

**Lawrence, Wing-chi CHAN**  
**(Associate Professor)**



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**QUALIFICATIONS:** Doctor of Philosophy, the University of Hong Kong (Artificial Intelligent Control)  
2001  
Bachelor of Engineering, the University of Hong Kong 1996

**BRIEF OUTLINE OF EXPERIENCE AND POSTS HELD:**

- 2015 - Associate Professor, Department of Health Technology and Informatics, Hong Kong Polytechnic University
- 2016 - Guest Professor, Institute of Nuclear Medicine and Molecular Imaging, Zhejiang University
- 2006 - 2015 Assistant Professor, Department of Health Technology and Informatics, Hong Kong Polytechnic University
- 2005 - 2006 Research Fellow, Department of Health Technology and Informatics, Hong Kong Polytechnic University
- 2002 – 2005 Research Fellow (yr 04-05) / Research Associate (yr 02-04), Department of Optometry and Radiography, Hong Kong Polytechnic University
- 2000 – 2002 Database Administrator, Jockey Club Research and Information Centre for Landslip Prevention and Land Development, the University of Hong Kong

**RESEARCH INTERESTS:**

Bioinformatics, imaging informatics and clinical decision support

**SERVICES TO PROFESSIONAL & SCIENTIFIC BODIES, CONSULTANCIES:**

- Editorial Board Member, Engineering Applications of Artificial Intelligence (<http://www.journals.elsevier.com/engineering-applications-of-artificial-intelligence/editorial-board/>)
- Associate Editor, Frontiers in Non-Coding RNA ([http://www.frontiersin.org/non-coding\\_rna](http://www.frontiersin.org/non-coding_rna))
- Guest Editor, Special Issue with Information Systems Frontiers: Knowledge Discovery and Management in Biomedical Information Systems, 2009
- Organizing committee member, IEEE International Conference on e-Health Networking, Application & Services: HealthCom 2011, Missouri
- Technical program committee member, IEEE International Conference on e-Health Networking, Application & Services: HealthCom 2012, Beijing
- Advisory committee member, Higher Diploma in Pharmaceutical Dispensing, Department of Health Sciences, Caritas Bianchi College of Careers
- Affiliate member, Hong Kong Society of Medical Informatics (HKSMI)

**REPRESENTATIVE PUBLICATIONS (JOURNAL ARTICLES, BOOK CHAPTERS, MONOGRAPHS AND CONFERENCE PAPERS):**

**Journal Articles: As of 13 Mar, 2018, Total: 55, Corresponding and/or 1<sup>st</sup> author: 25, 2<sup>nd</sup> author: 9 (\* corresponding author)**

- Tam, B.T., Yu, A.P., Tam, E.W., Monks, D.A., Wang, X.P., Pei, X.M., Koh, S.P., Sin, T.K., Law, H.K.W., Ugwu, F.N., Supriya, R., Yung, B.Y., Yip, S.P., Wong, S.C., **Chan, L.W.**, Lai, C.W., Ouyang, P., Siu, P.M. (2018) Ablation of Bax and Bak protects skeletal muscle against pressure-induced injury Scientific Reports, 8 (1), art. no. 3689. (DOI: 10.1038/s41598-018-21853-5) (2016 Impact factor: 4.259)
- Supriya, R., Yu, A.P., Lee, P.H., Lai, C.W., Cheng, K.K., Yau, S.Y., **Chan, L.W.**, Yung, B.Y., Siu, P.M. (2018) Yoga training modulates adipokines in adults with high-normal blood pressure and metabolic syndrome Scandinavian Journal of Medicine and Science in Sports, 28 (3), pp. 1130-1138. (DOI: 10.1111/sms.13029)
- Chan VKY, **Chan LWC**, Chow DHK. Oxygen Saturation and Heart Rate Variations as Predictors of Intradialytic Hypotension. Nephrol Nurs J. 2018 Jan-Feb;45(1):53-60.
- HL Wong, LP Ng, SP Koh, **Lawrence Chan**, Evelyn Yin Kwan Wong, Vivian Weiwen Xue, Hin Fung Tsang, Amanda Kit Ching Chan, KY Chiu, W Cheuk, and SC Cesar Wong. Hotspot KRAS

exon 2 mutations in CD166 positive colorectal cancer and colorectal adenoma cells.  
Oncotarget. (Accepted for publication) (2016 Impact factor: 5.168)

