

EDUCATION

- 2008-2015 **PhD** in Medicine at Karolinska Institutet. Thesis title: "*The search for human skeletal muscle memory: Exercise effects on the transcriptome and epigenome*".
- 2003-2007 **M.Sc. in Biomedical Sciences** at Karolinska Institutet
- 2006 Exchange semester at the National University of Singapore

PROFESSIONAL APPOINTMENTS

- 2022 - present **Director Wu Tsai Human Performance Alliance - Human Molecular Athlete Moonshot**
- 2022 - present **Instructor/junior faculty of Medicine at Stanford University.**
- 2017 - 2021 **Postdoctoral researcher at Stanford University** in the group of professor Euan Ashley.
- 2016 **Course administrator and lecturer at Karolinska Institutet**
- 2008 - 2015 **PhD program at Karolinska Institutet** in the group of professor Carl Johan Sundberg.

HONORS AND AWARDS

- 2020 American Heart Association Genomic and Precision Medicine Early Career Investigator Award
- 2019 Young Investigator Award from the Swedish foundation for promoting exercise (Sveriges Centralförening för Idrottens Främjande, scif.se).
- 2018 Young Investigator Award from the *Research Group on the Biochemistry of Exercise* for work on endurance-induced human skeletal muscle memory. Invited to IBEC in Beijing to present the work.

PUBLICATIONS

Total number of citations: 1431 (Google Scholar)

h-index: 14

- Amar D, Gay NR, Jimenez-Morales D, Jean Beltran PM, Ramaker ME, Raja A, Zhao B, Sun Y, Marwaha S, Gaul D, Hershman SG, Xia A, Lanza I, Fernandez FM, Montgomery SB, Hevener AL, Ashley EA, Walsh MJ, Sparks LM, Burant CF, Rector RS, Thyfault J, Wheeler MT, Goodpaster BH, Coen PM, Schenk S, Bodine SC, **Lindholm ME*** and the MoTrPAC Study Group. *The mitochondrial multi-omic response to exercise training across rat tissues*. **BioRxiv**. <https://doi.org/10.1101/2023.01.13.523698>. Accepted for publication in **Cell Metabolism**.
*Corresponding author
- MoTrPAC Study Group. *Temporal dynamics of the multi-omic response to endurance exercise training across tissues*. **BioRxiv**. <https://doi.org/10.1101/2022.09.21.508770>. Accepted for publication in **Nature**.
- Many GM, Sanford JA, Sagendorf TJ, Hou Z, Nigro P, Whytock K, Amar D, Caputo T, Gay NR, Gaul DA, Hirshman M, Jimenez-Morales D, **Lindholm ME**, Muehlbauer MJ, Vamvini M, Bergman B, Fernández FM, Goodyear LJ, Ortlund EA, Sparks LM, Xia A, Adkins JN, Bodine SC, Newgard CB, Schenk S, and the MoTrPAC Study Group. *Sexual dimorphism and the multi-omic response to exercise training in rat subcutaneous white adipose tissue*. **BioRxiv**. <https://doi.org/10.1101/2023.02.03.527012>. Accepted for publication in **Nature Metabolism**.
- Nair VD, Pincas H, Smith GR, Zaslavsky E, Ge Y, Amper MS, Vasoya M, Chikina M, Sun Y, Raja AN, Mao W, Gay NR, Esser KA, Smith KS, Zhao B, Wiel L, Singh A, **Lindholm ME**, Amar D, Montgomery SB, Snyder MP, Walsh MJ, Sealfon SC and MoTrPAC Study Group. *Molecular adaptations in response to exercise training are associated with tissue-specific transcriptomic and epigenomic signatures*. Accepted for publication in **Cell Genomics**.
- Emanuelsson EB, Arif M, Reitzner SM, Perez S, **Lindholm ME**, Mardinoglu A, Daub C, Sundberg CJ, Chapman MA. *Remodeling of the human skeletal muscle proteome found after long-term endurance training but not after strength training*. **iScience**. 2024 Jan 19;27(1).
- Kjellberg A, **Lindholm ME**, Zheng X, Liwenborg L, Rodriguez-Wallberg KA, Catrina SB, Lindholm P. *Comparing the Blood Response to Hyperbaric Oxygen with High-Intensity Interval Training—A Crossover Study in Healthy Volunteers*. **Antioxidants**. 2023, 12;2043.
- Voisin S, Seale K, Jacques M, Landen S, Harvey NR, Haupt LM, Griffiths LR, Ashton KJ, Coffey VG, Thompson JM, Doering TM, **Lindholm ME**, Walsh C, Davison G, Irwin R, McBride C, Hansson O, Asplund O, Heikkinen

AE, Piirilä P, Pietiläinen K, Ollikainen M, Blocquiaux S, Thomis M, Dawn CK, Sharples AP, Eynon N. *Exercise is associated with younger methylome and transcriptome profiles in human skeletal muscle*. **Aging Cell**. 2023 May 2;e13859.

