(I) **NUS Research Projects for Joint NUS-King's College London PhD Program**

Department of Biochemistry

Title of Research Project	Identifying G-protein-coupled receptors that regulate islet development and function: informing strategies for driving stem cell differentiation to beta-cells
Principal Investigator (PI)	 Adrian Kee Keong TEO, PhD
Title of PI	Dr
Name of Co-PI in KCL	Professor Shanta PERSAUD
Department of PI	Biochemistry and Medicine
Name of Institution	National University of Singapore
Address of PI	61 Biopolis Drive, Proteos, #06-07, Singapore 138673
Telephone Number	+65 6586 9641
Email Address	ateo@imcb.a-star.edu.sg; drainteo@gmail.com
Research Interests	stem cells; diabetes; pancreas; islet; beta cell; metabolism
Research Publications	1. Ng, H.J.N., Tan, W.X., Koh, Y.X., and Teo, K.K.A. (2019). Human islet isolation and distribution efforts for clinical and basic research. OBM transplantation, accepted. 2. Ng, H.J.N.#, Jasmen, B.J.#, Lim, C.S., Lau, H.H., Krishnan, V.G., Kadiwala, J., Kulkarni, R.N., Raeder, H., Vallier, L., Hoon, S., and Teo, K.K.A. (2019). HNF4A haploinsufficiency in MODY1 abrogates liver and pancreas differentiation from patient-derived iPSCs. iScience, accepted. #First authors

	3. Kang, N.-Y.#*, Soetedjo, A.A.P.#, Amirruddin, N.S., Chang, Y.-T., Eriksson, O., and Teo, K.K.A.* (2019). Tools for bioimaging pancreatic beta cells in diabetes. Trends Mol Med, accepted. #First authors *Corresponding authors 4. Dirice, E., De Jesus, D.F., Kahraman, S., Basile, G., Ng, R.W.S., El Ouaamari, A., Teo, K.K.A., Bhatt, S., Hu, J., and Kulkarni, R.N. (2019). Human duct cells contribute to β-cell compensation in insulin resistance. JCI Insight, accepted. 5. Dirice, E., Kahraman, S., De Jesus, D.F., El Ouaamari, A., Basile, G., Baker, R., Yigit, B., Piehowski, P.D., Kim, M.J., Dwyer, A.J., Ng, R.W.S., Schuser, C., Vethe, H., Martinov, T., Ishikawa, Y., Teo, K.K.A., Smith, R.D., Hu, J., Haskins, K., Serwold, T., Qian, W.-J., Fife, B.T., Kissler, S., and Kulkarni, R.N. (2019). Increased β-cell proliferation prior to immune-cell invasion prevents progression of type 1 diabetes. Nat Metab, accepted. 6. Nguyen, L., Chan, S.Y., and Teo, K.K.A. (2018). Metformin from mother to unborn child – are there unwarranted effects? EBioMedicine 35, 394-404. 7. Ng, H.J.N., and Teo, K.K.A. (2018). Heterogeneity and cell fate flux in single human pancreatic islet cells. Cell Death Disease 9, 222. 8. Teo, K.K.A.*, Lim, C.S., Cheow, L.F., Kin, T., Shapiro, J.A., Kang, N.-Y., Burkholder, W., and Lau, H.H. (2018). Single cell analyses of human islet cells reveal de-differentiation signatures. Cell Death Discovery 4, 14. *Corresponding author 9. Lau, H.H., Ng, H.J.N., Loo, S.W.L., Jasmen, B.J., and Teo, K.K.A. (2018). The molecular functions of hepatocyte nuclear factors – in and beyond the liver. J Hepatol. 68, 1033-1048. 10. Loo, S.W.L., Lau, H.H., Jasmen, B.J., Lim, C.S., and Teo, K.K.A. (2018). An arduous journey from human pluripotent stem cells to functional pancreatic β-cells. Diabetes, Obesity and Metabolism 20, 3-13. (Journal Cover Image)

	11. Isaac, A.*, Kodali, A.*, Nguyen, L., Teo, K.K.A., Chang, C.W., Karnani, N., Ng, K.L., Chong, Y.S., Gluckman, P.D., and Stunkel, W. (2017). Gestational diabetes alters functions in offspring's umbilical cord cells with implications for cardiovascular health. Endocrinology 158, 2102-2112. Selected for Endocrine Society Thematic Issue: Diabetes 2018 (https://academic.oup.com/endocrinesociety/pages/thematic_issue_diabetes_2018) 12. Valdez, I.A., Dirice, E., Gupta, M.K., Shirakawa, J., Teo, K.K.A.*, and Kulkarni, R.N.* (2016). Proinflammatory cytokines induce endocrine differentiation in pancreatic ductal cells via STAT3-dependent NGN3 activation. Cell Reports 15, 1-11. *Co-senior and Co-corresponding authors F1000Prime article recommendation: http://f1000.com/prime/726281818 13. Teo, K.K.A.*, Lau, H.H., Valdez, I.A., Dirice, E., Tjora, E., Raeder, H., and Kulkarni, R.N.* (2016). Early developmental perturbations in a human stem cell model of MODY5/HNF1B pancreatic hypoplasia. Stem Cell Reports 6, 357-367. *Corresponding authors 14. Santosa, M., Low S.J.B., Pek M.Q.N., and Teo, K.K.A. (2016). Knowledge gaps in rodent pancreas biology: taking human pluripotent stem cell-derived pancreatic beta cells into our own hands. Front. Endocrinol. 6, 194. 15. Gupta, M.K., Teo, K.K.A., Rao, T.N., Bhatt, S., Kleinridders, A., Shirakawa, J., Takatani, T., Hu, J., De Jesus, D.F., Windmueller, R., Wagers, A.J., and Kulkarni, R.N. (2015). Excessive cellular proliferation negatively impacts reprogramming efficiency of human fibroblasts. Stem Cells Transl Med 4, 1101-1108. 16. Teo, K.K.A.*, Gupta, M.K., Doria, A., and Kulkarni, R.N.* (2015). Dissecting diabetes/metabolic disease mechanisms using pluripotent stem cells and genome editing tools. Mol Metab 4, 593-604. *Corresponding authors 17. Teo, K.K.A., Tsuneyoshi, N., Hoon, S., Tan, E.-K., Stanton, L.W., Wright, C.V., and Dunn, N.R. (2015). PDX1 binds and represses hepatic genes to ensure robust

