

## CV: Dr. Karin Müller

### Address for correspondence

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### Position

Scientist and Leader of the Andrology lab

### Academic education

1967-1975	9th Polytechnical Primary School, Berlin, Germany
1975-1979	Extended Polytechnical Secondary School „Klement Gottwald“, Berlin, Germany
1979	Degree "Abitur"
1979 - 1984	Study of biology at the Humboldt University Berlin, Germany
1984	Diploma in biology/biophysics
1996	Doctorate: Dr. rer. nat.

### Professional activities

#### 1984 - 2007

Research associate at the Institute for Artificial Insemination Schönow (since 01.01.1993 Institute for Reproduction of Farm Animals Schönow e. V.)

#### *Main research focus*

Fields of research: Spermatology, Cryopreservation of semen, Membrane biology

#### 1991/1992

EMBO fellowship at INRA, Rennes, and at Institut de Biologie Physico-Chimique, Paris

#### *Main research focus*

Studies on lipids in the trout sperm membrane

#### 1997-2007

Head of department: Reproduction biology and In vitro techniques

#### *Main research focus*

Lipid dynamics in the sperm cell membrane, *In vitro* fertilisation in bovine, Maturation of oocytes and Apoptosis, Diagnostics of fertility

#### Since 2007

Research associate at the Leibniz Institute for Zoo- and Wildlife Research

#### *Main research focus*

Comparative andrology, Sperm physiology and (cryo)preservation, Physiology of the cell membrane, Lipidomics and fluorescence microscopy

#### *Teaching activities*

Reproduction biology in mammals (Course), Signal induction in reproduction (part. Lecture): Humboldt University Berlin (Master Molecular life sciences, Master Biophysics)

#### *Memberships*

Deutsche Gesellschaft für Biophysik e. V.  
Society for the Study of Reproduction, USA

## Most important papers published during previous 10 years

Greube, A., K. Müller, E. Töpfer-Petersen, A. Herrmann and P. Müller (2004)

Interaction of Fn type II proteins with membranes: the stallion seminal plasma protein SP-1/2. *Biochemistry* 43, 464-472.

Kurz, A., D. Viertel, A. Herrmann and K. Müller (2005)

Localisation of phosphatidylserine in boar sperm cell membranes during capacitation and acrosome reaction. *Reproduction* 130, 615-626.

Tannert, A., A. Kurz, K.-R. Erlemann, K. Müller, A. Herrmann, J. Schiller, E. Töpfer-Petersen, P. Manjunath and P. Müller (2007)

The bovine seminal plasma protein PDC-109 extracts phosphorylcholine containing lipids from the outer membrane leaflet.

*Europ. Biophys. J.* 36, 461-476.

Tannert, A., E. Töpfer-Petersen, A. Herrmann, K. Müller and P. Müller (2007)

The lipid composition modulates the influence of the bovine seminal plasma protein PDC-109 on membrane stability.

*Biochemistry* 46 (41), 11621 -11629. doi: 10.1021/bi7011299

Fuchs, B., K. Müller, F. Göritz, S. Blottner and J. Schiller (2007)

Characteristic oxidation products of choline plasmalogens are detectable in cattle and roe deer spermatozoa by MALDI-TOF mass spectrometry.

*Lipids* 42(11), 991-998. doi: 10.1007/s11745-007-3108-7

Müller, K., P. Müller, G. Pincemy, A. Kurz and C. Labbe (2008)

Characterization of sperm plasma membrane properties after cholesterol modification. Consequences for cryopreservation of rainbow trout spermatozoa.

*Biol Reprod* 78, 390-399.

Gabler, C., S. Odau, K. Müller, J. Schön, A. Bondzio, R. Einspanier (2008)

Exploring cumulus-oocyte-complex-oviductal cell interactions: Gene profiling in the bovine oviduct.

*J Physiol Pharmacol* 59, Suppl 9, 29-42

Fuchs, B., U. Jakob, F. Göritz, R. Hermes, T. Hildebrandt, J. Schiller and K. Müller (2009)

MALDI-TOF "fingerprint" phospholipid mass spectra allow the differentiation between ruminantia and feloidea spermatozoa.

*Theriogenology* 71, 568-575. <http://dx.doi.org/10.1016/j.theriogenology.2008.08.023>

Braun BC, Müller K, Lopes CAP, Ringleb J, Jewgenow K (2009)

The trefoil domain of porcine zona pellucida: a sperm receptor?

*Anim Reprod* 6 (3), 481-490.

Jakob U, Fuchs B, Süß R, Wibbelt G, Braun B, Müller K, Schiller J (2009)

The solubilisation of boar sperm membranes by different detergents - a microscopic, MALDI TOF MS, <sup>31</sup>P NMR and PAGE study on membrane lysis, extraction efficiency, lipid and protein composition.

*Lipids in Health and Disease* 8:49. doi: 10.1186/1476-511X-8-49. <http://www.lipidworld.com/content/8/1/49>

Scolari S, Müller K, Bittman R, Herrmann A, Müller P (2010)

Interaction of mammalian seminal plasma protein PDC-109 with cholesterol? Implications for a putative CRAC domain.

*Biochemistry* 49, 9027-9031. doi: 10.1021/bi101257c

Teuber K, Schiller J, Jakob U, Lüpold S, Orledge JM, Blount JD, Royle NJ, Hoodless A, Müller K (2011)

MALDI-TOF mass 1 spectrometry as a simple tool to determine the phospholipid / glycolipid composition of sperm: pheasant spermatozoa as one selected example.

