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CURRICULUM VITAE

Born on 28th January 1975 in Wuppertal, Germany

SCIENTIFIC RECORD

- Since September 2012** Consortium leader of consortium 4 ‘*Effects of ocean acidification in a warming climate on species interactions at distribution boundaries*’ of the BMBF-funded initiative BIOACID II (Biological Impact of Ocean Acidification) at Alfred Wegener Institute (AWI), Bremerhaven.
- Sept. 2010 – August 2012** Co-coordination of the BMBF-funded initiative BIOACID I at AWI.
- Sept. 2009 – August 2010** PI in continued DFG project ‘*Evolution of haemocyanin and its influence on thermal sensitivity in cold adapted cephalopods*’ (SPP 1158 Antarktis, MA 4271/1-2) at AWI.
- June - August 2009** Invited scientist (EU CORDIS programme) to Université de Bretagne Occidentale, Brest (F). Participation in Summer School of Physiology as a lecturer/supervisor.
- May 2008 – May 2009** PI in DFG funded project ‘*Evolution of haemocyanin and its influence on thermal sensitivity in cold adapted cephalopods*’ (SPP 1158 Antarktis, MA 4271/1-1) at AWI.
- Nov. 2004 – April 2008** Research Associate in NERC grant NER/A/S/2002/00812 ‘*The cellular basis of standard and active metabolic rate in the free-ranging cephalopod Sepia officinalis*’ at Department of Zoology, University of Cambridge, UK. Supervisor: Prof C Ellington.
- August 2001 – Dec. 2004** PhD at AWI under supervision of Prof H Pörtner. Thesis title: ‘*Cellular and systemic investigations of temperature adaptation in fish*’
- May 2000 - March 2001** MSc thesis under supervision of Prof H Pörtner at AWI: ‘*Oxygen dependent temperature tolerance in marine fish? Investigations by means of in vivo ³¹P NMR spectroscopy*’.
- July 1998 - July 1999** MSc studies in biology and specialisation in zoophysiology at WWU Münster, Germany. MSc exams in zoophysiology, plant physiology and biochemistry in March 2000.
- September 1997 - June 1998** Studies in marine biology & oceanography at University of Newcastle upon Tyne, England (supervision: Prof. N. Owens).
- October 1995 - Sept. 1997** Studies in biology at the Westfälische Wilhelms Universität (WWU) at Münster, Germany. BSc in September 1997.