	pancreatic commitment in differentiating human embryonic stem cells. Stem Cell Reports 4, 578-590. 18. Valdez, I.A.#, Teo, K.K.A.#*, and Kulkarni, R.N.* (2015). Cellular stress drives pancreatic plasticity. Sci. Transl. Med. 7, 273ps2. #First authors *Corresponding authors 19. Teo, K.K.A.*, Valdez, I.A., Dirice, E., and Kulkarni, R.N.* (2014). Comparable generation of Activin-induced definitive endoderm via additive Wnt or BMP signalling in absence of serum. Stem Cell Reports 3, 5-14. *Corresponding authors 20. Dirice, E., Kahraman, S., Jiang, W., El Ouaamari, A., De Jesus, D., Teo, K.K.A., Hu, J., Kawamori, D., Gaglia, J., Mathis, D., and Kulkarni, R.N. (2014). Soluble factors secreted by T-cells promote β cell proliferation. Diabetes 63, 188-202. 21. Teo, K.K.A., Wagers, A.J., and Kulkarni, R.N. (2013). New opportunities: harnessing induced pluripotency for discovery in diabetes and metabolism. Cell Metabolism 18, 775-791. 22. Teo, K.K.A., Windmueller, R., Johansson, B.B., Dirice, E., Njolstad, P.R., Tjora, E., Raeder, H., and Kulkarni, R.N. (2013). Derivation of human induced pluripotent stem cells from patients with maturity onset diabetes of the young. J Biol Chem. 288, 5353-5356. 23. Teo, K.K.A., and Kulkarni, R.N. (2012). Setting sail for glucose homeostasis with the AKAP150-PP2B-anchor. EMBO J. 31, 3956-3957. 24. Teo, K.K.A.*, Ali, Y.*, Wong, K.Y., Chipperfield, H., Sadasivam, A., Poobalan, Y., Tan, E.-K., Wang, S.-T., Abraham, S., Tsuneyoshi, N., Stanton, L.W., and Dunn, N.R. (2012). Activin and BMP4 synergistically promote formation of definitive endoderm in human embryonic stem cells. Stem Cells 30, 631-642. *Equal contribution

25. Brown, S., Teo, A., Pauklin, S., Hannan, N., Cho, C.H.-H., Lim, B., Vardy, L., Dunn, N.R., Trotter, M.W.B., Pedersen, R., and Vallier, L. (2011). Activin/Nodal signalling controls divergent transcriptional networks in human embryonic stem cells and in endoderm progenitors. Stem Cells 29, 1176-1185.

26. Teo, K.K.A., Arnold, S.J., Trotter, M.W.B., Brown, S., Ang, L.T., Chng, Z., Robertson, E.J., Dunn, N.R., and Vallier, L. (2011). Pluripotency factors regulate definitive endoderm specification through Eomesodermin. Genes Dev. 25, 238-250.
Perspective: Loh, K.M., and Lim, B. (2011). A precarious balance: pluripotency factors as lineage specifiers.
F1000Prime article recommendation: http://f1000.com/prime/8271956

27. Teo, K.K.A., and Vallier, L. (2010). Emerging use of stem cells in regenerative medicine. Biochem. J. 428, 11-23.

28. Chng, Z., Teo, A., Pedersen, R.A., and Vallier, L. (2010). SIP1 mediates cell-fate decisions between neuroectoderm and mesendoderm in human pluripotent stem cells. Cell Stem Cell 6, 59-70.

29. Vallier, L., Mendjan, S., Brown, S., Chng, Z., Teo, A., Smithers, L.E., Trotter, M.W., Cho, C.H., Martinez, A., Rugg-Gunn, P., Brons, G., and Pedersen, R.A. (2009). Activin/Nodal signalling maintains pluripotency by controlling Nanog expression. Development 136, 1339-1349.