8. **Lindholm ME**, Jimenez-Morales D, Zhu H, Seo K, Amar D, Zhao C, Raja A, Madhvani R, Abramowitz S, Espenel C, Sutton S, Caleshu C, Berry GJ, Motonaga K, Dunn K, Platt J, Ashley EA, Wheeler MT. Mono- and biallelic protein truncating variants in alpha-actinin 2 cause cardiomyopathy through distinct mechanisms. **Circ Genom Precis Med**. 2021 Nov 22:CIRCGEN121003419
9. Amar D*, **Lindholm ME***, Norrbom J, Wheeler MT, Rivas MA, Ashley EA. *Time trajectories in the transcriptomic response to exercise - a meta-analysis*. **Nat Commun**. 2021 Jun 9;12(1):3471
10. Sanford JA*, Nogiec CD*, **Lindholm ME***, Adkins JA, Amar D, Dasari S, Drugan JK, Fernández FM, Radom-Aizik S, Schenk S, Snyder MP, Tracy RP, Vanderboom P, Trappe S, Walsh MJ, the Molecular Transducers of Physical Activity Consortium. *Molecular Transducers of Physical Activity Consortium (MoTrPAC): Mapping the Dynamic Responses to Exercise*. **Cell**. 2020 Jun 25;181(7):1464-1474.
*Shared first author
11. Chapman MA, Arif M, Emanuelsson EB, Reitzner SM, **Lindholm ME**, Mardinoglu A, Sundberg CJ. *Skeletal muscle transcriptomic comparison between long-term trained and untrained men and women*. **Cell Reports**. 2020 Jun 23;31(12):107808.
12. Moberg M, **Lindholm ME**, Reitzner SM, Ekblom B, Sundberg CJ, Psilander N. *Exercise induces different molecular responses in trained and untrained human muscle*. **Medicine & Science in Sports & Exercise**. 2020 Feb 19.
13. Voisin S, Harvey NR, Haupt LM, Griffiths LR, Ashton KJ, Coffey VG, Doering TM, Thompson JLM, Benedict C, Cedernaes J, **Lindholm ME**, Craig JM, Rowlands DS, Sharples AP, Horvath S, Eynon N. *An epigenetic clock for human skeletal muscle*. **J Cachexia Sarcopenia Muscle**. 2020 Feb 20, DOI: [10.1002/jcsm.12556](https://doi.org/10.1002/jcsm.12556)
14. Wiik A, Andersson DP, Brismar TB, Chanpen S, Dhejne C, Ekström TJ, Flanagan JN, Holmberg M, Kere J, Lilja M, **Lindholm ME**, Lundberg TR, Maret E, Melin M, Olsson SM, Rullman E, Wåhlén K, Arver S, Gustafsson T. *Metabolic and functional changes in transgender individuals following cross-sex hormone treatment: Design and methods of the Gender Dysphoria Treatment in Sweden (GETS) study*. **Contemp Clin Trials Commun**. 2018 Apr 12;10:148-153.
15. DeBoever C, Tanigawa Y, **Lindholm ME**, McInnes G, Lavertu A, Ingelsson E, Chang C, Ashley EA, Bustamante CD, Daly MJ, Rivas MA. *Medical relevance of protein-truncating variants across 337,205 individuals in the UK Biobank study*. **Nat Commun**. 2018 Apr 24;9(1):1612.
16. **Lindholm ME**, Giacomello S, Solnestam BW, Fischer H, Huss M, Kjellqvist S, Sundberg CJ. *The impact of endurance training on human skeletal muscle memory, global isoform expression and novel transcripts*. **Plos Genetics**. 2016 Sep 22;12(9):e1006294.
17. **Lindholm ME**, Rundqvist H. *Skeletal muscle hypoxia-inducible factor-1 and exercise*. **Exp. Physiol**. 2016 Jan;101(1):28-32.
18. Lindskog C, Linné J, Fagerberg L, Hallström BM, Sundberg CJ, **Lindholm ME**, Kampf C, Choi H, Liem DA, Ping P, Våremo L, Mardinoglu A, Nielsen J, Larsson E, Pontén F, Uhlén M. *The human cardiac and skeletal muscle proteomes defined by transcriptomics and antibody-based profiling*. **BMC Genomics**. 2015 Jun 25;16:475.
19. **Lindholm ME**, Marabita F, Gomez-Cabrero D, Rundqvist H, Ekström TJ, Tegnér J, Sundberg CJ. *An integrative analysis reveals coordinated reprogramming of the epigenome and the transcriptome in human skeletal muscle after training*. **Epigenetics**. 2014 Dec 2;9(12):1557-69.
20. **Lindholm ME**, Huss M, Solnestam BW, Kjellqvist S, Lundeberg J, Sundberg CJ. *The human skeletal muscle transcriptome: sex differences, alternative splicing, and tissue homogeneity assessed with RNA sequencing*. **FASEB J**. 2014 Oct;28(10):4571-81.
21. **Lindholm ME**, Fischer H, Poellinger L, Johnson RS, Gustafsson T, Sundberg CJ, Rundqvist H. *Negative regulation of HIF in skeletal muscle of elite endurance athletes: a tentative mechanism promoting oxidative metabolism*. **Am J Physiol Regul Integr Comp Physiol**. 2014 Aug 1;307(3):R248-55.
22. Marabita F, Almgren M, **Lindholm ME**, Ruhrmann S, Fagerström-Billai F, Jagodic M, Sundberg CJ, Ekström TJ, Teschendorff AE, Tegnér J, Gomez-Cabrero D. *An evaluation of analysis pipelines for DNA methylation profiling using the Illumina HumanMethylation450 BeadChip platform*. **Epigenetics**. 2013 Mar;8(3):333-46.