CV Katrien De Bock

Katrien De Bock is Associate Professor at ETH Zurich (Department of Health Sciences and Technology) since October 2015. Her laboratory focuses its research on investigating how endothelial cells rewire their metabolism during angiogenesis and how endothelial cells metabolically communicate with other cell types in their microenvironment to maintain or establish organ homeostasis. Specific interest goes to deciphering mechanisms of blood vessel growth and endothelial metabolic crosstalk in the muscle following exercise and/or muscle injury.

Biography: Katrien De Bock was born in Belgium in 1980 and is a Belgian citizen. She received her Master in Rehabilitation sciences in 2002. During her PhD-period at the Research Center for Exercise and Health (University of Leuven – Belgium - Oct 2002 to Sept 2007), she focused her research on exercise physiology and studied metabolic plasticity in muscle during exercise in the fasted state. From Oct 2007 to June 2013, she conducted a postdoctoral training at the Vesalius Research Center, Flemish Interuniversity Institute of Biotechnology (VIB - University of Leuven) under the mentorship of Prof. Peter Carmeliet. Here, she studied the link between angiogenesis and metabolism during development and disease. In Sept 2014, Katrien De Bock received an assistant professorship position at University of Leuven (Belgium), but almost immediately moved to Madrid (Spain) for an intensive research stay in the laboratory of Prof. Julian Aragonés where she studied the link between hypoxia and metabolism (02-08/ 2014). Soon thereafter, she decided to take up a professorship at ETH in Zürich (Oct 2015). The research of Katrien De Bock is supported by an ERC Starting Grant. Prof. De Bock has published over 60 papers and an H-index of 37 (google scholar)

For more information on the research and latest publications from the lab: www.musec.ethz.ch

De Bock, Katrien (°26/02/1980)

Associate professor for Exercise and Health, ETH Zürich

Researcher ID: L-2273-2013

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Current positions.

2015 – Associate Professor (as from October 1st, 2015)
Laboratory for Exercise and Health, Institute of Movement Sciences, Department of Health Sciences and Technology, ETH, Swiss Federal Institute of Technology, Zürich, Switzerland

Previous positions.

2015 – 2019 Guest Professor
Exercise Physiology Research Group, Department of Kinesiology, University of Leuven, Leuven, Belgium

2013 – 2015 Tenure track professor (Oct 2013 to Sept 2015)
Department of Kinesiology, University of Leuven, Leuven, Belgium

2007 – 2013 Postdoctoral research fellow
Vesalius Research Center, Flemish Institute of Biotechnology (VIB) - University of Leuven, Leuven, Belgium

Education.

2007 PhD in Rehabilitation Sciences
Department of Kinesiology, University of Leuven, Leuven, Belgium
Supervisor: Prof. Peter Hespel
Title: Metabolic adaptations to exercise in the fasted state

2002 Master in Rehabilitation Sciences
Department of Kinesiology, University of Leuven, Leuven, Belgium
With great distinction

Institutional responsibilities

Since 2020 Head of the Movement Sciences and Sports Institute (ETH Zürich)
Since 2019 Member of the ETH Research commission
Since 2018 Deputy director of the SLAAF animal facility
Since 2018 Member of the EPIC steering committee
Since 2016 Member of the VIB (Flemish Institute of Biotechnology) Board of Alumni

Research stays abroad.

2014 Visiting professor (Feb-Aug, 2014)
Laboratory of Immunology, Autonomous University of Madrid, Madrid, Spain
2007 Visiting researcher (June, 2007)
NUTRIM, University of Maastricht, Maastricht, The Netherlands

Fellowships.

2014 FWO fellowship for longterm stay abroad (V402515N)
2014 EMBO Short Term Fellowship
2009 – 2012 FWO postdoctoral research fellowship (1.2.666.10.N.00)

Prizes and awards.

1. Price Ir. Jozef and Reinhilde De Swerts for the study of cardiovascular diseases. Belgian Royal Academy of Medicine, 2014. *Endothelial metabolism as a novel anti-angiogenic strategy.*
2. 2^{e} place presentation contest at the Annual symposium of the Flemish Society of Kinesiologie. Leuven, 2002. *The effect of neurodegeneration on the contractile properties of mouse muscles.*

Career breaks.

06/2005-09/2005 Birth of Noor De Bock (3 months)
06/2013-09/2013 Birth of Rosanne De Bock (3 months)

Current grant support.