- Chen, L., Liu, C., Gao, J., Xie, Z., **Chan, L. W. C.**, Keating, D. J., ... Yang, S. (2017). Inhibition of Miro1 disturbs mitophagy and pancreatic  $\beta$ -cell function interfering insulin release via IRS-Akt-Foxo1 in diabetes. *Oncotarget*, 8(53), 90693–90705.  
<http://doi.org/10.18632/oncotarget.20963> (2016 Impact factor: 5.168)
- **Lawrence W. C. Chan\***, S. C. Cesar Wong, Choo Chiap Chiau, et al., “Association Patterns of Ontological Features Signify Electronic Health Records in Liver Cancer,” *Journal of Healthcare Engineering*, vol. 2017, Article ID 6493016, 9 pages, 2017. doi:10.1155/2017/6493016
- Liu ES, Wu VW, Harris B, Foote M, Lehman M, **Chan LW\***. Vector-model-supported optimization in volumetric-modulated arc stereotactic radiotherapy planning for brain metastasis. *Med Dosim*. 2017 Mar 17. pii: S0958-3947(17)30002-X. doi: 10.1016/j.meddos.2017.01.002.
- Liu ES, Wu VW, Harris B, Lehman M, Pryor D, **Chan LW\***. Vector-model-supported approach in prostate plan optimization. *Med Dosim*. 2017 Mar 17. pii: S0958-3947(17)30001-8. doi: 10.1016/j.meddos.2017.01.001.
- Y. K. Wong, H. F. Tsang, V. W. Xue, C. M. Chan, T. C. Au, W. C. Cho, **L. W. Chan** & S. C. Wong (2017) Applications of digital PCR in precision medicine, *Expert Review of Precision Medicine and Drug Development*, 2:3, 177-186
- Patrick Y.P. Kao, Kim Hung Leung, **Lawrence W.C. Chan**, Shea Ping Yip\*, Maurice K.H. Yap. Pathway analysis of complex diseases for GWAS, extending to consider rare variants, multi-omics and interactions. *Biochimica et Biophysica Acta (BBA) - General Subjects*. Volume 1861, Issue 2, February 2017, Pages 335–353. (2016 Impact factor: 4.702)
- **Chan LWC\***, Wang FF, Meng F, Wang LL, Wong SCC, Au JSK, Yang S, Cho WCS. MiR-30 Family Potentially Targeting PI3K-SIAH2 Predicted Interaction Network Represents a Novel Putative Theranostic Panel in Non-small Cell Lung Cancer. *Front. Genet*. 2017; 8:8. (doi: 10.3389/fgene.2017.00008) (2016 Impact factor: 3.789)
- Wang FF, Meng F, Wang LL, Wong SCC, Cho WCS, **Chan LWC\***. Associations of mRNA:microRNA for the Shared Downstream Molecules of EGFR and Alternative Tyrosine Kinase Receptors in Non-small Cell Lung Cancer. *Front. Genet*. 2016; 7:173. (doi: 10.3389/fgene.2016.00173) (2016 Impact factor: 3.789)
- Meng F, Wang FF, Wang LL, Wong SCC, Cho WCS, **Chan LWC\***. MiR-30a-5p Overexpression May Overcome EGFR-Inhibitor Resistance through Regulating PI3K/AKT Signaling Pathway in Non-small Cell Lung Cancer Cell Lines. *Front. Genet*. 2016; 7:197. (doi: 10.3389/fgene.2016.00197) (2016 Impact factor: 3.789)

