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## GENOMICS AND BIOINFORMATICS



## Principal Investigator

Professor Hao Sun

## Team

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## Research Progress Summary

In the reporting period, the team has received several General Research Funds and one Collaborative Research Fund from the Research Grants Council to study the transcriptional regulation mechanisms in muscle stem cell quiescence, activation, and differentiation.



Sebnif: a bioinformatics pipeline developed for lincRNA identification

Sebnif: An Integrated Bioinformatics Pipeline for the Identification of Novel Large Intergenic Noncoding RNAs (lincRNAs) - Application in Human Skeletal Muscle Cells. PLoS One 2014

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## Recognitions

## Awards and Fellowships

Member's Full Name	Details
Hao Sun	UEF China / Sino British Fellowship Trust awarded by Office of Academic Links, CUHK
Xianlu Peng	Student Travel Award awarded by CUHK
Karl So	Faculty Postdoctoral Fellowship awarded by Faculty of Medicine, CUHK

## Grants and Consultancy

Full Name of PI	Project Title	Funding Source	Start Date (dd/mm/yyyy)	End Date (dd/mm/yyyy)	Amount (HK\$)
Hao Sun	LncRNA Dum Interacts with Dnmts to Regulate Dppa2 Expression during Myogenic Differentiation and Muscle Regeneration	Direct Grants, CUHK	30/06/2016	29/06/2017	25,000
Hao Sun	Identification and Functional Characterization of Super Enhancer Associated RNAs (seRNAs) in Skeletal Myogenesis Using Integrated Genomic Approach	Research Grants Council – General Research Fund	01/01/2016	31/12/2018	1,228,445
Hao Sun	Integrating Large Intergenic Noncoding RNAs into Pax7 Mediated Regulatory Circuitry in Muscle Satellite Cells	Research Grants Council – General Research Fund	01/01/2015	31/12/2017	623,277
Hao Sun	Genome-wide Identification and Characterization of Functional Long Noncoding RNAs in Skeletal Muscle Stem Cells Using Integrated High-throughput Sequencing and Regulatory Network Analysis	Research Grants Council – General Research Fund	01/01/2014	31/12/2016	1,125,842
Hao Sun (Co-I)	Elucidation of the Role of Pax7 in Muscle Stem Cells	Research Grants Council – Collaborative Research Fund	30/06/2015	29/06/2018	5,221,440
Hao Sun (Co-I)	Transplantation of Vascularised Pancreatic Beta Cells Derived from Human Stem Cells for Type-1 Diabetic Recipients	Food and Health Bureau – Health and Medical Research Fund	01/06/2016	31/05/2018	1,199,992
Hao Sun (Co-I)	Is Smad7 a Potential Therapeutic Target for Preventing Osteoporotic Bone Loss?	Research Grants Council – General Research Fund	01/01/2016	31/12/2018	821,097
Hao Sun (Co-I)	Functional Characterization of YY1 in Skeletal Muscle Stem Cells and Muscle Regeneration	Research Grants Council – General Research Fund	01/01/2016	31/12/2018	1,182,869
Hao Sun (Co-I)	Centre for Research into Circulating Fetal Nucleic Acids	Research Grants Council – Theme-based Research Scheme	01/01/2016	31/12/2020	48,828,000

Full Name of PI	Project Title	Funding Source	Start Date (dd/mm/yyyy)	End Date (dd/mm/yyyy)	Amount (HK\$)
Hao Sun (Co-I)	Study of YY1 Function in Muscle Stem Cells Using a Conditional Knockout Mouse Model	Direct Grants, CUHK	30/06/2015	29/06/2016	41,000
Hao Sun (Co-I)	Functional characterization of Malat1 in skeletal muscle stem cells and muscle regeneration	Research Grants Council – General Research Fund	01/01/2015	31/12/2017	1,086,500
Hao Sun (Co-I)	Functional Characterization of a Large Intergenic Non-coding RNA (lincRNA) in Muscle Stem Cells and Muscle Regeneration	Research Grants Council – General Research Fund	01/01/2014	31/12/2016	1,039,239
Hao Sun (Co-I)	Massively Parallel Sequencing of Plasma Nucleic Acids for the Molecular Diagnostics of Cancers	Research Grants Council – Theme-based Research Scheme	01/12/2011	30/11/2016	33,342,750

## Publications

## A. Journal Papers

- Sun K, Zhou L, Zhao Y, Wang HT, Sun H. Genome-wide RNA-seq and ChIP-seq reveal Linc-YY1 function in regulating YY1/PRC2 activity during skeletal myogenesis. *Genomics Data*. 2016; 7:247-9. (Data in brief)
- Jiang PY, Peng XL, Su XX, Sun K, Yu SC, Chu WI, Leung TY, Sun H, Chiu WK, Lo YM, Chan KC. FetalQuant<sup>SD</sup>: accurate quantification of fetal DNA fraction by shallow-depth sequencing of maternal plasma DNA. *npj Genomic Medicine*. 2016; 1:16013.

## B. Conference Papers

- Chen XN, Li YY, Sun K, Zhao Y, Chen FY, Zhou L; Lu LN, Wang LJ, Sun H, Wang HT. Functional Characterization of Malat1 in Skeletal Myogenic Differentiation and Muscle Regeneration. In: *Frontiers in Stem Cell Research*; Hong Kong; 2016 Jan 13-15.
- Peng XL, Zhao Y, So KH, Wang HT, Sun H. Integrative Characterization of Super-enhancers in Mouse Skeletal Muscle Cells. In: *Keystone Symposia on Molecular and Cellular Biology*; Suzhou, China; 2016 Jan 26.
- Chen XN, Li YY, Sun K, Zhao Y, Chen FY, Zhou L, Lu LN, Wang LJ, Nakagawa S, Prasanth VK, Sun H, Wang HT. miR-181 Targeted Malat1 Interacts with Suv39h1 to Regulate MyoD Transcriptional Activity during Myogenic Differentiation and Muscle Regeneration. In: *Keystone Symposia on Molecular and Cellular Biology*; Suzhou, China; 2016 Jan 26.
- Peng XL, Zhao Y, So KH, Wang HT, Sun H. Integrative characterization of super-enhancers in mouse skeletal muscle cells. In: *2016 Cold Spring Harbour Asia Conference*; Suzhou, China; 2016 May 9-13.
- Zhao Y, Peng XL, Zhou JJ, Sun H, Wang HT. An Enhancer and eRNA Exploration in Skeletal Muscle Cells. In: *The 3<sup>rd</sup> non-coding RNA and Epigenetics Workshop*; Guangzhou, China; 2016 Jun.