1. ERC Starting Grant. (StG-716140 - MusEC). Title: Understanding the metabolic crosstalk between the muscle and the endothelium: implications for exercise and insulin resistance. June 1st, 2017-May 31th, 2022.
2. Swiss National Science Foundation(SNSF) Project grant (31003A_176056). Title: Understanding exercise-induced endothelial metabolic reprogramming to promote ischemic revascularization. Oct 1st, 2017-Sept 30th, 2021.
3. ETH grant (ETH-16 17-1). Title: Defining the molecular mechanisms. underlying muscle fatty infiltration in humans. Feb 1st, 2018 - Jan 31th, 2021.

Current collaborative grant support

I participate in multiple collaborative research projects. Currently funded collaborative projects are:

1. ETH grant (ETH-24 19-1). Title: Causes and consequences of vascular ingrowth in tendon disease. Feb 1st, 2018 - Jan 31th, 2021. Co-application with Prof. Jess Snedeker.
2. Swiss Cancer League grant (KFS4758-02-2019-R). Title: Metabolic and neurodevelopmental programs regulating angiogenesis and the neurovascular unit (NVU) in tumors. Jan 1st, 2020-Dec 31th, 2023. Co-application with Dr. Thomas Wälchli. Boston University.

Publications
(1-63)

1. Veys K, Fan Z, Ghobrial M, Bouche A, Garcia-Caballero M, Vriens K, Conchinha NV, Seuwen A, Schlegel F, Gorski T, Crabbe M, Gilardoni P, Ardicoglu R, Schaffenrath J, Casteels C, De Smet G, Smolders I, Van Laere K, Abel ED, Fendt SM, Schroeter A, Kalucka J, Cantelmo AR, Walchli T, Keller A, Carmeliet P, De Bock K. Role of the GLUT1 Glucose Transporter in Postnatal CNS Angiogenesis and Blood-Brain Barrier Integrity. Circ Res. 2020. PubMed PMID: 32404031.
2. D'Hulst G, Soro-Arnaiz I, Masschelein E, Veys K, Fitzgerald G, Smeuninx B, Kim S, Deldicque L, Blaauw B, Carmeliet P, Breen L, Koivunen P, Zhao SM, De Bock K. PHD1 controls muscle mTORC1 in a hydroxylation-independent manner by stabilizing leucyl tRNA synthetase. Nat Commun. 2020;11(1):174. PubMed PMID: 31924757.
3. Shang M, Cappellesso F, Amorim R, Serneels J, Virga F, Eelen G, Carobbio S, Rincon MY, Maechler P, De Bock K, Ho PC, Sandri M, Ghesquiere B, Carmeliet P, Di Matteo M, Berardi E, Mazzone M. Macrophage-derived glutamine boosts satellite cells and muscle regeneration. Nature. 2020. PubMed PMID: 33116312.
4. Scheuren AC, D'Hulst G, Kuhn GA, Masschelein E, Wehrle E, De Bock K, Muller R. Hallmarks of frailty and osteosarcopenia in prematurely aged PolgA((D257A/D257A)) mice. J Cachexia Sarcopenia Muscle. 2020. PubMed PMID: 32596975.
5. Masschelein E, D'Hulst G, Zvick J, Hinte L, Soro-Arnaiz I, Gorski T, von Meyenn F, Bar-Nur O, De Bock K. Exercise promotes satellite cell contribution to myofibers in a load-dependent manner. Skelet Muscle. 2020;10(1):21. PubMed PMID: 32646489.
6. Zhang J, Muri J, Fitzgerald G, Gorski T, Gianni-Barrera R, Masschelein E, D'Hulst G, Gilardoni P, Turiel G, Fan Z, Wang T, Planque M, Carmeliet P, Pellerin L, Wolfrum C, Fendt SM, Banfi A, Stockmann C, Soro-Arnaiz I, Kopf M, De Bock K. Endothelial Lactate Controls Muscle Regeneration from Ischemia by Inducing M2-like Macrophage Polarization. Cell Metab. 2020;31(6):1136-53 e7. PubMed PMID: 32492393.
7. Blocquiaux S, Gorski T, Van Roie E, Ramaekers M, Van Thienen R, Nielens H, Delecluse C, De Bock K, Thomis M. The effect of resistance training, detraining and retraining on muscle strength and power, myofibre size, satellite cells and myonuclei in older men. Exp Gerontol. 2020;133:110860. PubMed PMID: 32017951.
8. Blocquiaux S, Gorski T, Van Roie E, Ramaekers M, Van Thienen R, Nielens H, Delecluse C, De Bock K, Thomis M. Corrigendum to "The effect of resistance training, detraining and retraining on muscle strength and power, myofibre size, satellite cells and myonuclei in older men" [Exp. Gerontol., 133, 2020, 110860]. Exp Gerontol. 2020;134:110897. PubMed PMID: 32147251.
9. D'Hulst G, Palmer AS, Masschelein E, Bar-Nur O, De Bock K. Voluntary Resistance Running as a Model to Induce mTOR Activation in Mouse Skeletal Muscle. Frontiers in physiology. 2019;10:1271-. PubMed PMID: 31636571.
10. Rossaert E, Pollari E, Jaspers T, Van Helleputte L, Jarpe M, Van Damme P, De Bock K, Moisse M, Van Den Bosch L. Restoration of histone acetylation ameliorates disease and metabolic abnormalities in a FUS mouse model. Acta Neuropathol Commun. 2019;7(1):107. PubMed PMID: 31277703.
11. Gorski TDB, K. Metabolic Interactions Between the Endothelium and the Muscle Microenvironment. Vasc Biol. 2019;1(1):H1-H8. PubMed PMID: WOS:000463529300051.
12. Caspers M, Blocquiaux S, Charlier R, Lefevre J, De Bock K, Thomis M. Metabolic fitness in relation to genetic variation and leukocyte DNA methylation. Physiol Genomics. 2019;51(1):12-26. PubMed PMID: 30526334.
13. Veys K, Alvarado-Diaz A, De Bock K. Measuring Glycolytic and Mitochondrial Fluxes in Endothelial Cells Using Radioactive Tracers. Methods Mol Biol. 2019;1862:121-36. PubMed PMID: 30315464.
14. Melendez-Rodriguez F, Urrutia AA, Lorendeau D, Rinaldi G, Roche O, Bogurcu-Seidel N, Ortega Muelas M, Mesa-Ciller C, Turiel G, Bouthelier A, Hernansanz-Agustin P, Elorza A, Escasany E, Li QOY, Torres-Capelli M, Tello D, Fuertes E, Fraga E, Martinez-Ruiz A, Perez B, Gimenez-Bachs JM,