LIST OF PUBLICATIONS

- 19.) Hirse, T., **Mark, F.C.**, Häfker, N.S., Sartoris, F.J., Wittke, S., Pörtner, H.O. Monitoring and control of pH and pCO₂ in recirculating seawater mesocosms. Submitted to Nature Methods
- 18.) **Strobel, A.**, Bennecke, S., Mintenbeck, K., Pörtner, H.O., **Mark, F.C.** Metabolic responses of Antarctic nototheniids to rising temperature and pCO₂. Submitted to PLoS ONE [IF=4,41]
- 17.) Agostini, C., Zane, L., Patarnello, T., **Mark, F.C.**, Marino, I.A.M. Using interspecific outliers to identify genetic differences between populations. Submitted to Marine Ecology Progress Series [IF=2,48]
- 16.) Kraft, J., Klumpen, E., **Mark, F.C.**, Bridges, C.R. The Influence of Ocean Acidification and Warming in Adults and Juvenile Edible Crabs (*Cancer pagurus* L.)-Acute and Chronic Responses and their Implications. Submitted to Marine Biology [IF=2,01]
- 15.) **Schiffer, M.**, Harms, L., Pörtner, H.O., Lucassen, M., **Mark, F.C.**, Storch, D. (2012) Development of physiological responses in Arctic *Hyas araneus* (Linnaeus) zoea I larvae to elevated seawater pCO₂. Mar Biol, in press (DOI: 10.1007/s00227-012-2036-0) [IF=2,01]
- 14.) Mintenbeck, K., Barrera-Oro, E.R., Brey, T., Jacob, U., Knust, R., **Mark, F.C.**, Moreira, E., **Strobel, A.**, Arntz, W.E. (2012) Impact of climate change on fish in complex Antarctic ecosystems. Adv Ecol Res (Vol. 46, Global Change in multispecies systems) 46:353-428, in press [IF=3,08]
- 13.) **Strobel, A.**, Hu, M.Y., Gutowska, M.A., Lieb, B., Lucassen, M., Melzner, F., Pörtner, H.O., **Mark, F. C.*** (2012) Influence of temperature and elevated seawater pCO₂ on the relative expression of different haemocyanin isoforms in the common cuttlefish *Sepia officinalis*. J Exp Zool Part A: Ecological Genetics and Physiology, published online 13 July 2012 (10.1002/jez.1743) [IF=3,36]
- 12.) **Oellermann, M.**, Pörtner, H.O., **Mark, F.C.*** (2012) Mitochondrial dynamics underlying thermal plasticity of cuttlefish (*Sepia officinalis*) hearts. J Exp Biol, 215: 2992-3000 [IF=3,04]
- 11.) **Mark, F. C.***, Lucassen, M., **Strobel, A.**, Barrera-Oro, E., Koschnick, N., Zane, L., Patarnello, T., Pörtner, H.O. and Papetti, C. (2012) Mitochondrial function in Antarctic nototheniids with ND6 translocation. PLoS ONE, 7(2): e31860 [0 citations, IF=4,41] 10.) Donohue, P., Calosi, P., Bates, A.H., Laverock, B., Rastrick, S., **Mark, F.C.**, **Strobel, A.**, Widdicombe, S. (2012) Physiological and behavioural impacts of exposure to elevated levels of CO₂ on an important ecosystem engineer, the burrowing shrimp *Upogebia deltaura*. Aquatic Biol, 15(1): 73-86. [0 citations, IF=1,61]
- 9.) Pörtner, H.O., Farrell, A.P., Knust, R., Lannig, G., **Mark, F. C.**, Storch, D. (2009) Adapting to Climate Change – Response letter. Science, 323:876-877. [10 citations, IF=31,36]
- 8.) Pörtner, H. O., Bock, C., Knust, R., Lannig, G., Lucassen, M., **Mark, F. C.**, Sartoris, F. J. (2008) Cod and climate in a latitudinal cline: developing a physiological cause and effect understanding of climate effects on marine fishes. Climate Res 37:253-270. [36 citations, IF= 2,11]
- 7.) Melzner, F., **Mark, F. C.** and Pörtner, H.-O. (2007) Role of blood-oxygen transport in thermal tolerance of the cuttlefish, *Sepia officinalis*. Int Comp Biol, 47(4):645-655. [14 citations, IF= 2,62]
- 6.) **Wolfram, K.**, **Mark, F. C.***, John, U., Lucassen, M., Pörtner, H. O. (2006). Microsatellite DNA variation indicates low levels of genetic differentiation among cuttlefish (*Sepia officinalis* L.) in the English Channel and the Bay of Biscay. Comp Biochem Physiol D, 1:375-383. [6 citations, IF=1,8]
- 5.) **Mark, F. C.***, Lucassen, M., and Pörtner, H.-O. (2006). Thermal sensitivity of uncoupling proteins in polar and temperate fish. Comp Biochem Physiol D, 1:365-374. [23 citations, IF=1,8]
- 4.) **Mark, F. C.***, Hirse, T., and Pörtner, H.-O. (2005). Thermal sensitivity of cellular energy budgets in some Antarctic fish hepatocytes. Polar Biol, 28(11):805-814. [21 citations, IF= 1,44]
- 3.) Pörtner, H. O., **Mark, F. C.**, Bock, C. (2004). Oxygen limited thermal tolerance in fish? Answers obtained by Nuclear Magnetic Resonance techniques. Resp Physiol Neurobiol, 141:243-260. [55 citations, IF=2,38]
- 2.) Brante, A., Fernández, M., Eckerle, L., **Mark, F. C.**, Pörtner, H. O., Arntz, W. (2003). Reproductive investment in the crab *Cancer setosus* along a latitudinal cline: egg production, embryo losses and embryo ventilation, Mar Ecol Prog Ser, 251: 221-232. [51 citations, IF= 2,48]
- 1.) **Mark, F.C.**, Bock, C., Pörtner, H.O. (2002). Oxygen limited thermal tolerance in Antarctic fish investigated by magnetic resonance imaging (MRI) and spectroscopy (31P-MRS), Am J Physiol, 283 (5), R1254- R1262. [75 citations, IF= 3,28]

*) corresponding author

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PUBLIC OUTREACH

Mark, F. C. (2011) The oceans are acidifying: spider crabs and icefish are feeling the repercussions of climate change. AWI brochure: Polar ecosystems in a changing climate.