Department of Medicine

Title of Research Project	Data science and machine learning approach to novel healthcare phenotypes
Principal Investigator (PI)	Chester Drum MD PhD 
Title of PI (Dr/Prof)	Dr
Name of Co-PI in KCL	Stefanos Leonardos
Department of PI	Medicine
Name of Institution	Yong Loo Lin School of Medicine
Address of PI	14 Medical Drive, Singapore, 117599
Telephone Number	+65 83183106
Email Address	mdccld@nus.edu.sg
Research Interests	Multi-omics, R, Python, UK-Biobank (have local download), super-computing, mass spectrometry, clinical outcomes, distributed ledger systems
Research Publications	Brandon N S Ooi, Raechell Raechell, Ariel F Ying, Yong Zher Koh, Yu Jin, Sherman W L Yee, Justin H S Lee, Samuel S Chong, Jack W C Tan, Jianjun Liu, Caroline G Lee, **Chester L Drum**, Robust performance of potentially functional SNPs in

	machine learning models for the prediction of atorvastatin-induced myalgia, Frontiers in Pharmacology, 2021 Apr 22;12:605764. doi: 10.3389/fphar.2021.605764. eCollection (**IF = 5.8**)1. Yee WL, **Drum CL**, Increasing Complexity to Simplify Clinical Care: High Resolution Mass Spectrometry as an Enabler of AI Guided Clinical and Therapeutic Monitoring. Adv. Therapeutics. 2020 Mar. doi.org/10.1002/adtp.201900163 (**IF=5.2**)1. Sen Hee Tay, Amelia Santosa, Eugene Chen Howe Goh, Chun Xiang Xu, Dip Nur, Lik Hang Wu, Mei Bigliardi-Qi, Leroy Sivappiragasam S/O Pakkiri, Bernett Teck Kwong Lee, **Chester Lee Drum*** and Paul Lorenz Bigliardi*, Distinct Transcriptomic and Metabolomic Profiles Characterize NSAID-Induced Urticaria/Angioedema Patients Undergoing Aspirin Desensitization, Journal of Allergy and Clinical Immunology, 2022 Aug 11:S0091-6749(22)01053-3. doi:10.1016/j.jaci.2022.07.025 (*co-senior author, **IF=10.8**)1. Ng Mei Li, Win Sen Kuan, LEROY PAKKIRI, Eugene Chen Howe Goh, Lik Hang Wu and **Chester Drum**, Deep Phenotyping of Oxidative Stress in Emergency Room Patients Reveals Homoarginine as a Novel Predictor of Sepsis Severity, Length of Hospital Stay and Length of ICU Stay, Frontiers in Medicine (*in press*) (**IF=5.08**)
Name of Co-PI in KCL	Stefanos Leonardos stefanos.leonardos@kcl.ac.uk
Department of Co-PI	Computer Science
Photo of Co-PI	

Title of Research Project	Deep phenotyping of oxidative stress in patients using mass spectroscopy: A fundamental mystery for patient outcomes
Principal Investigator (PI)	 Chester Drum
Title of PI (Dr/Prof)	Dr
Name of Co-PI in KCL	Mark Parkin
Department of PI	Medicine
Name of Institution	Yong Loo Lin School of Medicine
Address of PI	14 Medical Drive, Cardiovascular Research Institute, MD6, Level 8, Singapore 117599
Telephone Number	+65 6601 5010
Email Address	mdccld@nus.edu.sg
Research Interests	Mass spectrometry, clinical research, biomarkers, precision medicine, artificial intelligence
Research Publications	Krishnamurthy S, Muthukumaran P, Jayakumar MKG, Lisse D, Masurkar ND, Xu C, Chan JM, **Drum, C.L.** Surface protein engineering increases the circulation time of a cell membrane- based nanotherapeutic. Nanomedicine. 2019 Mar 8;18:169-178. doi: 10.1016/j.nano.2019.02.024. (IF=6.5) 1. Haldar, S., Pakkiri, L., Lim, J., Chia, S-C., Ponnalagu, S., **Drum, C.L.**, Jeyakumar, C. H., (2019). Reductions in postprandial plasma allantoin concentrations with increasing doses of polyphenol rich curry intake – a

	randomized crossover trial, Front. Physiol., 09 January 2019 https://doi.org/10.3389/fphys.2018.01899 (IF=4.13) 2. Purnamawati, K., Ong, J. A. H., Deshpande, S., Tan, W. K. Y., Masurkar, N., Low, J. K., & **Drum, C. L.** (2018). The importance of sex stratification in autoimmune disease biomarker research: A systematic review. Frontiers in Immunology, 9(JUN). doi:10.3389/fimmu.2018.01208 (IF=6.43) 3. Tan WKY, Purnamawati K, Pakkiri LS, Tan SH, Yang X, Chan MY, **Drum CL**, Sources of variability in quantifying circulating thymosin beta-4: Literature review and recommendations, Expert Opinion on Biological Therapy 2018 Mar 12:1-7. doi: 10.1080/14712598.2018.1448382. (IF = 3.68) 4. Patra A, Ding T, **Drum CL**, Using extraordinary optical transmission to quantify cardiac biomarkers in human serum, J Vis Exp. 2017 Dec 13;(130). doi: 10.3791/55597 (IF = 1.36) 5. Deshpande, S., Masurkar, N. D., Girish, V. M., Desai, M., Chakraborty, G., Chan, J. M., & **Drum, C. L.** Thermostable exoshells fold and stabilize recombinant proteins. Nature Communications, 2017 Nov. 13, 138(1), 1442. doi:10.1038/s41467-017-01585-2 (IF = 13) 6. Ohlson S, Kaur J, Raida M, Niss U, Bengala T, **Drum CL**, et al. Direct Analysis − No Sample Preparation − of Bioavailable Cortisol in Human Plasma by Weak Affinity Chromatography (WAC). Journal of Chromatography B. 2017 Jul. (IF = 4.17) 7. **Drum CL**, Tan KY, Chan SP, Pakkiri LS, Chong PC, Liew OW, et. al, Thymosin beta-4 is elevated in women with heart failure with preserved ejection fraction, Journal of the American Heart Association. American Heart Association, Inc; 2017 Jun 1;6(6):e005586. (IF = 5.12) PMID: 28611096 / DOI: 10.1161/JAHA.117.005586 8. Patra A, Ding T, Engudar G, Yi W, Dykas M, Liedberg B, Kah J, Venkatesan T, **Drum CL.** Component Specific Analysis of Plasma Protein Corona Formation On Gold Nanoparticles Using Multiplexed Surface Plasmon Resonance. Small. 2016 03-20;12(9):1174-82. doi: 10.1002/smll.201501603. (IF = 8.6) 9. Garcia-Miralles M, Ooi J, Bardile CF, Tan LJ, George M, **Drum CL**, et al. Treatment with the MAO-A inhibitor clorgyline elevates monoamine

