Christoph Winkler

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PRESENT APPOINTMENT:

Associate Professor, Department of Biological Sciences, National University of Singapore (NUS)

ACADEMIC QUALIFICATIONS:

1989 Diplom in Biology, Ludwig-Maximilians-University Munich, Germany
1989 Diploma thesis at Max-Planck-Institute for Biochemistry, Martinsried, Germany
1994 Dr. rer. nat., University of Wuerzburg, Germany ('*summa cum laude*'; with M. Schartl)
2005 '*Habilitation*' (Developmental Biology), University of Wuerzburg, Germany
2006 *'Privatdozent'* (PD, Member of Faculty of Biology), Univ. of Wuerzburg, Germany
2007 Associate Professor, National University of Singapore

PAST EMPLOYMENT HISTORY:

1994-1996 Postdoctoral fellow, Biocenter, University of Wuerzburg, Germany (with M. Schartl)
1996-1998 HFSP postdoctoral fellow, HHMI, Univ. of Washington, Seattle, USA (with R.T. Moon)
1998-2007 Group Leader, Physiological Chemistry I, Biocenter, Univ. of Wuerzburg, Germany
2002-2007 Senior Lecturer (with tenure), Biocenter, University of Wuerzburg
2007-now Associate Professor (since 2013 with tenure), National University of Singapore

AWARDS:

1996-1998 Human Frontier Science Program (HFSP) Long-term Postdoctoral Fellowship
2010 NUS-Japanese Society for the Promotion of Science (JSPS) Exchange Scholarship
2011 Teaching Excellence Award, Faculty of Science, National University of Singapore
2015 Presidential Visiting Professorship, University of Wuerzburg, Germany

UNIVERSITY SERVICE:

2006-2008 Steering Committee, Graduate College 1048 "Organogenesis", University of Wuerzburg
2008-now Member at NUS Graduate School for Integrative Sciences and Engineering (NGS)
2010-now Member, Centre for BioImaging Sciences (CBIS) at DBS, NUS
2010-2015 Member, Department Teaching Committee (DTC), DBS, NUS
2012-2015 Chairman, Department Teaching Committee (DTC), DBS, NUS
2013-2023 Member, Department Executive Committee (EXCO), DBS, NUS
2015-2017 Deputy Head of Department, Chairman of the Department Graduate Committee
2017-2023 Assistant Head of Department (Management and Development)
2020-now Member of IACUC Committee
2023-now Member of Department Research Committee
2024-now Director (Scientific), AquaPolis

TEN SELECTED PUBLICATIONS
(out of total: 118; h-index: 35; 4829 citations in Scopus)