Mark, F. C., Bock, C., Brodte, E., Hirse, T., Knust, R. and Koschnick, N. (2005) Adaptive competence of Teleostei. The Expedition ANTARKTIS XXI/2 (BENDEX) of RV "Polarstern" in 2003/2004. Reports on Polar and Marine Research 503:21-24 ([hdl:10013/epic.22630.d001](https://hdl.handle.net/10013/epic.22630.d001)).

TEACHING ACTIVITIES

June 2009	Lecturer & Supervisor in 'Summer School in Physiology', Université de Bretagne Occidentale (F), (www.physiology-orphy.fr)
2009, 2007, 2006	Organisation and supervision of a Marine Biological field course to Brittany (F) for University of Bremen.
November 2008	Invited professor for marine zoophysiology at University of Padova (I). 10 hour lecture series on ' <i>The Ecophysiology of Thermal Tolerance in Marine Ectotherms</i> '.
2008	Organisation and supervision of a Marine Biological/Physiological field course to Banyuls-sur-mer (F) for Universities of Mainz and Frankfurt/Main.

- ◆ Teaching activities and student supervision in various lab courses at AWI
- ◆ Supervision of **4 PhD theses** (since 2009)
External reviewer ('rapporteur') of PhD thesis and defense (Dec 2010, UBO Brest, F)
- ◆ Supervision of **9 MSc (Diploma) theses** (since 2005)
- ◆ Supervision of **2 BSc theses** (since 2008)
- ◆ Supervision of **6 student** research projects (since 2003)

COMMUNITY SERVICES

- ◆ Session Chair, Session 4: Responses of marine organisms and ecosystems to multiple environmental stressors. ,*The Ocean in a High CO₂-World* 3rd Symposium, Monterey (USA), September 24th-27th 2012.
- ◆ Organisation of ESF workshop ‘The effects of climate change on vulnerable life traits of aquatic ectotherms: towards an integrated approach’ Bremerhaven, September 18th-21st 2011 (with F. Giomi (AWI) and S. Cannicci (University of Florence, I))
- ◆ Organisation committee member of ‘Joint EPOCA, BIOACID and UKOARP meeting’, Bremerhaven, September 27th-30th 2010
- ◆ **Reviewer** for: Am J Physiol | Aquaculture | Aquatic Biology | Comp Biochem Physiol A, B, D | Functional Ecology | Invert Neurosci | J Exp Biol | J Exp Mar Biol Ecol | J Exp Zool | J Fish Biol | Mar Biol | Mitochondrion | Oikos | Philos T R Soc Lond | PLoS One | Polar Biol | Prog Oceanography
- ◆ Executive Board member and consortium leader in BIOACID II programme
- ◆ Scientific Steering Committee member in BIOACID I programme
- ◆ Numerous Expeditions and Ongoing International Collaborations
- ◆ Numerous Talks (>15) and Posters (>20) at International Scientific Meetings
- ◆ More than 10 international invited lectures & talks
- ◆ 8 Successful Grant Applications (since 2002), totalling >1.8 M €

QUALIFICATIONS

SYSTEMIC PHYSIOLOGY

- ◆ Application of MR imaging and spectroscopy, including setting up and running experiments with marine and terrestrial organisms
- ◆ Video analysis of activity patterns and animal video tracking
- ◆ Respirometry of aquatic organisms (SDA, SMR, AMR)
- ◆ Blood physiology, analysis of blood-oxygen binding characteristics in vertebrate and invertebrate blood, spectrophotometric and tonometric approaches
- ◆ Aquaculture of marine fish and cephalopods

CELL PHYSIOLOGY

- ◆ Cell isolation and primary culture of fish, cephalopod, mouse and toad hepatocytes
- ◆ Respirometry of isolated cells and mitochondria
- ◆ Cellular energetics studied by standard and inhibited respiration rates
- ◆ Application of MR imaging and spectroscopy to cell extracts
- ◆ Measurement of energy coupling, membrane potential and proton leak rates in intact and permeabilised cells and isolated mitochondria
- ◆ Photometric assays of enzyme activities

MOLECULAR PHYSIOLOGY

- ◆ Molecular techniques such as PCR, RealTime PCR, specific RNA quantification (RNase protection assay), cloning, sequencing, primer construction, RACE (rapid amplification of cDNA ends), native and SDS-PAGE, microsatellite analysis
- ◆ Specific protein quantification and Western Blotting
- ◆ Some experience with next generation sequencing techniques