	neurotransmitter levels and improves affective phenotypes in a mouse model of Huntington disease. Experimental Neurology. 2016 Jan 26;278:4–10. (5yr IF = 4.479, 2yr IF = 4.6) 10. Halliwell B, Cheah IK, **Drum CL**. Ergothioneine, an adaptive antioxidant for the protection of injured tissues? A hypothesis. Biochem Biophys Res Commun. 2016 Jan 6. doi: 10.1016/j.bbrc.2015.12.124 (5yr IF = 2.392, 2yr IF = 2.37) 11. Ding T, Hong M, Richards AM, It Wong Ten, Zhou X, **Drum CL**. Quantification of a Cardiac Biomarker in Human Serum Using Extraordinary Optical Transmission (EOT). PLoS ONE. 2015 Mar 16;10(3):e0120974. (IF = 3.02)

Department of Pharmacology

Title of Research Project	Signalling functions of amyloid precursor protein intracellular domain in neuroinflammation
Principal Investigator (PI)	 Gavin Dawe
Title of PI	Associate Professor
Name of Co-PI in KCL**	Chris Miller
Department of PI	Pharmacology
Name of Institution	National University of Singapore
Address of PI	#04-01Y, Block MD3, 16 Medical Drive, Singapore 117600
Telephone Number	+65 6516 8864

Email Address	gavindawe@nus.edu.sg
Research Interests	Stapled peptides, neuropharmacology, neurodegenerative diseases, amyloid precursor protein, cognitive function, adult neurogenesis, stem cells, depression, anxiety, relaxin-3, electrophysiology, and behavioural neuroscience.
Research Publications	More than 90 peer reviewed publications, H-index = 31. Selected relevant publications: 1. Liu C, Zhang CW, Zhou Y, Wong WQ, Lee LC, Ong WY, Yoon SO, Hong W, Fu XY, Soong TW, Koo EH, Stanton LW, Lim KL, Xiao ZC*, Dawe GS*. APP upregulation contributes to retinal ganglion cell degeneration via JNK3. Cell Death Differ. 2018 Mar;25(4):661-676. 2. Li S, Wang X, Ma QH, Yang WL, Zhang XG, Dawe GS*, Xiao ZC*. Amyloid precursor protein modulates Nav1.6 sodium channel currents through a Go-coupled JNK pathway. Sci Rep. 2016 Dec 23;6:39320. 3. Liu C, Tan FC, Xiao ZC, Dawe GS*. Amyloid precursor protein enhances Nav1.6 sodium channel cell surface expression. J Biol Chem. 2015 May 8;290(19):12048-57. 4. Shu R, Wong W, Ma QH, Yang ZZ, Zhu H, Liu FJ, Wang P, Ma J, Yan S, Polo JM, Bernard CC, Stanton LW*, Dawe GS*, Xiao ZC*. APP intracellular domain acts as a transcriptional regulator of miR-663 suppressing neuronal differentiation. Cell Death Dis. 2015 Feb 19;6:e1651. 5. Ma QH, Futagawa T, Yang WL, Jiang XD, Zeng L, Takeda D, Xu RX, Bagnard D, Schachner M, Furley AJ, Karagogeos D, Watanabe K, Dawe GS*, Xiao ZC*. A TAG1-APP signalling pathway through Fe65 negatively modulates neurogenesis. Nature Cell Biology, 2008, 10(3):283-294
Name of Co-PI in KCL	Chris Miller
Department of Co-PI	Department of Basic and Clinical Neuroscience
Photo of Co-PI	

Department of Physiology

Title of Research Project	Investigation of neural stem cell homeostasis in Drosophila
Principal Investigator (PI)	 Hongyan WANG
Title of PI	Professor
Name of Co-PI in KCL	Rita Sousa-Nunes
Department of PI	NUS Physiology and Duke-NUS Medical School
Name of Institution	National University of Singapore
Address of PI	Duke-NUS Medical School, 8 College Road
Telephone Number	+ 65 6516 7740
Email Address	gmswh@nus.edu.sg
Research Interests	Neural stem cells, cancer, neurodevelopmental disorders
Research Publications	Nature Communications, PLOS Biology, Developmental Cell, eLife, etc.