Animal Reproduction Science 123 (2011) 270–278. doi: 10.1016/j.anireprosci.2011.01.009

Fuchs B, Müller K, Paasch U, Schiller J (2012)

Lysophospholipids: potential Markers of Diseases and Infertility?

Bentham Science Publishers:

Mini-Reviews in Medicinal Chemistry 12 (1), 74-86(13). <http://dx.doi.org/10.2174/138955712798868931>

Wegener J, Kamp G, Knollmann U, May T, Müller K, Bienefeld K (2012)

In vivo validation of in vitro quality tests for cryopreserved honey bee semen.

Cryobiology 65, 126-131.

Schradin C, Eder S, Müller K (2012)

Differential investment into testes and sperm production in alternative male reproductive tactics of the African striped mouse (*Rhabdomys pumilio*).

Horm Behav. 61(5), 686-695. <http://dx.doi.org/10.1016/j.yhbeh.2012.03.002>

Raynaud J, Müller K, Schradin C (2012)

Experimental increase of testosterone levels in free-ranging juvenile male African striped mice (*Rhabdomys pumilio*) induces physiological, morphological, and behavioral changes.

Gen Comp Endocrinol. 178, 108-115.

N Mikołajewska, K Müller, W Nizański, K Jewgenow (2012)

Vitrification of domestic cat oocytes – studies on viability assessment and cytoskeletal changes.

Reprod. Dom. Anim. 47 Suppl 6:295-299. doi: 10.1111/rda.12044

Wegener J, K Zschörnig, K Onischke, B Fuchs, J Schiller, K Müller (2013)

Conservation of Honey Bee (*Apis mellifera*) sperm phospholipids during storage in the bee queen - a TLC/MALDI-TOF MS Study.

Experimental Gerontology 48, 213-222. <http://dx.doi.org/10.1016/j.exger.2012.12.009>

Simon P, S Bäumner, O Busch, R Röhrich, M Kaese, P Richterich, A Wehrend, K Müller, R Gerardy-Schahn, M Mühlenhoff, H Geyer, R Geyer, R Middendorff, SP Galuska (2013)

Polysialic acid is present in mammalian semen as a post-translational modification of the Neural Cell Adhesion Molecule NCAM and the polysialyltransferase ST8SiaII.

J Biol Chem 288(26):18825-18833. doi: 10.1074/jbc.M113.451112

Schulze M, K Ruediger, K Mueller, M Jung, C Well, M Reissmann (2013)

Development of an in vitro index to characterize fertilizing capacity of boar ejaculates.

Anim Reprod Sci 140(1-2):70-76. doi: 10.1016/j.anireprosci.2013.05.012

Nimptsch A, B Fuchs, R Süß, K Zschörnig, U Jakop, F Goeritz, J Schiller, K Müller (2013)

A simple method to identify ether lipids in spermatozoa samples by MALDI-TOF mass spectrometry.

Anal Bioanal Chem 405(21): 6675-6682. doi: 10.1007/s00216-013-7147-z

Svetlichnyy V, Müller P, Pomorski TG, Schulze M, Schiller J, Müller K (2014): Metabolic incorporation of unsaturated fatty acids into boar spermatozoa lipids and de novo formation of diacylglycerols.

Chem Phys Lipids 177, 41-50. doi: 10.1016/j.chemphyslip.2013.11.001.

Lueders I, Ludwig C, Schröder M, Müller K, Zahmel J, Dehnhard M (2014)

Successful non-surgical artificial insemination and hormonal monitoring in an Asiatic golden cat (*Catopuma temmincki*). Journal of Zoo and Wildlife Medicine 45(2): 372-379. doi: <http://dx.doi.org/10.1638/2013-0269R.1>

URL: <http://www.bioone.org/doi/full/10.1638/2013-0269R.1>

Pyttel S, Nimptsch A, Böttger J, Zschörnig K, Jakop U, Wegener J, Müller K, Paasch U, Schiller J (2014)

Changes of murine sperm phospholipid composition during epididymal maturation determined by MALDI-TOF mass spectrometry.

*Theriogenology* 82(3): 396-402. doi: 10.1016/j.theriogenology.2014.04.017

Müller K, Koster S, Painer J, Söderberg A, Gavier-Widèn D, Dehnhard M, Jewgenow K (2014)

Testosterone production and spermatogenesis in free-ranging Eurasian lynx (*Lynx lynx*) throughout the year.

*Europ J Wildlife Res* 60: 569-577. doi: 10.1007/s10344-014-0821-4

Hänsch M, Simon P, Schön J, Kaese M, Braun B, Jewgenow K, Goeritz F, Küpper J, Ahmadvand N, Geyer R, Middendorff R, Müller K, Galuska SP (2014)

Polysialylation of NCAM correlates with onset and termination of seasonal spermatogenesis in roe deer.

*Glycobiology* 24, 488-493. doi: 10.1093/glycob/cwu023

Schulze M, C Junkes, P Mueller, S Speck, K Ruediger, M Dathe, K Mueller (2014)

Are cationic antimicrobial peptides an alternative for conventional antibiotics in boar semen preservation? Effects of antimicrobial peptides on liquid-preserved boar spermatozoa.

*PLoS ONE* 9(6): e100490. doi: 10.1371/journal.pone.0100490

Speck S, Courtiol A, Junkes C, Dathe M, Rüdiger K, Müller K, Schulze M (2014)

Effects of cationic antimicrobial peptides on bacterial contaminants in liquid-preserved semen.

*PLoS ONE* 9(8): e105949. doi:10.1371/journal.pone.0105949