- Hou J, Meng F, **Chan LWC\***, Cho WCS, Wong SCC. Circulating Plasma MicroRNAs As Diagnostic Markers for NSCLC. *Front. Genet.* 2016; 7:193. (doi: 10.3389/fgene.2016.00193) (2016 Impact factor: 3.789)
- Supriya R, Tam BT, Pei XM, Lai CW, **Chan LW**, Yung BY and Siu PM (2016) Doxorubicin Induces Inflammatory Modulation and Metabolic Dysregulation in Diabetic Skeletal Muscle. *Front. Physiol.* 7:323. doi: 10.3389/fphys.2016.00323 (2016 Impact factor: 4.134)
- Pei X, Tam B, Sin T, Wang F, Yung B, **Chan LW**, Wong S, Ying M, Lai C and Siu PM (2016). S100A8 and S100A9 are Associated with Doxorubicin-induced Cardiotoxicity in the Heart of Diabetic Mice. *Front. Physiol.* 7:334. doi: 10.3389/fphys.2016.00334 (2016 Impact factor: 4.134)
- Sin TK, Wang F, Meng F, Wong SCC, Cho WCS, Siu PM, **Chan LWC\***, Yung BYM. Implications of MicroRNAs in the Treatment of Gefitinib-Resistant Non-Small Cell Lung Cancer. *International Journal of Molecular Sciences.* 2016; 17(2):237. (doi:10.3390/ijms17020237) (Review article; 2016 Impact factor: 3.226)
- **CHAN LWC\***, CHAN TP, Cheung BTF, Mo K, Fung KKL . Simulation, visualization and dosimetric validation of scatter radiation distribution under fluoroscopy settings. *Journal of Biomedical Engineering and Informatics* 2015; 1(1): 93-102. (<http://www.sciencedirect.com/journal/index.php/jbei/article/view/7268>)
- **Lawrence WC Chan**, Xihong Lin, Godwin Yung, Thomas Lui, Ya Ming Chiu, Fengfeng Wang, Nancy BY Tsui, William CS Cho, SP Yip, Parco M Siu, SC Cesar Wong, Benjamin YM Yung\*. Novel structural co-expression analysis linking the NPM1-associated ribosomal biogenesis network to chronic myelogenous leukemia. *Scientific Reports*, 2015, 5 (10973). (doi: 10.1038/srep10973) (2016 Impact factor: 4.259)
- Tam BT, Pei XM, Yung BY, Yip SP, **Chan LW**, Wong CS, and Siu PM. Unacylated ghrelin restores insulin and autophagic signalling in skeletal muscle of diabetic mice. *Pflügers Archiv - European Journal of Physiology*, 2015, 1-15. (2016 Impact factor: 3.156)
- **Lawrence Wing Chi Chan\***, Bin Pang, Chi-Ren Shyu, Tao Chan and Pek-Lan Khong. Genetic Algorithm Supported by Graphical Processing Unit Improves the Exploration of Effective Connectivity in Functional Brain Imaging. *Front. Comput. Neurosci.*, 2015, 9:50. doi: 10.3389/fncom.2015.00050.
- **Lawrence WC Chan\***, Ying Liu, Tao Chan, Helen KW Law, SC Cesar Wong, Andy PH Yeung, KF Lo, SW Yeung, KY Kwok, William YL Chan, Thomas YH Lau, CR Shyu. PubMed-supported Clinical Term Weighting Approach for Improving Inter-Patient Similarity Measure in Diagnosis Prediction. *BMC Medical Informatics and Decision Making*, 2015, 15:43. (doi: 10.1186/s12911-015-0166-2)

- **Lawrence WC Chan\***, YM Lai, Tao Chan. A Novel H.264-Supported Approach for Detecting and Classifying Hepatic Lesions in Computed Tomographic Images. *Current Medical Imaging Review* 11(3), 177-184, 2015.
- Sin TK, Yu AP, Yung BY, Yip SP, **Chan LW**, Wong CS, Rudd JA, and Siu PM\*. Effects of long-term resveratrol-induced SIRT1 activation on insulin and apoptotic signalling in aged skeletal muscle. *Acta Diabetologica*, 2015, 1-13. (2016 Impact factor: 3.340)
- Thomas WH Lui, Nancy BY Tsui\*, **Lawrence WC Chan**, Cesar SC Wong, Parco MF Siu, Benjamin YM Yung\*. DECODE: An Integrated Differential Co-expression and Differential Expression Analysis of Gene Expression Data. *BMC Bioinformatics*, 2015, 16:182. (doi:10.1186/s12859-015-0582-4)
- Fengfeng Wang, **Lawrence W.C. Chan\***, Nancy B.Y. Tsui, S.C. Cesar Wong, Parco M. Siu, SP Yip, Benjamin Y.M. Yung. Co-expression Pattern Analysis of NPM1-Associated Genes in Chronic Myelogenous Leukemia. *BioMed Research International*, 2015. Article ID 610595. (<http://dx.doi.org/10.1155/2015/610595>)
- Tam BT, Pei XM, Yung BY, Yip SP, **Chan LW**, Wong CS, and Siu PM. Autophagic adaptations to long-term habitual exercise in cardiac muscle. *International Journal of Sports Medicine*, 2015, 36(7): 526-34.
- Fengfeng Wang, William C.S. Cho, **Lawrence W.C. Chan\***, S.C. Cesar Wong, Nancy B.Y. Tsui, Parco M. Siu, Benjamin Y.M. Yung. Gene Network Exploration of Crosstalk between Apoptosis and Autophagy in Chronic Myeloid Leukemia. *BioMed Research International*, 2014. Article ID 459840. (<http://dx.doi.org/10.1155/2015/459840>)
- Fengfeng Wang, **Lawrence WC Chan\***, Helen KW Law, William CS Cho, Petrus Tang, J Yu, CR Shyu, SC Cesar Wong, SP Yip, Benjamin YM Yung. Exploring microRNA-mediated alteration of EGFR signaling pathway in non-small cell lung cancer using an mRNA:miRNA regression model supported by target prediction databases. *Genomics* 104(6) Part B, 504-511, 2014.
- Fengfeng Wang, **Lawrence WC Chan\***, William CS Cho, Petrus Tang, J Yu, CR Shyu, Nancy BY Tsui, SC Cesar Wong, SP Yip, Benjamin YM Yung. Novel Approach for Co-expression Analysis of E2F1–3 and MYC Target Genes in Chronic Myelogenous Leukemia. *BioMed Research International*, 2014. Article ID 439840. (<http://dx.doi.org/10.1155/2014/439840>)
- **Lawrence Wing-Chi Chan\***, Connie Hiu-Ching Ngo, Fengfeng Wang, Moss Y. Zhao, Mengying Zhao, Helen Ka-Wai Law, Sze Chuen Cesar Wong, Benjamin Yat-Ming Yung. Disease-specific Target Gene Expression Profiling of Molecular Imaging Probes: Database Development and Clinical Validation. *Molecular Imaging* 13, 1-12, 2014. (DOI: 10.2310/7290.2014.00017)
- Yu AP, Pei XM, Sin TK, Yip SP, Yung BY, **Chan LW**, Wong CS, and Siu PM. [D-Lys3]-GHRP-6 exhibits pro-autophagic effects on skeletal muscle. *Molecular and Cellular Endocrinology*, 2014, 401:155-64. (doi: 10.1016/j.mce.2014.09.031)

