

Curriculum Vitae**Markus Thiersch**

Last name	Thiersch
First name	Markus
Qualifications	Dr. sc. nat., M.sc. Biochemistry
Nationality	Swiss, German
Languages	German, English
Actual position	Head of Molecular Diagnostics, PathoVet AG www.pathovet.ch
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Scientific education, training, and council boards

- 10/2004 – 08/2009** Ph.D., Lab for Retinal Cell Biology, University of Zurich
- 2001/2004** M.sc. Biochemistry (Diplom), University of Leipzig
- 1999 – 2001** Bachelor (Vordiplom) Biochemistry, University of Leipzig

Professional employment

- 09/2023 – today** Head of Molecular Diagnostics, PathoVet AG
- 09/2023 – today** Head of Biology, Rütten Engineering AG
- 04/2015 – today** Senior Group Leader, Institute of Veterinary Physiology, University of Zurich
- 01/2012 – 03/2015** Postdoc Leader, Institute of Veterinary Physiology, University of Zurich
- 01/2010 – 12/2011** Postdoc, Department for Biomaterials, ETH Zurich
- 09/2009 – 12/2009** Postdoc, Lab for Retinal Cell Biology, University of Zurich

Lectures and awards

- 2022 – today** Animal experimentation and alternative methods in biomedical research (BME 311) for Master's Students in Biomedicine, University of Zurich
- 2018 – today** Scientific Writing and Publishing (BME 410) for Master's Students in Biomedicine, University of Zurich
- 2018/2022 – today** Physiology Respiration and Blood for Vet. med. Students (JK1 und JK2), University of Zurich
- 2016 – today** Evolutionary Medicine: Human Adaptation (BIO 437) for Master's Students in Biology, University of Zurich
- 2013 – today** Veterinary Medicine: Comparative Morphology and Pathophysiology (BIO 409) for Master's Students in Biomedicine
- 2018 – 2019** Scientific Writing and Publishing at Slovak Universities Bratislava, Kosice und Martin
- 2011** Biocompatible Materials II: PNS and CNS, ETH Zurich
- 2018/2022 – today** Physiology Respiration and Blood for Vet. med. Students (JK1 und JK2), University of Zurich
- 2011** Biocompatible Materials II: PNS and CNS, ETH Zurich
- 2011** Frontiers in Nanotechnology: Tissue Engineering, ETH Zurich
- 2011** Mechanobiology: Angiogenesis and Vascular Engineering, ETH Zurich

Supervision of Master's and Doctoral Students and Postdocs :

- 2015 – today** Supervision of 10 Master's Students in Biomedicine and Veterinary Medicine, three Dr. med. vet. and two Ph.D. Students, and three Postdocs

Memberships

- Since 2016** Life Science Switzerland LS2
- Since 2015** Zurich Center for Integrative Human Physiology (ZIHP)

Awards

- 02/2014** Best poster award at the "21. DVG Tagung der Fachgruppe Physiologie und Biochemie" in Zürich
- 2006** Travel Award für das 12. International Symposium on Retinal Degeneration 2006 in San Carlos de Bariloche, Argentina

Grants (competitive and non-competitive)

- J & F Thoma Foundation, Zug, Switzerland (PI principal investigator): “Effect of Physical Exercise on Cancer Mortality in High Altitude Exposed Mice” (10'000 CHF)
- Novartis Foundation for Medical-Biological Research, Basel, Switzerland (PI): “Erythropoietin-independent role of the erythropoietin receptor in chemo- and radioresistance of lung cancers” (60'000 CHF)
- J & F Thoma Foundation, Zug, Switzerland (PI) : “Effect of Physical Exercise on Cancer Mortality in High Altitude Exposed Mice” (25'000 CHF)
- Vifor Pharma, Glattbrugg, Switzerland (PI): “EPO resistant anemia in a spontaneously tumor-developing mouse model with iron deficiency” (70'000 CHF)
- Marie-Louise von Muralt-Stiftung für Kleintiere: grant extension (PI) “Analyzing the role of erythropoietin receptor in cancer growth and resistance to radiotherapy”(30'000 CHF)
- Marie-Louise von Muralt-Stiftung für Kleintiere (Co -PI); project funding “The role of myoglobin in breast cancer: in vitro and in vivo models for analyses of incidence, proliferation, virulence and response to radiotherapy”(140'000 CHF)
- Krebsliga Schweiz, project funding (Co-PI): “The role of myoglobin in the tumorigenesis of p53 wild type and deficient breast cancer” (242'450 CHF)Veterinary Pathology
- Marie-Louise von Muralt-Stiftung für Kleintiere: project funding (PI): “Analyzing the role of erythropoietin receptor in cancer growth and resistance to radiotherapy” (140'000 CHF)
- Forschungskredit of University of Zurich (PI): personal research grant “The impact of erythropoietin in the tumor microenvironment” (56'000 CHF)

