

Zhisong He

Department of Biosystems Science and Engineering, ETH Zurich
Klingelbergstrasse 48
4056 Basel, Switzerland
Email: zhisong.he@bsse.ethz.ch
Phone: +41-795207428

PERSONAL DATA

Date of birth: 17 May 1987

Place of birth: Guangdong, China

Nationality: Chinese

Languages: Chinese (native speaker, Cantonese & Mandarin), English (fluent)

ORCID ID: 0000-0002-1502-4801

Google Scholar: <https://scholar.google.com/citations?user=bneSL-oAAAAJ&hl=en>

Website: <https://zhisonghe.wixsite.com/home>

RESEARCH EXPERIENCE

08/2022 - Now	Lecturer, ETH Zurich
08/2021 - Now	Senior assistant with <u>Prof. Dr. Barbara Treutlein</u> , Department of Biosystems Science and Engineering, ETH Zurich, Basel, Switzerland
01/2019 - 07/2021	Postdoc with <u>Prof. Dr. Barbara Treutlein</u> , Department of Biosystems Science and Engineering, ETH Zurich, Basel, Switzerland
01/2018 - 12/2018	Postdoc with <u>Prof. Dr. Barbara Treutlein</u> , Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany
03/2015 - 01/2018	Postdoc with <u>Prof. Dr. Philipp Khaitovich</u> , CAS-MPG Partner Institute for Computational Biology, SIBS, CAS, Shanghai, China
07/2008 - 08/2008	Research intern with <u>Yu-Dong Cai</u> , CAS-MPG Partner Institute for Computational Biology, SIBS, CAS, Shanghai, China

EDUCATION

09/2009 - 11/2014	Ph. D. (Computational Biology), CAS-MPG Partner Institute for Computational Biology, SIBS, CAS, Shanghai, China <ul style="list-style-type: none">Supervisor: Philipp Khaitovich
09/2005 - 07/2009	B. Sc. (Bioinformatics), College of Life Sciences, Zhejiang University, Hangzhou, China

TEACHING EXPERIENCE

09/2022 - 12/2023	Co-lecturer: Systems Genomics
02/2020 - 06/2023	Co-lecturer: Single-cell Technologies
09/2013 - 12/2013	Teaching assistant: Biostatistics
02/2009 - 04/2009	Teaching assistant: Biological Databases

TECHNICAL SKILLS

- Programming: R (advanced), Python (advanced), Java (intermediate), Perl (beginner)
- Linux system maintenance and management
- Biological data analysis: Large-scaled sequencing data, including bulk RNA/ChIP-seq, single-cell RNA/ATAC-seq, etc. (advanced); imaging-based proteomic data (4i) (basic); LC-MS-based lipidomic data (basic)

PUBLICATIONS (since 2016) (* - equal contribution; # - corresponding authorship)

PREPRINTS

He Z*, Dony L*, Fleck JS*, Szalata A, Li KX, Slišković I, Lin C, Santel M, Atamian A, Quadrato G, Sun J, Paşca SP, Camp JG#, Theis FJ#, Treutlein B#

An integrated transcriptomic cell atlas of human neural organoids.

bioRxiv. 2023; doi:10.1101/2023.10.05.561097

Nikolova MT*, He Z*, Wimmer RA, Seimiya M, Nikoloff JM, Penninger JM#, Camp JG#, Treutlein B#,

Fate and state transitions during human blood vessel organoid development.

bioRxiv. 2022; doi:10.1101/2022.03.23.485329

Brazovskaja A*, Gomes T*, Körner C, **He Z**, Schaffer T, Eckel JC, Hänsel R, Santel M, Denecke T, Dannemann M, Brosch M, Hampe J, Seehofer D, Damm G#, Camp JG#, Treutlein B#,

Cell atlas of the regenerating human liver after portal vein embolization.

bioRxiv, 2021; doi:10.1101/2021.06.03.444016

PEER-REVIEWED

Wahle P*, Brancati G*, Harmel C*, **He Z***, Gut G, Castillo J, Santos A, Yu Q, Noser P, Fleck JS, Gjeta B, Pavlinić D, Picelli S, Hess M, Schmidt G, Lummen T, Hou Y, Galliker P, Goldblum D, Balogh M, Cowan CS, Scholl H, Roska B, Renner M, Pelkmans L#, Treutlein B#, Camp JG#,

Multimodal spatiotemporal phenotyping of human retinal organoid development.