- Fengfeng Wang, SC Cesar Wong, **Lawrence WC Chan\***, William CS Cho, SP Yip, Benjamin YM Yung. Multiple Regression Analysis of mRNA-miRNA Associations in Colorectal Cancer Pathway. *BioMed Research International*, 2014. Article ID 676724. (<http://dx.doi.org/10.1155/2014/676724>)
- AP Yu, XM Pei, TK Sin, SP Yip, BY Yung, **LW Chan**, CS Wong, PM Siu. Acylated and unacylated ghrelin inhibit doxorubicin-induced apoptosis in skeletal muscle. *Acta Physiologica* 2014, 211 (1): 201-13.
- Sin TK, Yu AP, Yung BY, Yip SP, **Chan LW**, Wong CS, Ying M, Rudd JA, Siu PM. Modulating effect of SIRT1 activation induced by resveratrol on Foxo1-associated apoptotic signalling in senescent heart. *J Physiol*. 2014 Apr 14.
- Chuang Yuan, Christopher W. K. Lai, **Lawrence W. C. Chan**, Meyrick Chow, Helen K. W. Law, Michael Ying. Cumulative Effects of Hypertension, Dyslipidemia, and Chronic Kidney Disease on Carotid Atherosclerosis in Chinese Patients with Type 2 Diabetes Mellitus. *Journal of Diabetes Research*, Volume 2014 (2014), Article ID 179686.
- Chuang Yuan, Christopher W. K. Lai, **Lawrence W. C. Chan**, Meyrick Chow, Helen K. W. Law, Michael Ying. The Effect of Diabetes Self-Management Education on Body Weight, Glycemic Control, and Other Metabolic Markers in Patients with Type 2 Diabetes Mellitus. *Journal of Diabetes Research*, Volume 2014 (2014), Article ID 789761.
- Tsang AH, Cheng KH, Wong AS, Chan CM, Tsui NB, Au TC, Chan AK, Luk LY, Cheung MT, **Chan LW**, Yung BY, Wong SC. Current and future molecular diagnostics in colorectal cancer and colorectal adenoma. *World J Gastroenterol*, 2014, 20(14): 3847-57. doi: 10.3748/wjg.v20.i14.3847.
- Chan CML, Au TCC, Chan ATC, Ma BBY, Tsui NBY, Hui EP, **Chan LWC**, Luk LY, Cheung MT, Ho WS, Yung BYM, Wong SCC. Advanced Technologies for Studying Circulating Tumor Cells at the Protein Level. *Expert Review of Proteomics*, 10:579-589, 2013.
- Lam EP, Chan CM, Tsui NB, Au TC, So CC, Wong KF, Wong HT, Chiu KY, **Chan LW**, Yung BY, Wong SC. Clinical applications of molecular technologies in hematology. *J Med Diagnostics Methods*, 2:doi:10.4172/2168-9784.1000130, 2013.
- **Chan LWC**, Wang FF, Cho WCS. Genomic Sequence Analysis of EGFR Regulation by MicroRNAs in Lung Cancer. *Current Topics in Medicinal Chemistry*, 2012. (PMID: 22352917; Epub ahead of print: BSP/CTMC/E-Pub/000312)
- **Chan LW**. Modeling equilibrium of microRNA expression. *Front Genet* 2011 Jun 16;2:35. doi: 10.3389/fgene.2011.00035. eCollection 2011. (2016 Impact factor: 3.789)
- Chow M, **Chan L**, Lo B, Chu WP, Chan T, Lai YM. Exploring the intention to use a clinical imaging portal for enhancing healthcare education. *Nurse Education Today*, 2012. (<http://dx.doi.org/10.1016/j.nedt.2012.01.009>)
- **Chan LWC\***, Liu Y, Shyu CR, Benzie IFF. A SNOMED supported ontological vector model for subclinical disorder detection using EHR similarity. *Engineering Applications of Artificial Intelligence* 24:1398-1409, 2011.