Title of Research Project	**The role of TDP43 in neural lineages formation and their degenerative dysfunction**
Principal Investigator (PI)	Ling Shuo-Chien
Title of PI (Dr/Prof)	Associate Professor
Address of PI	12 Science Drive 2, MD1, 16-03-H, NUS, SG 117549
Telephone Number	+65 6601 3645
Email Address	phsling@nus.edu.sg
Research Interests	Aging, neurodegeneration, RNA biology, autophagy, neurodevelopment

Research Publications (**TDP-43 related papers (selected)**)	1. *Ho WY*[#], *Chang JC*[#], *Lim K*[#], Cazenave-Gassiot A, Nguyen AT, Foo JC, Muralidharan S, Viera-Ortiz, A, *Ong SJM*, Agrawal I, Hoon S, Arogundade OA, Rodriguez MJ, Lim SM, Kim SH, Wenk MR, Lee EB, Ravits J, Tucker-Kellogg G, ***Ling, S.-C.****, "TDP-43 mediates SREBF2-regulated gene expression required for oligodendrocyte myelination", ***J. Cell Biol.***, 2021*,* 220(9):e201910213 ****: corresponding author*** 2. Chang KJ, Agrawal I, Vainshtein A, Ho WY, Xin W, Tucker-Kellogg G, Susuki K, Peles, ***Ling, S.-C.****, Chan J. R.*, "TDP-43 represses a cryptic exon in Schwann cells to ensure rapid saltatory conduction", ***eLIFE****,* 2021 (10):e64456, ****: co-corresponding author*** 3. Peng AYT[#], Agrawal I[#], Ho WY[#], Yen YC, Pinter AJ, Liu J, Phua QXC, Koh KB, Chang JC, Sanford E, Man JHK, Wong P, Gutmann DH, Tucker-Kellogg G, ***Ling, S.-C.****, "Loss of TDP-43 in astrocytes leads to motor deficits by triggering A1-like reactive phenotype and triglial dysfunction", ***Proc Natl Acad Sci U S A****.,* 2020*,* 117(46):29101-29112, ****: corresponding author*** 4. Wong, P, Ho, W. Y., Yen Y.-C., ***Ling, S.-C.****, "The vulnerability of motor and frontal cortex-dependent behaviors in mice expressing ALS-linked mutation in TDP-43", ***Neurobiology of Aging***, 2020 92:43-60 ****: corresponding author*** 5. Wang, J., Ho, H.W., Lim, K., Feng, J., Tucker-Kellogg, G., Nave., K.-A., ***Ling, S.-C.*,*** "Cell-autonomous requirement of TDP-43, an ALS/FTD signature protein, for oligodendrocyte survival and myelination", ***Proc Natl Acad Sci U S A***., 2018, 115(46):E10941-10950, ****: corresponding author*** 6. Bennet, C., Dastidar, S., ***Ling, S.-C.***, Malik, B., Ashe, T., Miller, D., Van Es, M., Matthew., M., Lee., C., Chen., Y. Sopher, B., Cleveland, D., La Spada, A., "Senataxin mutations elicit motor neuron degeneration phenotype and yield TDP-43 misloclaization in ALS4 mice and human patients" ***Acta Neuropathologica,*** 2018, 136(3):425-443 7. ***Ling, S.-C.****, "Synaptic paths to neurodegeneration: the emerging role of TDP-43 and FUS in synaptic functions", ***Neural Plasticity***, 2018, doi: 10.1155/2018/8413496, ****: corresponding author***

	8. Ditsworth, D., Maldonado, M., McAlonis-Downes, M., Sun, S., Seelman, A., Drenner, K., Arnold, E., ***Ling, S.-C***., Pizzo, D., Ravits, J., Cleveland, D. W., Da Cruz, S., "Mutant TDP-43 within motor neurons drive disease onset but not progression in Amyotrophic Lateral Sclerosis", ***Acta Neuropathologica***, 2017 (351):602 9. Mitchell, J. C., Constable, R., So, E., Vance, C., Scotter, E., Glover, L., Hortobagyi, T., Arnold, E. S., ***Ling, S.-C.***, McAlonis, M., Da Cruz, S., Polymenidou, M., Tessarolo, L., Cleveland, D. W., Shaw, C. E., "Wild type human TDP-43 potentiateds ALS-linked mutant TDP-43 driven progressive motor and cortical neuron degeneration with pathological features of ALS." ***Acta Neuropathol Commun*** *2015* (3):36 10. ***. Ling, S.-C.,*** Polymenidou M., and Cleveland, D. W., "Converging mechanisms in ALS and FTLD: disrupted RNA or protein homeostasis." ***Neuron****, 2013:* 416-438 11. Arnold, E.*, ***Ling, S.-C****., Lagier-Tourenne C., Polymenidou M., Huelga S., Ditsworth, D., Kordasiewicz, H. B., McAlonis-Downes, M., Platoshyn, O., Parone, P., Da Cruz, S., Swing, D. Tessarollo, L., Marsala, M., Shaw, C. E., Yeo, Y., Cleveland, D. W., "ALS-linked TDP-43 mutantions produce aberrant RNA splicing and adult-onset motor disease without aggregation or loss of nuclear TDP-43." ***Proc Natl Acad Sci U S A****, 2013:* E736-745. **** co-first author*** 12. Polymenidou M., Lagier-Tourenne C., Hutt K. R., Huelga S. C., Moran J., Liang T. Y., ***Ling S.-C.***, Sun E., Wancewicz E., Mazur C., Kordasiewicz, H., Sedaghat Y., Donohue J. P., Shiu L., Bennett C. F., Yeo G. W., Cleveland D. W., "Long pre-mRNA depletion and RNA missplicing contribute to neuronal vulnerability from loss of TDP-43." ***Nature Neurosci.***, 2011: 459-468 13. ***Ling S.-C.***, Albuquerque, C., Han, J.-S., Lagier-Tourenne, C., Tokunaga, S., Zhou, H., Cleveland, D. W., "ALS-associated mutations in TDP-43 increase its stability and promote TDP-43 complexes with FUS/TLS." ***Proc Natl Acad Sci U S A.****,* 2010: 13318-13323

