

王華婷



HUATING WANG



Principal Investigator
Huating Wang



Team members
Xiaona Chen, Liangqiang He, Suyang Zhang, Yang Li, Yulong Qiang, Zhiming He, Qin Zhou

Research Progress Summary

During the past year, the team led by 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; (4) to characterise 3D genome organisation in muscle stem cell lineage

progression as well as sarcopenia, a muscle weakening condition associated with aging. Findings from their research were published on Stem Cell Reports, Nature Communications, Briefings in Bioinformatics and well accepted by the peers from the scientific communities. As a result, Huating and her research team were invited to present their work at international and regional conferences such as China Muscle Society Annual Meeting, Annual Meeting of RNA Society etc. In addition, fruitful collaborations have been established with peer scientists from Hong Kong, China, U.S.A. and Europe.

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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	Postdoc Fellowship	Faculty of Medicine, The Chinese University of Hong Kong

Academic Editorship

Member's Name	Details	
	Role	Journal
Huating Wang	Editorial Board Member	Skeletal Muscle

Reviewer of Journal / Conference

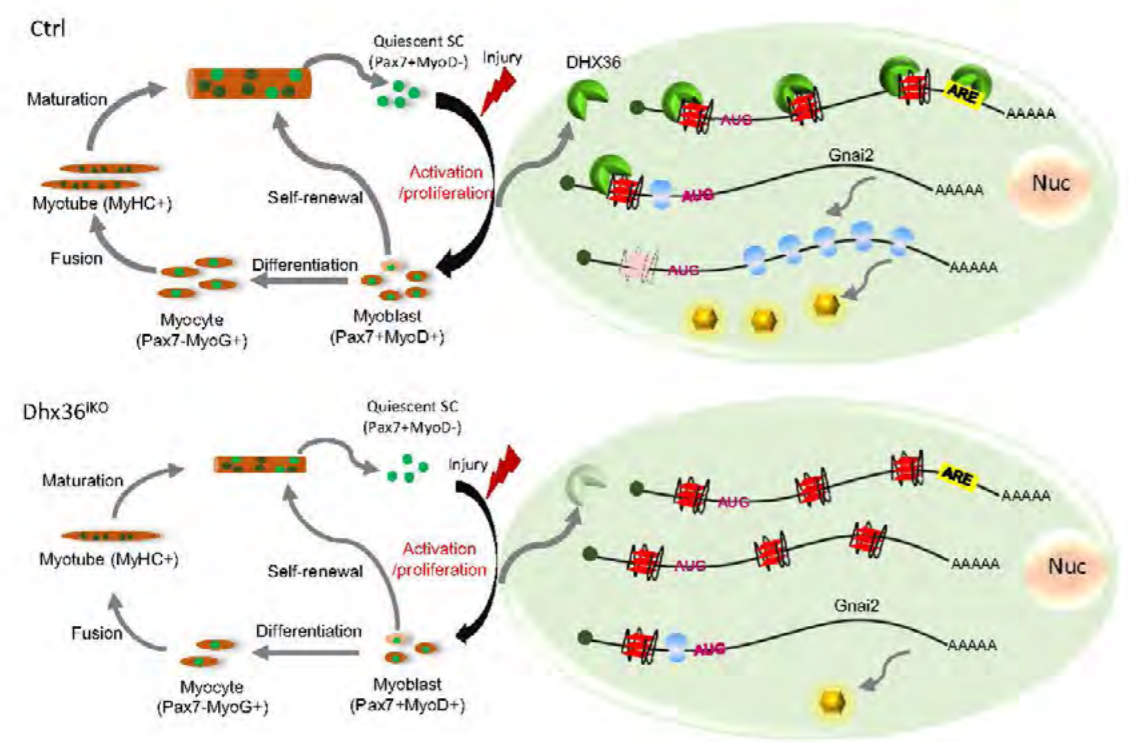
Member's Name	Details	
	Role	Journal / Conference
Huating Wang	Reviewer	Science Translational Medicine
		EMBO Reports
		Nucleic Acid Research
		Molecular Therapy
		Cell Regeneration