- Chow M, **Chan L**. Development and evaluation of a compartmental picture archiving and communications system model for integration and visualization of multidisciplinary biomedical data to facilitate student learning in an integrative health clinic. *Computers & Education* 54:733-741, 2010.
- Law MYY, Liu B, **Chan WC**. A DICOM-RT based ePR Information System for Radiation Therapy. *RadioGraphics* 29: 961-972, 2009.
- Wong AKS, **Chan LWC\***, Liu Y. Automating Object-Oriented Integration and Visualization of Multidisciplinary Biomedical Data in Radiology Workflow: Compartmental PACS Model. *Information Systems Frontiers* 11:369-379, 2009.
- Tang FH, **Chan LWC**, Cheung CW, Tsui PY. Computer-generated index for idiopathic scoliosis in digital chest radiography: a comparison of the degree of spinal curvature with human measurement. *Journal of Digital Imaging* 21 Suppl 1, S113-20, 2008.  
(Available at <http://www.springerlink.com/content/hu4q7v4662601p03/> on 7 August 2007)
- Liu BJ, Zhou Z, Gutierrez MA, Documet J, **Chan L**, Huang HK, International Internet2 Connectivity and Performance in Medical Imaging Applications: Bridging the Americas to Asia, *J High Speed Networks* 16(1), 5-20, 2007.
- Zhou Z, Gutierrez M, Documet J, **Chan L**, Huang HK, Liu B, The Role of a Data Grid in Worldwide Imaging-Based Clinical Trials, *J High Speed Networks* 16(1), 21-33, 2007.
- Lai YM, Qin L, Hung VWY, Chan ST, **Chan LWC**, Chan KM. Trabecular bone status in ultradistal tibia under habitual gait loading: A pQCT study in postmenopausal women. *Journal of Clinical Densitometry* 9(2): 175-183, 2006.
- **Chan LWC\***, Zhou MZ, Hau SK, Law MYY, Tang FH, Documet J, International Internet-2 performance and automatic tuning protocol for medical imaging applications, *Journal of Computerized Medical Imaging and Graphics*, 29: 103-114, 2005.
- Tang FH, Law MYY, Lee ACH, **Chan LWC**, A Mobile Phone Integrated Health Care Delivery System of Medical Images, *Journal of Digital Imaging*, Vol. 17, No. 3: pp. 217-225, (September), 2004.
- Chan CW, **Chan WC**, Jayawardena AW, Harris CJ, Structure selection of neurofuzzy networks based on support vector regression, *International Journal of Systems Science*. Abingdon, UK, Taylor & Francis, 33(9): 715-722, 2002.
- **Chan WC**, Chan CW, Cheung KC, Harris CJ, On the modelling of nonlinear dynamic systems using support vector neural networks, *Engineering Applications of Artificial Intelligence*, 14: pp. 105-113, 2001.

#### Conference Papers:

- **Lawrence WC Chan**, SC Cesar Wong, Keith WH Chiu "Ontological Features of Electronic Health Records Reveal Distinct Association Patterns in Liver Cancer", The First International

Workshop on Semantics-Powered Data Analytics – BIBM2016, Shenzhen, China, 15-18 Dec, 2016.