Photo of PI	
Name of Co-PI in KCL	Frank Hirth
Department of Co-PI	Reader of Evolutionary Neuroscience King's College London Institute of Psychiatry, Psychology & Neuroscience Maurice Wohl Clinical Neuroscience Institute Department of Basic & Clinical Neuroscience 5 Cutcombe Road, 3rd floor London SE5 9RX United Kingdom
Photo of Co-PI	

(II) NUS Research Projects for Joint NUS-King's College London PhD Program

Department of Biochemistry

Title of Research Project	Identify molecular signatures of early prediction of therapy resistance and recurrence to develop surveillance strategies for personalized treatment
Principal Investigator (PI)	Deng Lih Wen
Title of PI (Dr/Prof)	Associate Professor
Address of PI	Department of Biochemistry, Yong Loo Lin School of Medicine, National University of Singapore, 8 Medical Drive, MD7, #04-07, Singapore 117597
Telephone Number	+65-65161239
Email Address	bchdlw@nus.edu.sg
Research Interests	Understanding the cellular and molecular mechanism in cancer development and developing novel targets for therapeutic cancer intervention. Current research areas include: 1) Genomic instability and chromatin dynamics in cancer development; 2) Mechanisms of therapy resistance; 3) Therapeutic potential of targeting cancer metabolism and tumor microenvironment
Research Publications	**Publication in the past 5 years relevant to the proposed study.** 1. Bui QT, Lee KD, Fan YC, Lewis BS, **Deng LW**, Tsai YC. (2023) Disruption of CCL2 in Mesenchymal Stem Cells as an Anti-Tumor Approach against Prostate Cancer. **Cancers** (Basel). 15(2):441. 2. Peng L, Jiang J, Chen HN, Zhou L, Huang Z, Qin S, Jin P, Luo M, Li B, Shi J, Xie N, **Deng LW**, Liou YC, Nice EC, Huang C, Wei Y. (2021) Redox-sensitive cyclophilin A elicits chemoresistance through realigning cellular oxidative status in colorectal cancer**.** **Cell Reports**. 37(9):110069. (5-Yr Impact Factor= 10.4) 3. Nin DS, Wujanto C, Tan TZ, Lim D, Daman JAM, Wu K-Y, Dai MZY, Lee ZW, Idres S, Leong YH, Jha S, Ng JS-Y, Low JJH, Chang S-C, Tan DSP, Wu W, Choo BA and **Deng LW** (2021). GAGE mediates radioresistance in cervical cancers via the regulation of chromatin accessibility, **Cell Reports**. 36(9):109621. (5-Yr Impact Factor= 10.4)

	4. Liu C, Xie J, Wu W, Wang M, Chen W, Binte Idres S, Rong J, **Deng LW**, Khan SA, Wu J (2021) Automated Synthesis of Prexasertib and Derivatives Enabled by Continuous Flow Solid Phase Synthesis. **Nature Chemistry** 13(5):451-457. (5-Yr Impact Factor= 27.3) 5. Ho YK, Woo JY, Tu GXE, **Deng LW**, Too HP. (2020) A highly efficient non-viral process for programming mesenchymal stem cells for gene directed enzyme prodrug cancer therapy. **Sci Rep**. 2020 10(1):14257. (5-Yr Impact Factor= 5.0) 6. Novera W, Lee ZW, Nin DS, Dai MZ, Binte Idres S, Wu H, Damen JMA, Tuan ZT, Sim AYL, Long YC, Wu W, Huang RY, **Deng LW**. (2020) Cysteine deprivation targets ovarian clear cell carcinoma via oxidative stress and iron-sulfur cluster biogenesis deficit. **Antioxid Redox Signal**. 33(17):1191-1208. (5-Yr Impact Factor= 7.5) 7. Nin DS, Idres SB, Song ZJ, Moore PK, **Deng LW** (2020) Biological Effects of Morpholin-4-Ium 4 Methoxyphenyl (Morpholino) Phosphinodithioate and Other Phosphorothioate-Based Hydrogen Sulfide Donors. **Antioxid Redox Signal**. 32(2):145-158. 8. Zhou P, Ding X, Wan X, Liu L, Yuan X, Zhang W, Hui X, Meng G, Xiao H, Li B, Zhong J, Hou F, **Deng LW**, Zhang Y. (2018) MLL5 suppresses antiviral innate immune response by facilitating STUB1-mediated RIG-I degradation. **Nat Commun**. 9(1):1243. (4-Yr Impact Factor=11.82) 9. Lee ZW, Teo XY, Song ZJ, Nin DS, Novera W, Choo BA, Dymock BW, Moore PK, Huang RY, **Deng LW** (2017) Intracellular Hyper-Acidification Potentiated by Hydrogen Sulfide Mediates Invasive and Therapy Resistant Cancer Cell Death. **Front Pharmacol**. 8:763. doi: 10.3389/fphar.2017.00763. eCollection 2017. (Impact Factor = 5.9) 10. Zhang XM, Novera W, Zhang Y, **Deng LW** (2017) MLL5 (KMT2E): structure, function, and clinical relevance. **Cell Mol Life Sci**. 74(13):2333-2344. Review. (Impact Factor = 9.2)

