

# REPRODUCTION AND DEVELOPMENT



## Principal Investigator

Professor Ronald Wang

## Team

Hui Xu | Nina Chu | Simon Cui | Linda Wu | Alan Chan | Ricky Wu | Zinnat Hasina | Ying He | Melody Mao | Yi Song | Kennes Hung | Rachel Zhang | Alice Lin | Scoot Lin | Tan Zhou Yu Rong | Sophia | Jerry Huang | Ya Ting Gao

## Research Progress Summary

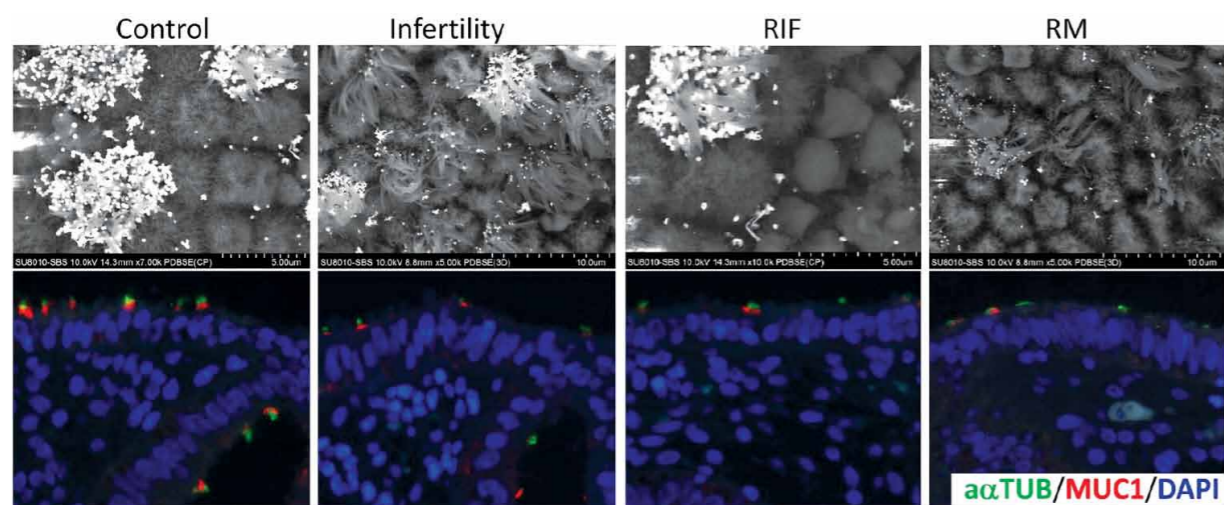
Professor Ronald Wang and his team from the Department of Obstetrics & Gynaecology focus on the field of Reproduction and Development. The team covered a wide spectrum of clinical, basic and genetic studies of female and male reproduction, and embryo and fetal development in human and mice. For reproduction, the research team focused on studying diseases in endometrium and ovary, including recurrent reproductive failure (e.g. recurrent miscarriage, recurrent implantation failure, endometrial imaging), endometriosis (e.g. clinical trial, angiogenesis, immunosuppression), endometrial cancer (e.g. lncRNA and HIF dysregulation), polycystic ovary syndrome (clinical trial and secondary analysis), etc. For development, the research team focused on the neural stem cell regeneration, abnormal neurodevelopmental mechanism (e.g. cerebellar ataxia, Down's syndrome), embryopathy in maternal disease (e.g. pregestational and gestational diabetes),

placental function (e.g. fetal growth restriction, preterm birth, preeclampsia, hormonal expression), cord blood stem cells (e.g. mononuclear cells for neonatal cerebral ischemia and anaemia), drug safety during pregnancy (e.g. melamine, Chinese herbal medicine), etc.

In 2019, the team has published 1 review, 16 papers and 1 book chapter (12 LiHS acknowledged, 6 Health and Medical Research Fund / last / corresponding author) and obtained 10 research grants (4 as PI including 1 Health and Medical Research Fund (HMRF) and 1 Direct Grant; and 6 as Co-I including 2 General Research Fund (GRF), 4 HMRF and 1 Shenzhen Innovation and Technology Fund (SZ-ITF)).

Currently, the team consists of 9 PhD students (7 as principal supervisor; 2 as co-supervisor), 3 of them will submit their thesis in 2020.





Localisation and expression of Mucin 1 (MUC1) in luminal epithelial cells. Representative scanning immunoelectron microscopy of MUC1 localisation (upper panel) and modified double immunofluorescence of MUC1 expressed ciliated cells (lower panel) on LH+7 day endometrium among control receptive (Control), Infertility, recurrent implantation failure (RIF), and recurrent miscarriage (RM).