- Tam BT, Yung BY, Wong CS, **Chan LW**, Tam EW, and Siu PM. Muscle compression causes reduction of oxidative phosphorylation (OXPHOS) subunits and increase in autophagy. *FASEB Journal* 30: 742.3, 2016.
- **Lawrence W. C. Chan**, Cesar Wong, Fei Meng, Fengfeng Wang, Benjamin Y. M. Yung, “Single cell imaging for exploring the relationship between glucose uptake, survival and metastasis in cancer”, 4th International Conference and Exhibition on Cell & Gene Therapy, London, UK, 10-12 Aug, 2015.
- Benjamin Y. M. Yung, Xihong Lin, Godwin Yung, S. C. Cesar Wong, Fengfeng Wang, **Lawrence W. C. Chan**, “A big data analysis platform to unveil gene interactions in cancer”, 4th International Conference and Exhibition on Cell & Gene Therapy, London, UK, 10-12 Aug, 2015.
- Wang F, **Chan L**, Law HKW, Cho WCS, Wong C, Yip SP, Yung BYM “In-Silico Analysis of EGFR-Associated microRNA Signature in Cancer”, The fifth workshop on Biomolecular Networks and Human Diseases – BIBM2013, Shanghai, China, 18-21 Dec, 2013.
- Wong SCC, Au TCC, Chan CML, Tsui NBY, **Chan LWC**, Yung BYM, “Menstrual blood TAP1 I333V and D637G gene polymorphisms are associated with less risk to develop high-grade cervical intraepithelial neoplasia”, the American Association for Cancer Research Annual Meeting 2014, San Diego, California, April 5-9, 2014.
- **Chan L**, Pang B, Shyu CR, Chan T, Khong PL, “Fast GPU Algorithm for Analyzing Effective Connectivity in Functional Brain Imaging”, 2013 The 3rd IFAC International Conference on Intelligent Control and Automation Science (ICONS 2013), Chengdu, China, September 2-4, 2013.
- Chow M, **Chan L**, “Clinical Decision Support using Traditional Chinese Medicine (TCM) Ontology and Text Similarity”, The 11th International Congress on Nursing Informatics, Montreal, Canada, 23-27 June, 2012
- **Chan LWC**, Chan T, Cheng LF, Mak WS, “Machine Learning of Patient Similarity: A Case Study on Predicting Survival in Cancer Patient after Locoregional Chemotherapy”, The first workshop on Knowledge Engineering, Discovery and Dissemination in Health – BIBM2010, Hong Kong SAR, China, 18-21 Dec, 2010
- **Chan LWC**, Sun Y, Chen R, “Clustering the Interacting Molecular and Clinical Atherosclerosis Risk Factors using Principal Components Analysis”, 2009 Summit on Translational Bioinformatics, San Francisco, USA, 15-17 March, 2009.
- **Chan LWC**, Benzie IFF, Lau TYH, Zheng YP, Wong KS, Liu Y, Chan ST, “Construction of Multidimensional Arterial Health Status Map based on Molecular and Clinical Measurements, Fuzzy System and Data Cubes”, 2008 AMIA Translational Bioinformatics Summit, San Francisco, California, 10-12 March 2008.



- **Chan LWC**, Wong AKS, Chan ST, Benzie IFF, Lau TYH, Liu Y, Zheng YP, "A Synergistic Multidisciplinary Knowledge Discovery and Clinical Decision Support Platform for Health Studies: Needs and Direction", Health Research Symposium, Hong Kong SAR, 29 September, 2007.
- **Chan LWC**, Chan ST, Lau TYH, Zheng YP, Liu Y, Wong AKS, Benzie IFF, "A conceptual Multidisciplinary Analytical Model of Carotid and Cerebral Atherosclerosis based on Artificial Intelligence", Enhancing Healthcare Education, Research & Practice Symposium, Hong Kong SAR, China, 9-10 July 2007.
- Liu B, Law MY, Huang HK, Zee C, **Chan LW**, "A DICOM-RT ePR radiation therapy information system for managing brain tumor patients", Imaging Informatics and Standards, SPIE International Symposium: Medical Imaging, San Diego, USA, 11-16 February 2006.
- Huang HK, Zhang A, Liu B, Zhou Z, Documet J, King N, **Chan LWC**, "Data Grid for Large-Scale Medical Image Archive and Analysis", Proceedings of the 13th ACM International Conference on Multimedia, Singapore, November 6-11, 2005.
- **Chan LWC**, Huang HK, Cao F, Zhou Z, Law MYY, Tang FH, "A Consistent and Repeatable Clinical Protocol for High Performance International Internet-2 Connection in Remote Medical Image Transmission", Scientific paper: SSM21-03, Radiological Society of Northern America, 90th Scientific Assembly, Chicago, Illinois, 2004.
- Tang FH, **Chan LWC**, Wong P, "An Intelligent Detection of Idiopathic Scoliosis in Chest Computed Radiography Under Picture Archiving and Communication System (PACS) Environment", InfoRad: 9113DS-i, Radiological Society of Northern America, 90th Scientific Assembly, Chicago, Illinois, 2004.
- Tang FH, Lee A, **Chan LWC**, Law MYY, "Multi-dimensional Intelligence Integrated Server for Distributed Picture Archiving and Communication Systems", InfoRad: 9613PACS-i, Radiological Society of Northern America, 90th Scientific Assembly, Chicago, Illinois, 2004.
- Law MYY, **Chan LWC**, Huang HK, Zhang X, Sun J, "Distribution of DICOM-RT ePR-based Radiotherapy Information", InfoRad: 9305EMR-i, Radiological Society of Northern America, 90th Scientific Assembly, Chicago, Illinois, 2004.
- Law MYY, Huang HK, **Chan LWC**, Zhang X, Sun J, "The Development and Implementation of a Prototype DICOM-based Radiotherapy Information System", Scientific poster: 092ORI-p, Radiological Society of Northern America, 90th Scientific Assembly, Chicago, Illinois, 2004.
- **Chan LWC**, Cao F, Zhou M, Hau SK, "Connectivity Issues and Performance Monitoring of International Internet-2 in Tele-Imaging Consultation", Education Exhibit: 0152RI, Radiological Society of Northern America, 89th Scientific Assembly, Chicago, Illinois, 2003.
- **Chan LWC**, Li R, Leung K, Hau SK, Wong ECH, "International Internet2 Connectivity Requirements for Tele-Imaging Consultation", PACS and Integrated Medical Information Systems: Design & Evaluation, SPIE International Symposium: Medical Imaging, San Diego, USA, 15-20 February 2003.