Salinas-Sanchez AS, Acker T, Sanchez Prieto R, Fendt SM, De Bock K, Aragones J. HIF1alpha Suppresses Tumor Cell Proliferation through Inhibition of Aspartate Biosynthesis. Cell Rep. 2019;26(9):2257-65 e4. PubMed PMID: 30811976.

15. Vandoorne T, Veys K, Guo W, Sicart A, Vints K, Swijsen A, Moisse M, Eelen G, Gounko NV, Fumagalli L, Fazal R, Germeys C, Quaegebeur A, Fendt SM, Carmeliet P, Verfaillie C, Van Damme P, Ghesquiere B, De Bock K, Van Den Bosch L. Differentiation but not ALS mutations in FUS rewires motor neuron metabolism. Nat Commun. 2019;10(1):4147. PubMed PMID: 31515480.
16. Fitzgerald G, Soro-Arnaiz I, De Bock K. The Warburg Effect in Endothelial Cells and its Potential as an Anti-angiogenic Target in Cancer. Front Cell Dev Biol. 2018;6:100. PubMed PMID: 30255018.
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18. Caspers M, Blocquiaux S, Charlier R, Knaeps S, Lefevre J, De Bock K, Thomis M. Intensity-Specific Differential Leukocyte DNA Methylation in Physical (In)Activity: An Exploratory Approach. Twin Res Hum Genet. 2018;21(2):101-11. PubMed PMID: 29582722.
19. Ramachandran D, Clara R, Fedele S, Michel L, Burkard J, Kaufman S, Diaz AA, Weissfeld N, De Bock K, Prip-Buus C, Langhans W, Mansouri A. Enhancing enterocyte fatty acid oxidation in mice affects glycemic control depending on dietary fat. Sci Rep. 2018;8(1):10818. PubMed PMID: 30018405.
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28. Peeters A, Shinde AB, Dirkx R, Smet J, De Bock K, Espeel M, Vanhorebeek I, Vanlander A, Van Coster R, Carmeliet P, Fransen M, Van Veldhoven PP, Baes M. Mitochondria in peroxisome-deficient hepatocytes exhibit impaired respiration, depleted DNA, and PGC-1alpha independent proliferation. Biochim Biophys Acta. 2015;1853(2):285-98. PubMed PMID: 25450972.
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Van Schepdael A, Schwalbe H, Gervasio FL, Carmeliet G, Rozensky J, Dewerchin M, Simons M, Christopoulos A, Herbert JM, Carmeliet P. Inhibition of tumor angiogenesis and growth by a small-molecule multi-FGF receptor blocker with allosteric properties. Cancer Cell. 2013;23(4):477-88. PubMed PMID: 23597562.

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