1. Kuhl, H., Tan, W.H., Klopp, C., Kleiner, W., Koyun, B., Ciorpac, M., Feron, R., Knytl, M., Kloas, W., Schartl, M., Winkler, C.*, Stöck, M.* (**2024**). A candidate sex determination locus in amphibians which evolved by structural variation between X- and Y-chromosomes. ***Nature Comms*** 15(1):4781. **co-corresponding authors*.
2. Tan, W.H., Ruecklin, M., Larionova, D., Tran, B.N., van Heuven, B.J., Marone, F., Matsudaira, P., Winkler, C. (**2024**). A Collagen10a1 mutation disrupts cell polarity in a medaka model for Metaphyseal Chondrodysplasia type Schmid. ***iScience*** 27(4):109405***.***
3. Tzung, K.W., Lalonde, R.L., Prummel, K.D., Mahabaleshwar, H., Moran, H.R., Stundl, J., Cass, A.N., Le, Y., Lea, R., Dorey, K., Tomecka, M.J., Zhang, C., Brombacher, E.C., White, W.T., Roehl, H.H., Tulenko, F.J., Winkler, C., Currie, P.D., Amaya, E., Davis, M.C., Bronner, M.E., Mosimann, C., Carney, T.J. (**2023**). A median fin derived from the lateral plate mesoderm and the origin of paired fins. ***Nature*** 618(7965):543-549.
4. Phan, Q.T., Chua, Y.K., Jin, A., Winkler, C.*, Koh, W.P.* (**2022**). CXCL9 predicts the risk of osteoporotic hip fracture in a prospective cohort of Chinese men – a matched case-control study. ***Journal Bone Mineral Research*** 37, 1843-1849. * co-corresponding authors
5. Tan, W.H., Winkler, C. (**2022**). A novel non-disruptive and efficient knock-in allows fate tracing of resident osteoblast progenitors during repair of vertebral lesions in medaka. ***Development*** 149(12):dev200238***.***
6. Tay, S.H., Ellieyana, E.N., Le, Y., Sarusie, M.V., Grimm, C., Ohmer, J., Mathuru, A., Fischer, U., Winkler, C. (**2021**). A novel zebrafish model for intermediate type spinal muscular atrophy demonstrates importance of Smn for maintenance of mature motor neurons. ***Hum Mol Genet*** 30(24):2488-2502***.***
7. Koh, A., Tao, S., Ang, S.T., See, K., Kathiresan, P., Orbán, L., Wohland, T., and Winkler, C. **(2021)**. A Neurexin2aa deficiency results in axon pathfinding defects and social impairment in zebrafish. ***Human Molecular Genetics*** 29, 3765-3780***.***
8. Phan, Q.T., Tan, W.H., Liu, R.R., Sundaram, S., Buettner, A., Kneitz, S., Cheong, B., Vyas, H., Mathavan, S., Schartl, M., Winkler, C. (**2020**). Cxcl9l and Cxcr3.2 regulate recruitment of osteoclast progenitors to bone matrix in a medaka osteoporosis model. ***Proc Natl Acad Sci USA*** 117, 19286-19286.
9. Yu, T., Graf, M., Renn, J., Schartl, M., Larionova, D., Huysseune, A., Witten, P.E., Winkler, C. **(2017)**. A vertebrate specific and essential role for *sp7/osterix* in osteogenesis revealed by gene knock-out in the teleost medaka. ***Development*** 144:265-271.
10. Yu, T., Buettner, A., To, T.T., Witten, P.E., Huysseune, A., Winkler, C. (**2016**). Live imaging of osteoclast inhibition by bisphosphonates in a medaka osteoporosis model. ***Disease Models & Mechanisms*** 9(2), 155-163.

AWARDED EXTERNAL FUNDING:

2001-2004 BMBF 50WB0152: 'The role of osteoprotegerin during osteoclast differentiation at altered gravity conditions: In vivo analysis in the zebrafish (Danio rerio) and medaka model (Oryzias latipes)'. (**Co-PI**, together with M. Schartl)

2004-2007 European Space Agency ESA, CCN 15452/01/NL/SH: 'Investigations of developmental pathways leading to bone formation and homeostasis by genetic dissection and functional analysis of osteoprotegerin (OPG) in a transgenic fish model on earth and in microgravity environment'. (**Co-PI**, together with M. Schartl)

2004-2008 German Research Council (DFG), Graduate School GRK1048 'Molecular basis of organ development in vertebrates'; Project C3: 'Functional characterization of midkine-b (mdkb) during cell specification in the dorsal neural tube of zebrafish'. (**PI**)

2006-2007 Collaborative Research Center SFB 581 'Molecular models for diseases of the nervous system', Project B20: 'Deficiencies in RNA metabolism as cause of neurodegenerative diseases: Molecular Analysis of Retinitis Pigmentosa'. (**Co-PI**, together with Utz Fischer)

2007-2009 NUS Academic Research fund (AcRF) Tier 1 start-up fund, R-154-000-329-133: 'The role of microRNAs during cell specification and differentiation in the zebrafish spinal cord'. S$ 180,000 SGD. (**PI**)

2007-2010 Ministry of Education/AcRF Tier2, T207B3107: 'Defects in RNA metabolism as cause for neuronal degeneration: A zebrafish model for Retinitis Pigmentosa'. S$ 582,000 SGD. (**PI**)

2007-2010 A-STAR/BMRC, 07/1/21/19/544: 'Medakafish as a model for human bone disorders: The role of Osterix and SOST in controlling bone homeostasis". S$ 687,121 SGD. (**PI**)

2010-2012 Center for Life Sciences/VISA: 'Ageing induced changes in bone homeostasis visualized in vivo by transgenic reporter fish'. S$ 20,000 SGD. (**PI**)

2010-2013 Ministry of Education/AcRF Tier 1: 'Anaplastic lymphoma kinase (Alk): Elucidating its proto-oncogenic function during neurogenesis in zebrafish'. S$ 110,670 SGD. (**PI**)

2011-2014 A-STAR/BMRC: 'Understanding regulatory networks in healthy and diseased bone cells using a medaka osteoporosis model'. S$ 568,500 SGD. (**PI**)