- Law MYY, **Chan WC**, Huang HK, Tang FH, "Expanding a Clinical PACS for Education and Research in a University Setting", InfoRad: 9208ED, Radiological Society of Northern America, 89th Scientific Assembly, Chicago, Illinois, 2003.

#### **Book Chapters:**

- **Chan LWC**, Chan ST, Lau TYH, Zhang YP, Liu Y, Wong AKS, Benzie IFF. A Conceptual Multidisciplinary Analytical Model of Carotid and Cerebral Atherosclerosis based on Artificial Intelligence. In: Wong J, Ng JK, Tsang KF, Tsang P, Wang FL (Eds.), Emergency Services and Healthcare Informatics, City University of Hong Kong, pp. 52-63, 2011.
- **Chan LWC**, Chan ST, Zheng YP, Wong AKS, Liu Y, Benzie IFF, DICOM-based Multidisciplinary Platform for Clinical Decision Support: Needs and Direction. In: Liu Y, Sun A, Loh HT, Lu WF, Lim E-P (Eds.), Advances of Computational Intelligence in Industrial Systems, Studies of Computational Intelligence, Springer: Berlin / Heidelberg, vol. 116, pp.191-212, 2008.
- Lai YM, **Chan WC**, Regional differences in cortical bone status in long bone shaft under habitual loading evaluated pQCT, quantitative backscattered electron imaging and polarized light microscopy. LING QIN, HK GENANT et al. (Ed.): Advanced Bioimaging Technologies in Assessment of Quality of Bone and Scaffold Biomaterials. Springer, 2006.

#### **Invited speech:**

**Lawrence Chan**, Biomedical Big Data Analytics – Current Trend and New Perspective. International Conference on Artificial Intelligence and Computer Engineering 2016, Wuhan, 18-19 June 2016. (Keynote Speech)

**Lawrence Chan**, Bioinformatics characterization of molecular imaging probes. Biomedical Engineering International Conference 2014, Hong Kong Productivity Council, 4 -6 December 2014. (Keynote Speech)

**Chan LWC**, Next-Generation Search Engine for PACS. Healthcare Information Exchange—How Public Meets Private? HKCEC, July 15, 2009.

#### **RESEARCH GRANTS:**

##### **External Competitive Research Grants:**

General Research Fund 2016-2017 (17119916). HK\$570,115 awarded.

Project duration: 24 months. On-going project

“Characterising and quantifying intratumour heterogeneity in cervical cancer with intravoxel incoherent motion diffusion-weighted MRI”.

PI: Lee, Elaine Yuen Phin, Co-I: **Chan, Wing Chi**, Dr Hui, Sai Kam, Prof Ngan, Hextan Yuen Sheung.

RGC Collaborative Research Fund 2014-2015 (Equipment, C7018-14E). HK\$4,000,000 awarded

“Micro-PET for pre-clinical molecular imaging research in Hong Kong”

PI: Pek-Lan Khong, Co-PI: Benjamin Yung, Cesar Wong, **Chan Wing Chi**, and other 14 Co-PIs

Health and Medical Research Fund 2014-2015 (02131026). HK\$1,000,000 awarded  
“Functional Role of MicroRNAs in EGFR-Targeted Therapy Resistance in Non-Small Cell Lung Cancer”  
PA: **Chan Wing Chi**, Co-A: Benjamin Yung, Cesar Wong, Helen Law, Lam Chan, Wan He

Health and Medical Research Fund 2014-2015 (14130462). HK\$1,000,000 awarded  
“Ecological relationship between Legionella and biofilm communities in potable water distribution system”  
PA: Leung Hang Mei Polly, Co-A: Mui Kwok Wai, Yip Shea Ping, **Chan Wing Chi**

General Research Fund 2011-2012 (511811). HK\$783,374 awarded.  
Project duration: 36 months. Completed project  
“Clinical Decision Support using Biomedical Ontology and Literature Supported Patient Similarity for Diagnostic and Prognostic Pattern Discovery from Electronic Health Records”.  
PI: **Chan Wing Chi**, Co-I: Liu Ying, Benzie Iris Frances Forster, Chan Tao, Shyu Chi-Ren.

#### **Internal Research Grants:**

Internal Grant for Proposals Rated 3.5 in GRF 2015-2016, Funding Source: Hong Kong Polytechnic University (G-YBK3). HK\$159,660 awarded.  
Project duration: 12 months. Ongoing project  
“A Binary-Descriptor Method for Identifying Multiple Co-expression Signatures with Unique Biological Contexts in Cancer”.  
PI: **Lawrence W.C. Chan**, Co-I: Sze Chuen Cesar Wong, Yat Ming Yung.