Photo of PI	
Name of Co-PI in KCL	To be confirmed
Department of Co-PI	School of Cancer & Pharmaceutical Sciences Faculty of Life Sciences & Medicine
Photo of Co-PI	

Department of Pathology

Title of Research Project	Role of Inflammation in Cancer
Principal Investigator (PI)	 Vinay Tergaonkar
Title of PI (Dr/Prof)	Professor
Name of Co-PI in KCL	Professor Joy Burchell, Professor Sarah Pinder, Professor Arnie Purushotham, Professor Andrew Tutt
Department of PI	Pathology/Biochemistry
Name of Institution	National University of Singapore and IMCB
Address of PI	61, Biopolis Drive, Singapore 138673
Telephone Number	+65 6586 9836
Email Address	vinayt@imcb.a-star.edu.sg
Research Interests	Inflammation and Cancer, Telomerase and aging, Genomics.

Research Publications	1. Landscape of human mast cell chromatin: a rich resource for identification of novel mediators and genetic drivers of allergic and inflammatory diseases. Cildir G, John Toubia, Kwok Ho Yip, Mingyan Zhou, Harshita Pant, Pravin Hissaria, Jingxian Zhang, Wanjin Hong, Nirmal Robinson, Michele A. Grimbaldeston, Angel F. Lopez, Tergaonkar V. (2019). Immunity. In Press. 2. Long-Range Chromatin Interactions Drive Mutant TERT PromoterActivation.<https://www.ncbi.nlm.nih.gov/pubmed/27650951> Akıncılar SC, Khattar E, Boon PL, Unal B, Fullwood MJ, Tergaonkar V. (2016). Cancer Discovery. 6(11):1276-1291. 3. Telomerase reverse transcriptase promotes cancer cell proliferation by augmenting tRNA expression. Khattar E, Kumar P, Liu CY, Akıncılar SC, Raju A, Lakshmanan M, Maury JJ, Qiang Y, Li S, Tan EY, Hui KM, Shi M, Loh YH, Tergaonkar V. (2016) Journal of Clinical Investigation. 126(10):4045-4060. 4. Non-canonical NF-κB signalling and ETS1/2 cooperatively drive C250T mutant TERT promoter activation.<https://www.ncbi.nlm.nih.gov/pubmed/26389665> Li Y, Zhou QL, Sun W, Chandrasekharan P, Cheng HS, Ying Z, Lakshmanan M, Raju A, Tenen DG, Cheng SY, Chuang KH, Li J, Prabhakar S, Li M, Tergaonkar V. (2015) Nature Cell Biology. 17(10):1327-38. 5. Telomerase regulates MYC-driven oncogenesis independent of its reverse transcriptase activity.<https://www.ncbi.nlm.nih.gov/pubmed/25893605> Koh CM, Khattar E, Leow SC, Liu CY, Muller J, Ang WX, Li Y, Franzoso G, Li S, Guccione E, Tergaonkar V. (2015). Journal of Clinical Investigation. 125(5):2019-22 6. NUCKS is a positive transcriptional regulator of insulin signaling. Beiying Qiu, Xiaohe Shi, EeTsin Wong, Joy Lim, Hannah L.F. Swa, Jayantha Gunaratne, Kenneth Cheng, Karen Lam, Aimin Xu, Weiping Han, Tergaonkar V. (2014). Cell Reports. 7(6):1876-86.

	7. Telomerase directly regulates NF-κB-dependent transcription.<https://www.ncbi.nlm.nih.gov/pubmed/23159929> Ghosh A, Saginc G, Leow SC, Khattar E, Shin EM, Yan TD, Wong M, Zhang Z, Li G, Sung WK, Zhou J, Chng WJ, Li S, Liu E, Tergaonkar V. (2012) Nature Cell Biology. 14(12):1270-81. 8. ATM-dependent ELKS ubiquitination coordinates IKK activation in response to genotoxic stress. Wu Z, Wong ET, Shi Y, Chen Z, Miyamoto S, Tergaonkar V. (2010). Molecular Cell. 40(1): 75-86. 9. Telomere independent Rap1 is an IKK-adaptor and regulates NFKB-dependent gene expression. Teo H, Ghosh S, Luesch H, Wong ET, Ghosh A, Malik N, Orth A, de Jesus P, Perry AP, Oliver JD, Tran NL, Speiser LJ, Saez E, Schultz P, Chanda S, Verma IM, Tergaonkar V. (2010). Nature Cell Biology. (12)(8):758-67. 10 . WIP1 phosphatase is a negative regulator of NF-kappaB signalling. Chew J, Biswas S, Shreeram S, Humaidi M, Wong ET, Dhillion MK, Teo H, Hazra A, Fang CC, López-Collazo E, Bulavin DV, Tergaonkar V. (2009). Nature Cell Biology. 11(5):659-66.

