Kit S. Lam, M.D., Ph.D.

Research/Academic Interests

Dr. Lam is an expert in combinatorial chemistry, chemical biology, drug development, molecular imaging, nanotherapeutics and medical oncology. His laboratory is engaged in the development and application of combinatorial library methods for basic research and drug discovery. In addition to cancer drug development, he is also interested in signal transduction, antibiotics development, molecular immunology, chemical microarray, and proteomics.

Dr. Lam is both a practicing medical oncologist and a laboratory investigator. He is acclaimed for his pioneering role in the field of combinatorial chemistry and developing the novel one-bead-one-compound technology, which rapidly screens millions of chemicals at one time to identify those that bind to diseased cells. The tool is advancing the early detection and precise delivery of treatments for brain, breast, prostate, pancreatic, lymphoma and other cancers. In addition, it is advancing the discovery of imaging agents that produce highly detailed molecular profiles of diseases for improved diagnosis and tracking medication effectiveness.

His development and applications of combinatorial chemistry and other chemical methods look to solve many biomedical problems. Dr. Lam invented the "one-bead-one-compound" (OBOC) combinatorial library method, filed the patents and published the technique in Nature in 1991. This represents one of the first few reports in the new field of combinatorial chemistry at the time. Since then, the field of combinatorial chemistry has rapidly evolved into a new chemistry discipline, and has become an indispensable tool in drug development and chemical research. The OBOC combinatorial library approach is unique and truly an ultra-high throughput method, as thousands to millions of chemical compounds (peptides, peptidomimetics, small molecules, and macrocyclic natural product like molecules) can be efficiently synthesized and screened in parallel in a relatively short time.

In addition to expanding the use of one-bead-one-compound technology, Dr. Lam's research also includes developing a blood test for ovarian-cancer detection, utilizing nanoparticle carriers for drug delivery and synthesizing cancer-fighting molecules with less-toxic side effects. He is currently collaborating on projects to identify the molecular pathogenesis of and treatments for primary biliary cirrhosis, osteoporosis and Alzheimer's disease.

Title

Professor and Chair, Department of Biochemistry and Molecular Medicine
Professor, Hematology and Oncology

Specialty

Biological Chemistry, Cancer, Hematology Oncology, Internal Medicine, Molecular Biology/Medicine

Department

Biological Chemistry and Molecular Medicine
Internal Medicine

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Biological Chemistry
Hematology and Oncology

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Languages
Cantonese, Mandarin

Education
M.D., Stanford University School of Medicine, Palo Alto, California, 1984
Ph.D., University of Wisconsin, Madison, Wisconsin, 1980
B.A., University of Texas, Austin, Texas, 1975

Residency
University of Arizona, Tucson, Arizona, 1984-87

Fellowships
University of Arizona, Tucson, Arizona, 1987-89

Board Certifications
American Board of Internal Medicine, 1987
American Board of Internal Medicine, Medical Oncology, 1989

Professional Memberships
American Association for Cancer Research
American Chemical Society
American College of Physicians
American Peptide Society
Society of Chinese Bioscientists in America

Honors and Awards
Fellow of American College of Physicians, 2008
Award of the Society of Combinatorial Sciences for pioneering contribution to and remarkable scientific accomplishments in combinatorial sciences throughout my career (First International Symposium on Combinatorial Sciences held in Florence, Italy, 2007), 2007
Cathay Award (Chinese Peptide Symposium 1998), 1998
Stohlman Scholar (Leukemia Society of America), 1997
Upjohn Research Award for Outstanding Achievement in Cancer Research, 1989
Research Honors Award at Stanford University School of Medicine, 1984
Chinese American Physicians Society Scholarship, 1980

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Kit S. Lam, M.D., Ph.D.

Graduated with highest honors and special honors in microbiology, 1975
Phi Kappa Phi, 1975
Phi Beta Kappa, 1975

Select Recent Publications

Chang PC, Fitzgerald LD, Hsia DA, Izumiya Y, Wu CY, Hsieh WP, Lin SF, Campbell M, Lam KS, Luciw PA, Tepper CG, Kung HJ. Histone demethylase JMJD2A regulates Kaposi's sarcoma-associated herpesvirus replication and is targeted by a viral transcriptional factor. *J Virol.* 2011 Apr; 85(7):3283-93. Epub 2011 Jan 12.

Ding Y, Hong L, Nie B, Lam KS, Pan T. Capillary-driven automatic packaging. *Lab Chip.* 2011 Apr 21;11(8):1464-9. Epub 2011 Mar 7.

Kumaresan PR, Wang Y, Saunders M, Maeda Y, Liu R, Wang X, Lam KS. Rapid discovery of death ligands with one-bead-two-compound combinatorial library methods. *ACS Comb Sci.* 2011 May 9; 13(3):259-64. Epub 2011 Feb 8.

Li J, Liu R, Lam KS, Jin LW, Duan Y. Alzheimer's disease drug candidates stabilize A-ß protein native structure by interacting with the hydrophobic core. *Biophys J.* 2011 Feb 16;100(4):1076-82.

Li Y, Xiao K, Luo J, Xiao W, Lee JS, Gonik AM, Kato J, Dong TA, Lam KS. Well-defined, reversible disulfide cross-linked micelles for on-demand paclitaxel delivery. *Biomaterials.* 2011 Sep;32(27): 6633-45. Epub 2011 Jun 11.

Shi L, Fleming CJ, Riechers SL, Yin NN, Luo J, Lam KS, Liu GY. High-Resolution Imaging of Dendrimers Used in Drug Delivery via Scanning Probe Microscopy. *J Drug Deliv.* 2011;2011: 254095. Epub 2011 Jun 13.

Xiao K, Li Y, Luo J, Lee JS, Xiao W, Gonik AM, Agarwal RG, Lam KS. The effect of surface charge on in vivo biodistribution of PEG-oligocholic acid based micellar nanoparticles. *Biomaterials.* 2011 May;32(13):3435-46. Epub 2011 Feb 4.

Xiao K, Luo J, Li Y, Lee JS, Fung G, Lam KS. PEG-oligocholic acid telodendrimer micelles for the targeted delivery of doxorubicin to B-cell lymphoma. *J Control Release.* 2011 Oct 30;155(2):272-81. Epub 2011 Jul 19.

Yao N, Chen CY, Wu CY, Motonishi K, Kung HJ, Lam KS. Novel flavonoids with antiproliferative activities against breast cancer cells. *J Med Chem.* 2011 Jul 14;54(13):4339-49. Epub 2011 Jun 8.

Xiao W, Wang Y, Lau EY, Luo J, Yao N, Shi C, Meza L, Tseng H, Maeda Y, Kumaresan P, Liu R, Lightstone FC, Takada Y, Lam KS. The use of one-bead one-compound combinatorial library technology to discover high-affinity avß3 integrin and cancer targeting arginine-glycine-aspartic acid ligands with a built-in handle. *Mol Cancer Ther.* 2010 Oct;9(10):2714-23. Epub 2010 Sep 21.

Berti L, Woldeyesus T, Li Y, Lam KS. Maximization of loading and stability of ssDNA:iron oxide nanoparticle complexes formed through electrostatic interaction. *Langmuir.* 2010 Dec 7;26(23):

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18293-9. Epub 2010 Nov 3.

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