PolyU Internal Fund: Project of Strategic Importance 2014-2015. HK\$4,000,000 awarded  
“A multidisciplinary research on cancer and its metabolic risk factor: from computational characterisation, functional discovery to clinical diagnostics development”  
Team leader: Benjamin Yung, Team members: Sheaping Yip, Parco Siu, Cesar Wong, **Chan Wing Chi**, Winnie Kam

Internal Grant for Proposals Rated 3.5 in GRF 2012-2013, Funding Source: Hong Kong Polytechnic University (G-YL61). HK\$160,400 awarded.  
Project duration: 18 months. Completed project  
“Molecular Interaction Set Enrichment Analysis of Differential Pathway Patterns”.  
PI: **Lawrence W.C. Chan**, Co-I: Shea-ping Yip, Yat Ming Yung.

Dean’s Reserve, FHSS, Hong Kong Polytechnic University (87U7). HK\$326,000 awarded.  
Project duration: not specified. On-going project  
“Bioinformatics-based analysis of complex diseases”.  
PI: **Chan Wing Chi**, Co-I: Yip Shea Ping.

Competitive Research Grants for Newly Recruited Junior Academic, Funding Source: Hong Kong Polytechnic University (A-PC0B), HK\$150,000 awarded.  
Project duration: 18 months. Completed project  
“Development of a UMLS-integrated Ontology-based Similar ePR Search Engine”.  
PI: **Lawrence W.C. Chan**, Co-I: Iris F.F. Benzie, Phoebe S.T. Chan, Y. Liu.

Internal Competitive Research Grants - Single Department, Funding Source: Hong Kong Polytechnic University (A-PH74). HK\$120,000 awarded.

Project duration: 12 months. Completed project

“Artificial intelligent modelling of inter-relationships between biomarker profile and haemodynamic features of atherosclerosis in Type II Diabetes Mellitus”.

PI: **Lawrence W.C. Chan**, Co-I: Iris F.F. Benzie, Phoebe S.T. Chan, Thomas Y.H. Lau.

Internal Grant for Proposals Rated 3.5 in GRF 2008-2009, Funding Source: Hong Kong Polytechnic University (A-SA33). HK\$150,000 awarded.

Project duration: 12 months. Completed project

“Sketching a Multi-dimensional Arterial Health Status Map based on Fuzzy Expert System, Health Domain Expertise and Published Relative Risk Findings”.

PI: **Lawrence W.C. Chan**, Co-I: Iris F.F. Benzie, Phoebe S.T. Chan, Thomas Y.H. Lau, Y. Liu, Y.P. Zheng.

## RESEARCH AWARDS AND PATENTS:

### Research Awards:

Silver Award in the 53rd World Exhibition of Innovation, Research and New Technology: Tang FH, Law MYY, Lee A, **Chan L**, Mobile Image Distribution in Medical Picture Archiving and Communication System, 2004.

Certificate of Merit, in recognition of the excellence of InfoRad exhibit: Tang FH, Lee A, Law MYY, **Chan LWC**, Mobile Accessing Controller for Enterprise Picture Archiving and Communication System using Multiple Wireless Communication Modes, Radiological Society of Northern America, 89th Scientific Assembly, Chicago, Illinois, 2003.

### Patents:

**Chan LWC**, Benzie IFF, Fuzzy System for Cardiovascular Disease and Stroke Risk Assessment, Chinese Patent, 14 May, 2014. (CN101645142B)

A Fuzzy-logic algorithm was developed by aggregating the published associations of actionable and non-actionable risk factors with cardiovascular disease and stroke to a risk score. The risk assessment system based on such algorithm has a flexible structure, which allows the adaptive incorporation of newly discovered risk factors to the risk score calculation. The system has been launched at <http://www.polyu.edu.hk/bmi/vhealth.swf> (English version) and <http://www.polyu.edu.hk/bmi/vhealthc.swf> (Chinese version). The daily monitoring of cardiovascular disease and stroke risk is of particularly importance to the high-risk group, such as Diabetes patients.

Tang FH, **Chan LWC**, An Intelligent-Enhanced System for Early Detection of Idiopathic Scoliosis in Chest Radiography, Chinese Patent, 21 Nov, 2007. (CN100349548C)

Cobb angle measured from chest radiograph is widely used for assessing scoliosis. The intraobserver and interobserver variability and low image quality limit the validity and consistency of the measurement results. An intelligence system was developed to generate an index for scoliosis. We examined the consistency of the automatically generated index and its correlation with Cobb angle. It has been proved that the index can be used to assess the extent of spinal curvature rather than manual measurement on radiographs.