Department of Physiology

Title of Research Project	Characterisation and validation of early biomarkers of AD
Principal Investigator (PI)	 John Chua
Title of PI (Dr/Prof)	Dr
Name of Co-PI in KCL	To be confirmed

Department of PI	Physiology
Name of Institution	National University of Singapore
Address of PI	28 Medical Drive, Centre for Life Sciences, Singapore 117456
Telephone Number	+65 6601 5178
Email Address	phsjcje@nus.edu.sg
Research Interests	Synapse, protein trafficking, Neurodevelopment, Neurodegeneration, Proteomics, Interactomics
Research Publications	(Selected) Koopmans, F., van Nierop, P., Andres-Alonso, M., Byrnes, A., Cijsouw, T., Coba, M.P., Cornelisse, L.N., Farrell, R.J., Goldschmidt, H.L., Howrigan, D.P.*, et al.* (2019). SynGO: An Evidence-Based, Expert-Curated Knowledge Base for the Synapse. Neuron. Yagensky, O., Nodehi, M.K., Rabe, T., Zafar, S., Zerr, I., and En Chua, J.J. (2018). Deciphering the Progression of Alzheimer's Disease by Proteomic Analysis. Alzheimer's & Dementia *14*. Yagensky, O., Kalantary Dehaghi, T., and Chua, J.J. (2016). The Roles of Microtubule-Based Transport at Presynaptic Nerve Terminals. Frontiers in synaptic neuroscience *8*, 3. Kohansal-Nodehi, M., Chua, J.J., Urlaub, H., Jahn, R., and Czernik, D. (2016). Analysis of protein phosphorylation in nerve terminal reveals extensive changes in active zone proteins upon exocytosis. eLife *5*. Butkevich, E., Hartig, W., Nikolov, M., Erck, C., Grosche, J., Urlaub, H., Schmidt, C.F., Klopfenstein, D.R., and Chua, J.J. (2016). Phosphorylation of FEZ1 by Microtubule Affinity Regulating Kinases regulates its function in presynaptic protein trafficking. Scientific reports *6*, 26965.

	Binotti, B., Pavlos, N.J., Riedel, D., Wenzel, D., Vorbruggen, G., Schalk, A.M., Kuhnel, K., Boyken, J., Erck, C., Martens, H.*, et al.* (2015). The GTPase Rab26 links synaptic vesicles to the autophagy pathway. eLife *4*, e05597. Boyken, J., Gronborg, M., Riedel, D., Urlaub, H., Jahn, R., and Chua, J.J. (2013). Molecular profiling of synaptic vesicle docking sites reveals novel proteins but few differences between glutamatergic and GABAergic synapses. Neuron *78*, 285-297. Chua, J.J., Butkevich, E., Worseck, J.M., Kittelmann, M., Gronborg, M., Behrmann, E., Stelzl, U., Pavlos, N.J., Lalowski, M.M., Eimer, S.*, et al.* (2012). Phosphorylation-regulated axonal dependent transport of syntaxin 1 is mediated by a Kinesin-1 adapter. Proc Natl Acad Sci U S A *109*, 5862-5867.

Title of Research Project	Steroid resistance in asthma and respiratory infections
Principal Investigator (PI)	 Thai Tran
Title of PI (Dr/Prof)	Associate Professor
Name of Co-PI in KCL	To be confirmed
Department of PI	Physiology
Name of Institution	National University of Singapore
Address of PI	2 Medical Drive, MD9, Singapore 117593
Telephone Number	+65 6516 3663
Email Address	phstt@nus.edu.sg
Research Interests	Asthma, respiratory infections, COPD
Research Publications	PMID: 27233153, PMID: 29274410

(III) KCL Research Projects for Joint NUS-King's College London PhD Program

Title of Research Project	Advancing an inclusive medical curriculum
Principal Investigator (PI)	 Shuangyu Li KCL, Medical Education, Life Sciences & Medicine
Title of PI (Dr/Prof)	Dr
Name of Co-PI in NUS	 Gavin Dawe
Department of Co-PI	Pharmacology
Name of Institution	National University of Singapore
Address of Co- PI	#04-01Y, Block MD3, 16 Medical Drive, Singapore 117600
Telephone Number	+65 6516 8864
Email Address	gavindawe@nus.edu.sg
Research Interests	Medical education
Research Publications	• There is more than what you think--cultural competence development in clinical placements through the eyes of ethnography 01 June 2019 • Body-oriented gestures as a practitioner's window into interpreted communication 01 July 2019

	• The medical consultation through the lenses of language and social interaction theory 01 January 2019 • Introducing Human Values into the curriculum: the GKT School of Medical Education at King's College London example 01 January 2018 • Consensus building in understanding theoretical frameworks of cultural competence and diversity in healthcare: A critical interpretive review of the literature 01 January 2017 • Interaction - a missing piece of the jigsaw in interpreter-mediated medical consultation models 01 May 2017 • Using linguistic methods in clinical communication education 03 November 2016 • Using interdisciplinary research to inform interpreter-mediated consultation training 01 January 2015 • Learning communication by analysing itâ€"using linguistics and technology in clinical communication education 25 June 2015 • Analysing Clinical Talk - an interdisciplinary approach to teaching and learning clinical communication 01 January 2014