Source: Wu FR, Mao D, Liu YY, Chen XY, Xu H, Li TC, Wang CC. Localization of Mucin 1 in endometrial luminal epithelium and its expression in women with reproductive failure during implantation window. *Journal of Molecular Histology*. 2019;50(6):563-572. doi:10.1007/s10735-019-09848-6.

## Research and Scholarship

### Research Awards and Recognitions

Member's Full Name	Details
Ronald Wang	Outbound Research Mobility Scheme for 2019-20. Internationalization Faculty Mobility Schemes. The Chinese University of Hong Kong, Hong Kong. Karolinska Institutet, Sweden, 17-24 August 2017
Kennes Hung	CUHK-Karolinska Institutet PhD Student Exchange Programme for 2018-19 to undertake a research attachment at the Department of Medical Biochemistry and Biophysics in Karolinska Institutet, Sweden, March - August 2019

### Fellowships

Member's Full Name	Details
Ronald Wang	Professor (Distinguished), Jiangxi University of Traditional Chinese Medicine, Nanchang
Simon Cui	University Postdoctoral Fellowship, The Chinese University of Hong Kong
Linda Wu	Faculty Postdoctoral Fellowship, The Chinese University of Hong Kong

### Reviewer of Journal / Conference

Member's Full Name	Details
Ronald Wang	Reviewer, International Immunopharmacology
	Reviewer, Proceedings of the National Academy of Sciences of the United States of America
	Reviewer, Science of the Total Environment
	Reviewer, Public Health Nutrition
	Reviewer, Gynecological Endocrinology
	Reviewer, Cancers
	Reviewer, Reproductive BioMedicine Online
	Reviewer, Endocrine Journal
	Reviewer, American Journal of Reproductive Immunology
	Reviewer, Reproductive BioMedicine Online
	Reviewer, Neurotoxicology
	Reviewer, Clinical Chemistry
	Reviewer, Journal of Assisted Reproduction and Genetics
	Reviewer, Evidence-Based Complementary and Alternative Medicine
	Reviewer, British Medical Journal
	Reviewer, Frontiers in Genetics
	Reviewer, Clinical Endocrinology
	Reviewer, Integrative Medicine
	Reviewer, Gynecological Endocrinology
	Reviewer, Journal of Pathology
	Reviewer, Diabetes, Obesity and Metabolism
	Reviewer, Cancers
	Reviewer, European Journal of Obstetrics & Gynecology and Reproductive Biology
Reviewer, FASEB Journal	
Reviewer, Reproductive BioMedicine Online	
Reviewer, Scientific Reports	
Reviewer, Journal of Diabetes Investigation	

### Grants and Consultancy

Name	Project Title	Funding Source	Start Date	End Date	Amount (HK\$)
Ronald Wang KSW Hung	An <i>in silico</i> (PharmMapper and Microarray) Approach to Identify Drug Targets of EGCG and Pro-EGCG in Treating Endometriosis	The Obstetrical and Gynaecological Society of Hong Kong – Hong Kong Obstetrical and Gynaecological Trust Fund	01/08/2019	31/07/2020	30,000
Ronald Wang Y He H Xu	Therapeutic Mechanism of Sunitinib Inhibiting Myeloid-derived Suppressor Cells for a Novel Treatment of Endometriosis	The Obstetrical and Gynaecological Society of Hong Kong – Hong Kong Obstetrical and Gynaecological Trust Fund	01/08/2019	31/07/2020	50,000

**Grants and Consultancy**

Name	Project Title	Funding Source	Start Date	End Date	Amount (HK\$)
Ronald Wang RZ Zhang	Whole Genome DNA Methylation and Transcriptome Sequencing to Reveal Epigenetic Regulations of Endometrium Receptivity in Women with Reproductive Failure – a Pilot Study	CUHK Research Committee – Direct Grant	30/06/2019	29/06/2020	105,000
Ronald Wang	A Metabolomic Approach to Redefine Diagnostic Criteria and Classification of Polycystic Ovary Syndrome	Food and Health Bureau – Health and Medical Research Fund	01/04/2019	31/03/2021	1,499,999
Ronald Wang	Evaluation of Aspirin Non-responsiveness in Preeclampsia Prevention: a Pharmacometabolomics Approach [06171046]	Food and Health Bureau – Health and Medical Research Fund	01/08/2019	31/01/2021	989,600
Ronald Wang	Do Endometrial Leucocytes and Angiogenesis in the Peri-implantation Period Predict Hypertensive Disorders in the Subsequent Pregnancy? [06170186]	Food and Health Bureau – Health and Medical Research Fund	01/08/2019	31/01/2021	477,196
Ronald Wang	A Double Blinded, Randomized Placebo Controlled Trial on Effect of Traditional Chinese Medicine Formula WuziYanzong Pill on Improving Semen Qualities in Men with Sub-optimal Parameters	Food and Health Bureau – Health and Medical Research Fund	01/05/2019	30/04/2022	1,114,156