Nature Biotechnology. 2023; doi:10.1038/s41587-023-01747-2.

Fleck JS*, Jansen SMJ*, Wollny D, Zenk F, Seimiya M, Jain A, Okamoto R, Santel M, **He Z**#, Camp JG#, Treutlein B#,

Inferring and perturbing cell fate regulomes in human brain organoids.

Nature. 2022; doi:10.1038/s41586-022-05279-8.

Wollny D#, Vernot B, Wang J, Hondele M, Safrastyan A, Aron F, Micheel J, **He Z**, Hyman A, Weis K, Camp JG, Tang TD#, Treutlein B#,

Characterization of RNA content in individual phase-separated coacervate microdroplets.

Nature Communications. 2022; 13:2626.

He Z*, Maynard A*, Jain A*, Gerber T*, Petri R, Santel M, Ly K, Sidow L, Sanchís-Calleja F, Riesenberg S, Camp JG#, Treutlein B#,

Lineage recording in human cerebral organoids.

Nature Methods. 2022. doi:10.1038/s41592-021-01344-8.

Lin HC*, **He Z***, Ebert S*, Schörnig M, Santel M, Nikolova M, Weigert A, Hevers W, Kasri NN, Taverna E, Camp JG#, Treutlein B#,

NGN2 induces diverse neuron types from human pluripotency.

Stem Cell Report. 2021; S2213-6711(21)00372-6.

Yu Q*, Kilik U*, Holloway EM*, Tsai YH, Harmel C, Wu A, Wu JH, Czerwinski M, Childs C, **He Z**, Capeling M, Huang S, Glass IA, Higgins PDR, Treutlein B#, Spence JR#, Camp JG#,

Charting human development using a multi-endodermal organ atlas and organoid models.

Cell. 2021; doi:10.1016/j.cell.2021.04.028.

Fleck JS*, Sanchís-Calleja F*, **He Z**, Santel M, Boyle MJ, Camp JG#, Treutlein B#,

Resolving organoid brain region identities by mapping single-cell genomic data to reference atlases.

Cell Stem Cell. 2021; doi:10.1016/j.stem.2021.02.015.

He Z#, Brazovskaja A, Ebert S, Camp JG#, Treutlein B#,

CSS: Cluster similarity spectrum integration of single-cell genomics data.

Genome Biology. 2020; 21(1):224.

Dannemann M, **He Z**, Heide C, Vernot B, Sidow L, Kanton S, Weigert A, Treutlein B, Pääbo S, Kelso J, Camp JG#,

Human Stem Cell Resources Are an Inroad to Neandertal DNA Functions.

Stem Cell Report. 2020; 15(1):214-225.

Kanton S*, Boyle M*, **He Z***, Santel M, Weigert A, Sanchís-Calleja F, Guijarro P, Sidow L, Fleck JS, Han D, Qian Z, Heide M, Huttner WB, Khaitovich P, Pääbo S, Treutlein B#, Camp JG#,

Organoid single-cell genomic atlas uncovers human-specific features of brain development.

Nature. 2019; 574, 418-422.

Yu Q*, **He Z***, Zubkov D*, Huang S, Kurochkin I, Yang X, Halene T, Willmitzer L, Giavalisco P, Akbarian S, Khaitovich P#, Lipidome alterations in human prefrontal cortex during development, aging, and cognitive disorders.

Molecular Psychiatry. 2018; doi:10.1038/s41380-018-0200-8.

Liu C, Wang R, **He Z**, Osteil P, Wilkie E, Yang X, Chen J, Cui G, Guo W, Chen Y, Peng G, Tam PPL, Jing N#, Suppressing nodal signaling activity predisposes ectodermal differentiation of epiblast stem cells.