2013-2016 Ministry of Health/NMRC: 'In vivo models for Spinal Muscular Atrophy: Insight into the molecular mechanisms of motor neuron degeneration'. S$ 835,000 SGD. (**PI**)

2014-2017 Ministry of Education/AcRF Tier 2: 'Osteoblast-osteoclast interaction during bone degeneration and repair'. S$ 713,831 SGD. (**PI**)

2015-2017 National Institute of Health (NIH), USA: 'Osteogenic effects of dietary anthocyanins in transgenic medaka'. S$ 243,105 USD. (**Co-PI**)

2016-2019 Ministry of Education/AcRF Tier 1: 'The role of VAPB in a novel zebrafish model for ALS8'. S$ 179,920.00 SGD. (**PI**)

2017-2020 Ministry of Education/AcRF Tier 2: 'Control of osteoblast plasticity in a medaka osteoporosis model'. S$ 858.087 SGD. **(PI)**

2017-2022 Ministry of Education/AcRF Tier 3: 'Solving the Conundrum of Morphogen Dynamics during Tissue Patterning'. S$ 1,110,270 SGD. **(PI)**

2018-2021 National Research Foundation (NRF) Singapore: 'A functional genomics approach to teleost musculoskeletal homeostasis'. S$ 424,632 SGD. **(PI)**

2019-2021 NUSMed-FoS Initiative 'Healthy Brain Ageing' – 'Analyzing mRNA editing and Fez1 function in the zebrafish nervous system'. S$ 454,000 SGD. **(PI)**

2019-2020 NUS/BER Strategic Partnership 'Chemokine control of bone health'. S$ 18,400 SGD. **(PI)**

2021-2022 Ministry of Education/AcRF Tier 1: 'A molecular analysis of selective motor neuron vulnerability in a mutant zebrafish model for spinal muscular atrophy'. S$ 100,000 SGD. **(PI)**

2022-2025 Ministry of Education/AcRF Tier 2: 'Chemokine control of osteoclast recruitment – new insights into bone remodelling'. S$ 1,172,975.00. **(PI)**

2024-2027 Ministry of Education/AcRF Tier 1: 'MOTOR NEURON RESILIENCE IN A ZEBRAFISH MODEL FOR SPINAL MUSCULAR ATROPHY'. S$ 250,000. **(PI)**

EDITORIAL BOARDS:
- PLoS ONE (2009-2022)
- Journal of Applied Ichthyology, Guest Editor (2011-2017)
- Journal of Fish Biology, Guest Editor (since 2018)
- Frontiers in Cell and Developmental Biology - Morphogenesis and Patterning; Review Editor, 2021
- Frontiers in Endocrinology – Bone Research; Guest Associate Editor, 2021 – 2023
- Journal of Gerontology: Small Fish Models in Gerontology Research; Guest Editor, 2022 – 2024
- Development, Growth and Differentiation (DGD), Asian Editor, 2024 – present

SUPERVISORY BOARD MEMBER:
- Member of the Supervisory Board of the EU Marie Sklodowska-Curie International Innovative Training Network "BioMedaqu" (2018-2022)

AD-HOC REVIEWER FOR FUNDING ORGANIZATIONS:
- Agence Nationale de la Recherche (ANR), France
- Alexander-von-Humboldt Foundation, Germany
- Biotechnology and Biological Sciences Research Council (BBSRC), UK
- CNRS, Atip-Avenir Programme, France
- Deutsche Forschungsgemeinschaft (DFG), Germany
- European Science Foundation (ESF)
- Fonds de la Recherche Scientifique (FNRS), Belgium
- German/Israeli Foundation (GIF)
- Horizon Programme, Netherlands Genomics Initiative (NGI), Netherlands
- Human Frontier Science Program (HFSP)
- Medical Research Council (MRC), UK
- MINERVA, Germany/Israel
- National Medical Research Council (NMRC), A-STAR, Singapore
- National University of Singapore Academic Research Fund, Singapore
- National Science Foundation (NSF), USA
- Netherlands Organization for Scientific Research (NWO), Netherlands
- Orphan Disease Center, Perelman School of Medicine, University of Pennsylvania, USA
- Singapore Food Story (SFS)
- SMA Europe
- Yale-NUS Research Grant Administration

MEMBER OF GRANT EVALUATION PANEL:
- Member of the University Research Council (URC) Expert Panel: Biomedical Engineering & Life Sciences; National University of Singapore