Reviewer

- The FASEB Journal
- Cancer Control
- Journal of Clinical Medicine
- Molecular Biology Reports
- High Altitude Medicine & Biology
- Frontiers in Pharmacology
- High Altitude Medicine and Biology

Publications

Research Articles

- **Reassessment of the Current Iron Deficiency Definition in Pulmonary Hypertension.** Reiser AE, **Thiersch M**, Gassmann M, Muckenthaler MU, Geiser T, Lichtblau M, Ulrich S. *Pulm. Circ.* 2025 Jul 29;15(3):e70142. doi: 10.1002/pul2.70142
- **Insights into the Biological Activity and Bio-Interaction Properties of Nanoscale Imine-Based 2D and 3D Covalent Organic Frameworks.** Ye H, Franco C, Aboouf MA, **Thiersch M**, Sevim S, Llacer-Wintle J, Veciana A, Llauradó-Capdevila G, Wang K, Chen XZ, Tang Q, Matheu R, Wendel-Garcia PD, Sánchez-Murcia PA, Nelson BJ, Luo C, Puigmartí-Luis J, Pané S. *Adv Sci (Weinh).* 2024 Nov;11(44):e2407391. doi: 10.1002/advs.202407391

- **A Comprehensive Insight and In Silico Analysis of CircRNAs in Hepatocellular Carcinoma: A Step toward ncRNA-Based Precision Medicine.** Youness RA, Hassan HA, Abaza T, Hady AA, El Magdoub HM, Ali M, Vogel J, Thiersch M, Gassmann M, Hamdy NM, Aboouf MA. *Cells*. 2024 Jul 24;13(15):1245. doi: 10.3390/cells13151245
- **Voluntary exercise does not always suppress lung cancer progression.** Leimbacher AC, Villiger P, Desboeufs N, Aboouf MA, Nanni M, Armbruster J, Ademi H, Fluchter P, Ruetten M, Gantenbein F, Haider TJ, Gassmann M, Thiersch M. *iScience*. Aug 18 2023;26(8):107298. doi:10.1016/j.isci.2023.107298
- **Association of serum hepcidin with prostatespecific antigen levels in men from high Andean cities of Peru.** Alcantara-Zapata DE, Thiersch M, Gonzales GF. *Int J Health Sci (Qassim)*. Mar-Apr 2023;17(2):28-36.
- **Endogenous myoglobin expression in mouse models of mammary carcinoma reduces hypoxia and metastasis in PyMT mice.** Aboouf MA, Armbruster J, Guscetti F, Thiersch M, Boss A, Godecke A, Winning S, Padberg C, Fandrey J, Kristiansen G, Bicker A, Hankeln T, Gassmann M, Gorr TA. *Sci Rep*. May 9 2023;13(1):7530. doi:10.1038/s41598-023-34614-w
- **Iron- and erythropoietin-resistant anemia in a spontaneous breast cancer mouse model.** Bregolat NF, Ruetten M, Da Silva MC, Aboouf MA, Ademi H, Buren NV, Armbruster J, Stirn M, Altamura S, Marques O, Rodriguez JMM, Samillan VJ, Singh RP, Wielockx B, Muckenthaler MU, Gassmann M, Thiersch M. *Haematologica*. Apr 7 2022;doi:10.3324/haematol.2022.280732
- **Erythropoietin receptor regulates tumor mitochondrial biogenesis through iNOS and pAKT.** Aboouf MA, Guscetti F, von Büren N, Armbruster J, Ademi H, Ruetten M, Melendez-Rodriguez F, Rülcke T, Seymer A, Jacobs RA, Schneider Gasser EM, Aragones J, Neumann D, Gassmann M, Thiersch M. *Frontiers in Oncology*. 2022;Accepted: 18 Jul 2022doi:10.3389/fonc.2022.976961
- **Pro-Apoptotic and Anti-Invasive Properties Underscore the Tumor- Suppressing Impact of Myoglobin on a Subset of Human Breast Cancer Cells.** Aboouf MA, Armbruster J, Thiersch M, Guscetti F, Kristiansen G, Schraml P, Bicker A, Petry R, Hankeln T, Gassmann M, Gorr TA. *Int J Mol Sci*. Sep 29 2022;23(19)doi:10.3390/ijms231911483
- **Erythropoietin promotes hippocampal mitochondrial function and enhances cognition in mice.** Jacobs RA, Aboouf MA, Koester-Hegmann C, Muttathukunnel P, Laouafa S, Arias-Reyes C, Thiersch M, Soliz J, Gassmann M, Schneider Gasser EM. *Commun Biol*. Aug 5 2021;4(1):938. doi:10.1038/s42003-021-02465-8
- **Transcriptomic analysis of the mouse retina after acute and chronic normobaric and hypobaric hypoxia.** Ebner LJA, Samardzija M, Storti F, Todorova V, Karademir D, Behr J, Simpson F, Thiersch M, Grimm C. *Sci Rep*. Aug 17 2021;11(1):16666. doi:10.1038/s41598-021-96150-9
- **Myoglobin, expressed in brown adipose tissue of mice, regulates the content and activity of mitochondria and lipid droplets.** Aboouf MA, Armbruster J, Thiersch M, Gassmann M, Godecke A, Gnaiger E, Kristiansen G, Bicker A, Hankeln T, Zhu H, Gorr TA. *Biochim Biophys Acta Mol Cell Biol Lipids*. Dec 2021;1866(12):159026. doi:10.1016/j.bbalip.2021.159026
- **Iron Regulation in Elderly Asian Elephants (*Elephas maximus*) Chronically Infected With *Mycobacterium tuberculosis*.** Ruetten M, Steinmetz HW, Thiersch M, Kik M, Vaughan L, Altamura S, Muckenthaler MU, Gassmann M. *Front Vet Sci*. 2020;7:596379. doi:10.3389/fvets.2020.596379
- **A Single 60.000 IU Dose of Erythropoietin Does Not Improve Short-Term Aerobic Exercise Performance in Healthy Subjects: A Randomized, Double-Blind, Placebo-Controlled Crossover Trial.** Haider T, Diaz V, Albert J,