Stem Cell Report. 2018; 11 (1), 43-57.

He Z#, Yu Q,

Identification and characterization of functional modules reflecting transcriptome transition during human neuron maturation.

BMC Genomics. 2018; 19:262.

Fan J*, Kuai B*, Wu G, Wu X, Chi B, Wang L, Wang K, Shi Z, Zhang H, Chen S, **He Z**, Wang S, Zhou Z, Li G, Cheng H#,
Exosome cofactor hMTR4 competes with export adaptor ALYREF to ensure balanced nuclear RNA pools for degradation
and export.

The EMBO journal. 2017; 36 (19), 2870-2886.

Shi M, Zhang H, Wu X, **He Z**, Wang L, Yin S, Tian B, Li G#, Cheng H#,
ALYREF mainly binds to the 5' and the 3' regions of the mRNA in vivo.

Nucleic Acids Research. 2017; 45 (16), 9640-9653

Dönertaş H, İzgi H, Kamacıoğlu A, **He Z**, Khaitovich P, Somel M#,

Gene expression reversal toward pre-adult levels in the aging human brain and age-related loss of cellular identity.

Scientific Report. 2017; 7:5894.

Yu Q, **He Z**#,

Comprehensive investigation of temporal and autism-associated cell type composition-dependent and independent gene
expression changes in human brains.

Scientific Report. 2017; 7:4121.

He Z*, Han D*, Efimova O, Guijarro P, Yu Q, Oleksiak A, Jiang S, Anokhin K, Velichkovsky B, Grünewald S, Khaitovich
P#,

Comprehensive transcriptome analysis of neocortical layers in humans, chimpanzees and macaques.

Nature Neuroscience. 2017; 20:886–895.

Mora-Bermúdez F*, Badsha F*, Kanton S*, Camp JG*, Vernot B, Köhler K, Voigt B, Okita K, Maricic T, **He Z**, Lachmann R,
Pääbo S#, Treutlein B#, Huttner WB#,

Differences and similarities between human and chimpanzee neural progenitors during cerebral cortex development.

eLife. 2016; 5:e18683.

Kao CY*, **He Z***, Henes K, Asara JM, Webhofer C, Filiou MD, Khaitovich P, Wotjak CT, Turck CW#,

Fluoxetine treatment rescues energy metabolism pathway alterations in a posttraumatic stress disorder mouse model.

Molecular Neuropsychiatry. 2016; 2:46-59.

Kao CY*, **He Z***, Zannas AS, Hahn O, Kühne C, Reichel JM, Binder EB, Wotjak CT, Khaitovich P#, Turck CW#,

Fluoxetine treatment prevents the inflammatory response in a mouse model of posttraumatic stress disorder.

Journal of Psychiatric Research. 2016; 76:74-83.

PRESENTATIONS (since 2016)

Towards an integrated cell atlas of human brain organoids

ISSCR Digital webinar series: Next Generation Organoids (virtual), 04/2023

Lineage recording in human cerebral organoids.

CGM online webinar (virtual), 03/2022

Illuminating cerebral organoid development using single-cell genomics.

EMBL Barcelona Postdoc Seminar Series (virtual), 11/2020

Organoid single-cell genomic atlas uncovers human-specific features of brain development.

The 7th International Conference on Stem Cell Engineering in Barcelona, Spain, 12/2019

Organoid single-cell genomic atlas uncovers human-specific features of brain development.

The 5th Annual conference of Lithuanian Stem Cell Research Association in Vilnius, Lithuania, 10/2019

Assessing the relevance to model inter-individual variation in cerebral and liver organoids.

CZI Science Europe Retreat in Stockholm, Sweden, 08/2018. Jointly presented with Sabina Kanton

AWARDS

09/2012	Excellent Graduate Student Award in CAS
09/2011	Excellent Graduate Student Award in CAS
07/2009	Zhejiang Province Outstanding Graduates Award
11/2008	China National Scholarship