

## Research Progress Summary

During the past year, the team led by Professor Huating Wang continued the work on gene regulatory mechanisms centered on transcription factors (TFs) and RNA binding proteins (RBPs) in skeletal muscle stem cells and muscle regeneration. Specifically, they have been focusing on the following projects:

1. to characterise the previously unknown function of RBPs in 3D genome organisation;
2. to investigate key TF function in early regulatory events during satellite cell activation in muscle regeneration;
3. to study the functional roles of Dhx36 in skeletal muscle stem cells and muscle regeneration; and
4. to characterise 3D genome organisation in muscle stem cell lineage progression as well as Sarcopenia, a muscle-weakening condition associated with ageing.

# NON-CODING RNAs AND CELLULAR SIGNALLING

Non-coding RNAs



**Principal Investigator**  
Professor Huating Wang



**Team Members**

Xiaona Chen | Yu Zhao | Liangqiang He |  
Yuying Li | Suyang Zhang | Yang Li |  
Zhiming He | Yulong Qiao



## Research and Scholarship

### Fellowships

Member's Name	Details	
	Fellowship	Organisation
Liangqiang He	Postdoc Fellowship	Faculty of Medicine, The Chinese University of Hong Kong
Suyang Zhang		

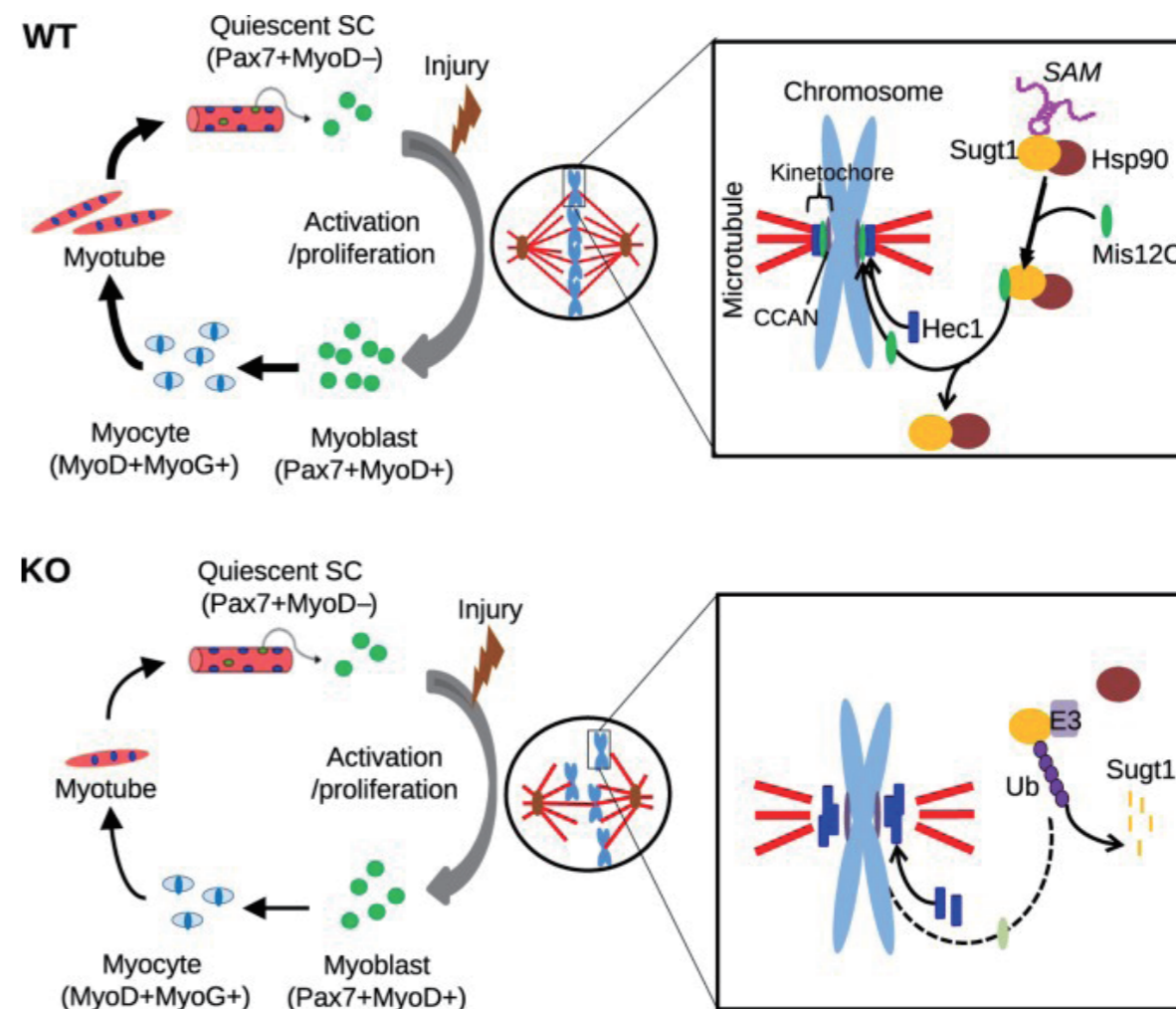
### Reviewer of Journal / Conference

Member's Name	Role	Details
		Journal / Conference
Huating Wang	Reviewer	Nature Communications
		Science Translational Medicine
		Molecular Therapy
		STAR Protocols
		Skeletal Muscle