**Publications****A. Journal Papers**

1. Wu FR, Mao D, Liu YY, Chen XY, Xu H, Li TC, Wang CC. Localization of Mucin 1 in endometrial luminal epithelium and its expression in women with reproductive failure during implantation window. *Journal of Molecular Histology*. 2019;50(6):563-572. doi:10.1007/s10735-019-09848-6.
2. Li J, Wu Q, Wang CC, Wang R, Ng EHY, Liu JP, Mol BWJ, Wu XK, Li WT, PCOSAct Study Group. Endocrine characteristics, body mass index and metabolic syndrome in women with polycystic ovary syndrome. *Reproductive Biomedicine Online*. 2019;39(5):868-876. doi:10.1016/j.rbmo.2019.06.014.

3. Law TSM, Wu FR, Xu H, Wang CC, Li TC. Endometrium imaging using real-time rotational optical coherence tomography imaging system. *Medicine (Baltimore)*. 2019;98(44):e17738. doi:10.1097/MD.00000000000017738.
4. Cui L, Chen YS, Liu F, Luo YH, Fan Y, Xu GF, Zhou B, Li P, Pan XY, Wang CC. EDNRB isoform 3 confers Temozolomide resistance in A375 melanoma cells by modulating membrane potential, reactive oxygen species and mitochondrial Ca<sup>2+</sup>. *Cancer Management and Research*. 2019;Volume 11:7353-7367. doi:10.2147/CMAR.S208604.
5. Li L, Tang LY, Liang B, Wang RY, Sun QH, Lau CBS, Leung PC, Fritsche E, Liebsch M, Seiler A, Spielmann H, Wang CC. Evaluation of *in vitro* embryotoxicity tests for Chinese herbal medicines. *Reproductive Toxicology*. 2019;89:45-53. doi:10.1016/j.reprotox.2019.06.001.
6. Chen J, Deng Y, Ao LF, Song Y, Xu Y, Wang CC, Choy KW, Chung TKH, Du Q, Sui Y, Yang T, Yang J, Tang T. The high-risk HPV oncogene E7 upregulates miR-182 expression through the TGF- $\beta$ /Smad pathway in cervical cancer. *Cancer Letter*. 2019;460:75-85. doi:10.1016/j.canlet.2019.06.015.
7. Chen FY, Zhou JJ, Li YY, Zhao Y, Cap Y, Wang LJ, Zhang ZK, Zhang BT, Wang CC, Wu ZG, Wong CCL, Sun H, Wang HT. YY1 regulates skeletal muscle regeneration through controlling metabolic reprogramming of satellite cells. *EMBO Journal*. 2019;38(10):e99727. doi:10.15252/embj.201899727.
8. Wu L, Wang CC. Genetic variants in promoter regions associated with type 2 diabetes mellitus: A large-scale meta-analysis and subgroup analysis. *Journal of Cellular Biochemistry*. 2019;120(8):13012-13025. doi:10.1002/jcb.28572.
9. Law TSM, Cheung WC, Wu FR, Zhang RZ, Chung JPW, Wang CC, Chen XY, Li TC. Endometrial vascularization characterized by optical coherence tomography and immunohistochemistry in women undergoing *in vitro* fertilization-embryo transfer treatment. *Medicina (B Aires)*. 2019;55(4):81. doi:10.3390/medicina55040081.
10. Ling L, Wu T, To KKW, Cheung KW, Lui KO, Niu M, Lam KS, Wang CC, Li J, Wang H, Yuen KY, Chen Z. Vedolizumab-mediated integrin  $\alpha 4\beta 7$  blockade does not control HIV-1SF162 rebound after combination antiretroviral therapy interruption in humanized mice. *AIDS*. 2019;33(4):F1-F12. doi:10.1097/QAD.0000000000002149.
11. Cui L, Zhou F, Chen C, Wang CC. Overexpression of CCDC69 activates p14ARF/MDM2/p53 pathway and confers cisplatin sensitivity. *Journal of Ovarian Research*. 2019;12(1):4. doi:10.1186/s13048-019-0479-3.
12. Zhang T, Chen XY, Wang CC, Li TC, Kim JK. Intrauterine infusion of human chorionic gonadotropin before embryo transfer in IVF/ET cycle: The critical review. *American Journal of Reproductive Immunology*. 2019;81(2):e13077. doi:10.1111/aji.13077 [Review].

**B. Patents**

1. 李天照 · 黃志超 · 宋李烟 · 梁為亮 · 李百靈 · 高峻。一種OCT探頭驅動裝置和OCT檢測設置[SIPO 201820311468.6]。