 9. Souris, J.S., Cheng H.S., Chen, N.T., Chen, C.T., Lo, L.W. (2013) *In Vivo* Imaging of Nanoparticle Targeting of Aberrant Glycosylation and Glycoprotein Expression in Ovarian Cancer. *World Molecular imaging Congress (WMIC)*, Savannah, U.S.A
 10. Souris, J.S., Chen, N.T., Cheng, S.H., Konda, V., Dougher, U., Bissonnette, B.M., Mou, C.Y., Chen, C.T., Lo, L.W. (2013) PEGylated Mesoporous Silica Nanoparticle Targeting of Colorectal Cancer and Polyps. *World Molecular imaging Congress (WMIC)*, Savannah, U.S.A
 11. Cheng, S.H., Leoni L., Roman B. B., Souris, J.S., Chen, N.T., Lo, L.W. Chen, C.T. (2013) Mesoporous Silica Encased, Ultra-small/Aggregate Manganese Oxide Nanoparticles as Positive T1 Contrast Agents for MRI *World Molecular imaging Congress (WMIC)*, Savannah, U.S.A
 12. Chen, N.T., Souris, J.S., Cheng, S.H., Konda, V., Dougher, U., Bissonnette, B.M., Mou, C.Y., Chen, C.T., Lo, L.W. (2012) Mesoporous silica contrast agents for the endoscopic detection of nascent colorectal cancer. *International Conference on Nanotechnology in Medicine (NanoMED)*, University College London, United Kingdom (**Oral presentation**)
 13. Souris, J.S., Chen, N.T., Cheng, S.H., Konda, V., Dougher, U., Bissonnette, B.M., Mou, C.Y., Chen, C.T., Lo, L.W. (2012) Mesoporous silica contrast agents for the endoscopic detection of nascent colorectal cancer. *World Molecular imaging Congress (WMIC)*, Dublin, Ireland
 14. Chen, N.T., Tang K.C., Chung, M.F., Cheng, S.H., Huang, C.M., Chu, C.H., Chou, P.T., Mou, C.Y., Lo, L.W. (2012) Mesoporous silica-encased gold nanorods for two-photon activated photodynamic therapy via intra-particle energy transfer. *NHRI Research day*, Taiwan
 15. Cheng S.H., Chen, N.T., and Lo, L.W. (2011) Development of dual-modality mesoporous silica nanoparticle-based contrast agents for CT and optical imaging in cancer diagnostics, *Nanotoday conference*, U.S.A
 16. Chen, N.T., Lin, S.Y., and Lo, L.W. (2010) Real-time monitoring of cell apoptosis by nucleus shuttles of sub-nanometer gold quantum dots. *E-bulletin of National Health Research Institutes*, Taiwan
 17. Chen, N.T., Cheng, S.H., Lee, C.H., and Lo, L.W. (2008) Longitudinal imaging of enhanced retention and stability of near-infrared mesoporous silica nanoparticles in breast cancer xenografts. *World Molecular Imaging Congress*, Nice, France
 18. Lin, S.Y., Chen, N.T., and Lo, L.W. (2008) Ligand-exchanged fluorescent gold quantum dots functionalized with leading peptide for nuclear targeting and intracellular imaging. *World Molecular Imaging Congress*, Nice, France
 19. Chen, N.T. and Yang, W.M. (2006) The molecular mechanism of STAF65 γ in transcriptional regulation. *14th Symposium on Recent Advances in Cellular and Molecular Biology*, Taiwan

Research Support:

China Medical University Research Grant

10/27/16 ~ 7/31/17

NT\$ 230,000

“Highly Sensitive Nano-radical for Quantitative Tumor Oxymetric Images”

CMU105-N-11

Role: PI

National Science Council, Taiwan

1/1/17~7/31/18

NT\$ 2,590,000

“Highly Sensitive Nano-radical for *In Vivo* Tumor Intracellular Oxygen Measurements Using Electron Paramagnetic Resonance Imaging”

MOST 106-2113-M-039-002-MY2

Role: PI