- Alvarez-Sanchez M, Thiersch M, Maggiorini M, Hilty MP, Spengler CM, Gassmann M. *Front Physiol.* 2020;11:537389. doi:10.3389/fphys.2020.537389
- **High-Altitude Cognitive Impairment Is Prevented by Enriched Environment Including Exercise via VEGF Signaling.** Koester-Hegmann C, Bengoetxea H, Kosenkov D, Thiersch M, Haider T, Gassmann M, Schneider Gasser EM. *Front Cell Neurosci.* 2018;12:532. doi:10.3389/fncel.2018.00532
 - **Novel antibodies directed against the human erythropoietin receptor: creating a basis for clinical implementation.** Maxwell P, Melendez-Rodriguez F, Matchett KB, Aragonés J, Ben-Califa N, Jaekel H, Hengst L, Lindner H, Bernardini A, Brockmeier U, Fandrey J, Grunert F, Oster HS, Mittelman M, El-Tanani M, Thiersch M, Schneider Gasser EM, Gassmann M, Dangoor D, Cuthbert RJ, Irvine A, Jordan A, Lappin T, Thompson J, Neumann D. *Br J Haematol.* Feb 2015;168(3):429-42. doi:10.1111/bjh.13133
 - **The angiogenic response to PLL-g-PEG-mediated HIF-1alpha plasmid DNA delivery in healthy and diabetic rats. Biomaterials.** Thiersch M, Rimann M, Panagiotopoulou V, Ozturk E, Biedermann T, Textor M, Luhmann TC, Hall H. *May 2013;34(16):4173-4182.* doi:10.1016/j.biomaterials.2013.02.021
 - **Normoxic activation of hypoxia-inducible factors in photoreceptors provides transient protection against light-induced retinal degeneration.** Lange C, Heynen SR, Tanimoto N, Thiersch M, Le YZ, Meneau I, Seeliger MW, Samardzija M, Caprara C, Grimm C. *Invest Ophthalmol Vis Sci.* Jul 29 2011;52(8):5872-80. doi:10.1167/iovs.11-7204
 - **HIF1A is essential for the development of the intermediate plexus of the retinal vasculature.** Caprara C, Thiersch M, Lange C, Joly S, Samardzija M, Grimm C. *Invest Ophthalmol Vis Sci.* Apr 4 2011;52(5):2109-17. doi:10.1167/iovs.10-6222
 - **The differential role of Jak/STAT signaling in retinal degeneration.** Lange C, Thiersch M, Samardzija M, Grimm C. *Adv Exp Med Biol.* 2010;664:601-7. doi:10.1007/978-1-4419-1399-9_69
 - **LIF-dependent JAK3 activation is not essential for retinal degeneration.** Lange C, Thiersch M, Samardzija M, Burgi S, Joly S, Grimm C. *J Neurochem.* Jun 2010;113(5):1210-20. doi:10.1111/j.1471-4159.2010.06686.x
 - **Retinal neuroprotection by hypoxic preconditioning is independent of hypoxia-inducible factor-1 alpha expression in photoreceptors.** Thiersch M, Lange C, Joly S, Heynen S, Le YZ, Samardzija M, Grimm C. *Eur J Neurosci.* Jun 2009;29(12):2291-302. doi:10.1111/j.1460-9568.2009.06781.x
 - **In conditions of limited chromophore supply rods entrap 11-cis-retinal leading to loss of cone function and cell death.** Samardzija M, Tanimoto N, Kostic C, Beck S, Oberhauser V, Joly S, Thiersch M, Fahl E, Arsenijevic Y, von Lintig J, Wenzel A, Seeliger MW, Grimm C. *Hum Mol Genet.* Apr 1 2009;18(7):1266-75. doi:10.1093/hmg/ddp026
 - **Nonessential role of beta3 and beta5 integrin subunits for efficient clearance of cellular debris after light-induced photoreceptor degeneration.** Joly S, Samardzija M, Wenzel A, Thiersch M, Grimm C. *Invest Ophthalmol Vis Sci.* Mar 2009;50(3):1423-32. doi:10.1167/iovs.08-2432
 - **Analysis of the retinal gene expression profile after hypoxic preconditioning identifies candidate genes for neuroprotection.** Thiersch M, Raffelsberger W, Frigg R, Samardzija M, Wenzel A, Poch O, Grimm C. *BMC Genomics.* Feb 8 2008;9:73. doi:10.1186/1471-2164-9-73
 - **The hypoxic transcriptome of the retina: identification of factors with potential neuroprotective activity.** Thiersch M, Raffelsberger W, Frigg E, Samardzija M, Blank P, Poch O, Grimm C. *Adv Exp Med Biol.* 2008;613:75-85. doi:10.1007/978-0-387-74904-4_8