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	01/01/2021	31/12/2023	1,394,799
	Elucidation of Intrinsic and Extrinsic Alterations Regulating Skeletal Muscle Stem Cell Aging: Mechanisms for Sarcopenia	Food and Health Bureau – Health and Medical Research Fund	02/12/2021	01/12/2023	1,496,150
	Aging, Skeletal Degeneration and Regeneration	Research Grants Council – Areas of Excellence Scheme	01/05/2021	30/04/2029	64,889,000
	Molecular Regulation of Quiescence and Early Activation in Muscle Stem Cells	Research Grants Council – Collaborative 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	01/01/2021	31/12/2023	1,194,637
	Investigating the Functional Significance of Three-dimensional Structures of Topologically Associating Domains	Research Grants Council – General Research Fund	01/01/2021	31/12/2023	1,195,542
	Studying the Functional Mechanism of Endothelial YY1 in Postischemic Angiogenesis	Research Grants Council – General Research Fund	01/01/2021	31/12/2023	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	01/01/2020	31/12/2022	1,111,376
	Large Scale Interaction Analysis of RNA Binding Proteins/LncRNAs to Identify LncRNA Nuclear Localization Mechanisms	Research Grants Council – General Research Fund	01/01/2020	31/12/2022	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	National Natural Science Foundation of China	01/01/2019	31/12/2022	RMB 600,000
	Epigenetic Mapping in Human Skeletal Muscle Stem Cells	The Hong Kong Epigenomics Project	01/08/2018	31/12/2022	1,000,000

Publications
A. Journal Papers

1. He L, Ding Y, Zhao Y, So KK, Peng XL, Li Y, Yuan J, He Z, Chen X, Sun H, Wang H. CRISPR/Cas9/AAV9-mediated in vivo editing identifies MYC regulation of 3D genome in skeletal muscle stem cell. *Stem Cell Reports*. 2021;16(10):2442-2458. doi:10.1016/j.stemcr.2021.08.011.
2. Chen X, Yuan J, Xue G, Campanario S, Wang D, Wang W, Mou X, Liew SW, Umar MI, Isern J, Zhao Y, He L, Li Y, Mann CJ, Yu X, Wang L, Perdiguero E, Chen W, Xue Y, Nagamine Y, Kwok CK, Sun H, Muñoz-CY, Kwo P, Wang H. Translational control by DHX36 binding to 5'UTR G-quadruplex is essential for muscle stem-cell regenerative functions. *Nature Communications*. 2021;12(1):5043. doi:10.1038/s41467-021-25170-w.
3. Huang Y, Qiao Y, Zhao Y, Li Y, Yuan J, Zhou J, Sun H, Wang H, Li Ka Shing A. Large scale RNA-binding proteins/LncRNAs interaction analysis to uncover lncRNA nuclear localization mechanisms. *Briefings in Bioinformatics*. 2021;22(6):1-15. doi:10.1093/bib/bbab195.
4. Wang H, Huang Y, Yu M, Yu Y, Li S, Wang H, Sun H, Li B, Xu G, Hu P. Muscle regeneration controlled by a designated DNA dioxygenase. *Cell Death & Disease* 2021 12:6. 2021;12(6):1-14. doi:10.1038/s41419-021-03817-2.



Schematic illustration of the functional mechanism of DHX36 in regulating SC proliferation and muscle regeneration.

Source: Chen X, Yuan J, Xue G, Campanario S, Wang D, Wang W, Mou X, Liew SW, Umar MI, Isern J, Zhao Y, He L, Li Y, Mann CJ, Yu X, Wang L, Perdiguero E, Chen W, Xue Y, Nagamine Y, Kwok CK, Sun H, Muñoz-CY, Kwo P, Wang H. *Translational control by DHX36 binding to 5'UTR G-quadruplex is essential for muscle stem-cell regenerative functions. Nature Communications*. 2021;12(1):5043. doi:10.1038/s41467-021-25170-w.