## Grants and Consultancy

Name	Project Title	Funding Source	Start Date (dd/mm/yyyy)	End Date (dd/mm/yyyy)	Amount (HK\$)
Huating Wang	Functional Characterization of Atf3 in Skeletal Muscle Stem Cells and Muscle Regeneration	Research Grants Council – General Research Fund	01/01/2020	31/12/2022	1,394,799
	Molecular Regulation of Quiescence and Early Activation in Muscle Stem Cells	Research Grants Council – General Research Fund	30/06/2020	29/06/2023	6,969,211
	3D Genome Rewiring during Muscle Stem Cell Lineage Development and Aging	Research Grants Council – General Research Fund	01/01/2020	31/12/2022	1,194,637
	Investigating the Functional Significance of Three-dimensional Structures of Topologically Associating Domains	Research Grants Council – General Research Fund	01/01/2020	31/12/2022	1,195,542
	Studying the Functional Mechanism of Endothelial YY1 in Postischemic Angiogenesis	Research Grants Council – General Research Fund	01/01/2020	31/12/2022	1,195,542
	Elucidation of Post-transcriptional Regulatory Functions of Dhx36 in Skeletal Muscle Stem Cells and Muscle Regeneration	Research Grants Council – General Research Fund	01/01/2019	31/12/2021	1,111,376
	Large Scale Interaction Analysis of RNA Binding Proteins/LncRNAs to Identify lncRNA Nuclear Localization Mechanisms	Research Grants Council – General Research Fund	01/01/2019	31/12/2021	1,115,175
	長鏈非編碼 RNA Linc-Cdkn1b 對骨骼肌幹細胞及肌肉再生的調控及其分子機制研究	The National Natural Science Foundation of China	01/01/2018	31/12/2021	RMB 600,000
	Functional Dissection of lncRNA SAM in Skeletal Muscle Stem Cells and Muscle Regeneration	Research Grants Council – General Research Fund	01/01/2018	31/12/2020	1,232,466
Epigenetic Mapping in Human Skeletal Muscle Stem Cells	The Hong Kong Epigenomics Project	01/08/2018	31/12/2023	1,000,000	

- Zhou S, Zhang W, Cai G, Ding Y, Wei C, Li S, Yang Y, Qin J, Liu D, Zhang H, Shao X, Wang J, Wang H, Yang W, Wang H, Chen S, Hu P, Sun L. Myofiber necroptosis promotes muscle stem cell proliferation via releasing Tenascin-c during regeneration. *Cell Research*. 2020;30(12):1063-1077. doi:10.1038/s41422-020-00393-6.
- Li Y, Yuan J, Chen F, Zhang S, Zhao Y, Chen X, Lu L, Zhou L, Chu CY, Sun H, Wang H. Long noncoding RNA SAM promotes myoblast proliferation through stabilizing Sugt1 and facilitating kinetochore assembly. *Nature Communications*. 2020;11(1):2725. doi:10.1038/s41467-020-16553-6.
- Hou L, Wei Y, Lin Y, Wang X, Lai Y, Yin M, Chen Y, Guo X, Wu S, Zhu Y, Yuan J, Tariq M, Li N, Sun H, Wang H, Zhang X, Chen J, Bao X, Jauch R. Concurrent binding to DNA and RNA facilitates the pluripotency reprogramming activity of Sox2. *Nucleic Acids Research*. 2020;48(7):3869-3887. doi:10.1093/nar/gkaa067.



Long noncoding RNA SAM promotes myoblast proliferation through stabilising Sugt1 and facilitating kinetochore assembly.

Source: Li Y, Yuan J, Chen F, Zhang S, Zhao Y, Chen X, Lu L, Zhou L, Chu CY, Sun H, Wang H. Long noncoding RNA SAM promotes myoblast proliferation through stabilizing Sugt1 and facilitating kinetochore assembly. *Nature Communications*. 2020;11(1):2725. doi:10.1038/s41467-020-16553-6.

## Publications

### A. Journal Papers

- Sun K, Li L, Ma L, Zhao Y, Deng L, Wang H, Sun H. Msuite: A high-performance and versatile DNA methylation data-analysis toolkit. *Patterns*. 2020;1(8):100127. doi:10.1016/j.patter.2020.100127.
- Man GCW, Wang J, Song Y, Wong JH, Zhao Y, Lau TS, Leung KT, Chan TH, Wang H, Kwong J, Ng TB, Wang CC. Therapeutic potential of a novel prodrug of green tea extract in induction of apoptosis via ERK/JNK and Akt signaling pathway in human endometrial cancer. *BMC Cancer*. 2020;20(1):964. doi:10.1186/s12885-020-07455-3.