- **R91W mutation in Rpe65 leads to milder early-onset retinal dystrophy due to the generation of low levels of 11-cis-retinal.** Samardzija M, von Lintig J, Tanimoto N, Oberhauser V, Thiersch M, Reme CE, Seeliger M, Grimm C, Wenzel A. Hum Mol Genet. Jan 15 2008;17(2):281-92. doi:10.1093/hmg/ddm304
- **Leukemia inhibitory factor extends the lifespan of injured photoreceptors in vivo.** Joly S, Lange C, Thiersch M, Samardzija M, Grimm C. J Neurosci. Dec 17 2008;28(51):13765-74. doi:10.1523/JNEUROSCI.5114-08.2008
- **Caspase-1 ablation protects photoreceptors in a model of autosomal dominant retinitis pigmentosa.** Samardzija M, Wenzel A, Thiersch M, Frigg R, Reme C, Grimm C. Invest Ophthalmol Vis Sci. Dec 2006;47(12):5181-90. doi:10.1167/iovs.06-0556
- **Differential role of Jak- STAT signaling in retinal degenerations.** Samardzija M, Wenzel A, Aufenberg S, Thiersch M, Reme C, Grimm C. FASEB J. Nov 2006;20(13):2411-3. doi:10.1096/fj.06-5895fje
- **Pseudomonas putida KT2440 responds specifically to chlorophenoxy herbicides and their initial metabolites.** Benndorf D, Thiersch M, Loffhagen N, Kunath C, Harms H. Proteomics. Jun 2006;6(11):3319-29. doi:10.1002/pmic.200500781

Reviews

- **The Brain at High Altitude: From Molecular Signaling to Cognitive Performance.** Aboouf MA, Thiersch M, Soliz J, Gassmann M, Schneider Gasser EM. Int J Mol Sci. Jun 15 2023;24(12)doi:10.3390/ijms241210179
- **Myoglobin in Brown Adipose Tissue: A Multifaceted Player in Thermogenesis.** Aboouf MA, Gorr TA, Hamdy NM, Gassmann M, Thiersch M. Cells. Sep 8 2023;12(18)doi:10.3390/cells12182240
- **HIF-2: an important player in neuronal response to ischemia.** Schneider Gasser EM, Gassmann M, Thiersch M. Pflugers Arch. Aug 2021;473(8):1175-1176. doi:10.1007/s00424-021-02601-7
- **High Altitude and Cancer Mortality.** Thiersch M, Swenson ER. High Alt Med Biol. Jun 2018;19(2):116-123. doi:10.1089/ham.2017.0061
- **Coping with Hypoxia at High Altitude: How Lung, Blood, and Brain Respond and Cross Talk 5th International Atacama-Leh Symposium in San Pedro de Atacama, March 4-9, 2018, Chile.** Schneider Gasser EM, Fabregas Bregolat N, Thiersch M. High Alt Med Biol. Sep 2018;19(3):291-294. doi:10.1089/ham.2018.0039
- **Reduced cancer mortality at high altitude: The role of glucose, lipids, iron and physical activity.** Thiersch M, Swenson ER, Haider T, Gassmann M. Exp Cell Res. Jul 15 2017;356(2):209- 216. doi:10.1016/j.yexcr.2017.03.048

Books

- **Mechanisms of cell death and neuroprotection in retinal degenerations In: Brain and retina in degenerative diseases of childhood.** Grimm C., Wenzel A., Samardzija M., Thiersch M. (2007) by Schmitt B., Kohlschütter A., Neubauer B., Plecko-Startling B. (Edts.) SPS Verlagsgesellschaft, Heilbronn, Germany. pp 170-180.s

Congresses and seminars

Talks

- 2023** LS2 Life Science Annual Meeting 2023, Switzerland
- 2022** 8th Chronic Hypoxia Symposium 2023, La Paz, Bolivia

- 2022 DVG Fachgruppentagung Physiologie und Biochemie 2022
- 2022 Vetsuisse Bahnhofsevent
- 2020 16th Symposium of the Centre for Integrative Human Physiology in Zurich, Switzerland
- 2018 5th International Atacama-Leh Symposium in San Pedro de Atacama, Chile
- 2014 EpoCan FP7 Meetings in Athens, Greece; Obergurgel, Austria; Belfast, Northern Ireland; Vienna, Austria; Madrid, Spain
- 2011 4th International Conference on Tissue Engineering in Crete, Greece
- 2009 ARVO Annual Meeting in Fort Lauderdale, Florida, USA
- 2008 Swiss Retina Meeting in Brunnen, Switzerland
- 2007 1st Young Researchers Workshop on Vision and Neurodegeneration in Potsdam, Germany
- 2007 Swiss Retina Meeting in Brunnen, Switzerland
- 2006 XIIth International Symposium on Retinal Degeneration 2006 San Carlos de Bariloche, Argentina
- 2006 2nd Symposium of the Centre for Integrative Human Physiology in Zurich, Switzerland
- 2006 Swiss Retina Meeting in Brunnen, Switzerland

Posters

- 2022 Vetsuisse Bahnhofsevent
- 2015 Keystone Symposium: "Hypoxia: from basic mechanisms to therapeutics, Dublin, Ireland
- 2014 21. DVG Tagung der Fachgruppe Physiologie und Biochemie" in Zurich
- 2011 4th International Conference on Tissue Engineering in Crete, Greek
- 2010 Third International NanoBio Conference 2010, August 24-27, 2010, Zurich
- 2008 4th Pro Retina Research Colloquium Potsdam, March 28 - 29, 2008, Potsdam, Germany
- 2007 ZIHP (Centre for Integrative Human Physiology), August 31, 2007, Zurich, Switzerland
- 2007 ARVO Annual Meeting, May 06 - 10, 2007, Fort Lauderdale, Florida, USA
- 2007 3rd Pro Retina Research Colloquium Potsdam, March 30 - 31, 2007, Potsdam, Germany
- 2007 6th day of Clinical Research, March 01 - 02, 2007, University Hospital Zurich, Switzerland