

CURRICULUM VITAE (September 2018)

Finn-Arne Weltzien, Dr.scient. (Ph.D.)

Norwegian. Born in Bergen, Norway

Address: Norwegian University of Life Sciences
NMBU School of Veterinary Sciences
PO box 369 Sentrum
0102 Oslo, Norway

Mob: +47 950 960 15
Skype: *finniweltzien*
E-mail: finn-arne.weltzien@nmbu.no

Current position: Professor in Physiology, Head of Section for Biochemistry and Physiology

1. Research interests

Neuroendocrinology of puberty and reproduction in teleost fish

My research group investigates fundamental aspects of neuroendocrine regulation of puberty in fish. Using Atlantic salmon and Japanese medaka as model systems, we investigate how different hypothalamic and gonadal factors control the pituitary gonadotrope cells and how the intracellular signaling pathways of gonadotropes are regulated at puberty. In this work, we are using different approaches using molecular biology, electrophysiology, and bioinformatics. My research group currently consists of 5 postdocs, 4 PhD-students, and a lab engineer.

2. University degrees

- 2002 **Dr.scient. (PhD)** in reproductive physiology at the Department of Zoology, University of Bergen, Norway: "Gonadotropins, pituitary cell types, and spermatogenesis in Atlantic halibut (*Hippoglossus hippoglossus* L.)." Supervisors: Drs Birgitta Norberg and Hans Jørgen Fyhn.
- 1995 **Cand.scient. (MSc)** in zoophysiology at the Department of Zoology, University of Bergen: "Temperature related metabolism and ketosis in eggs and larvae of turbot (*Scophthalmus maximus* L.) and nauplii of brine shrimp (*Artemia franciscana* K.)." Grade: 1.3 (scale from best grade 1.0 to lowest passable grade 4.0). Supervisor: Dr Hans Jørgen Fyhn.

3. Work experience (post PhD)

- 2014- Head of Section of Biochemistry and Physiology
- 2014-2019 Coordinator/Project leader of *Impress*, an EU Marie Skłodowska Curie Innovative Training Network
- Fall 2013 Sabbatical in the group of Sylvie Dufour at Museum National d'Histoire Naturelle, Paris, France
- 2009- Professor at the Norwegian University of Life Sciences, Oslo, Norway.
- 2009- Adjunct Professor at the Department of Molecular Biosciences, University of Oslo (UoO).
- 2008 Group leader at the Department of Molecular Biosciences, UoO.
- 2005-2008 NFR-researcher at the Department of Molecular Biosciences, UoO. Group leader: Olav Sand.
- 2003-2005 Marie Curie Individual Fellowship from the EU. Postdoctoral work at Muséum National d'Histoire Naturelle, Paris, and Institut de Neurobiologie Alfred Fessard, CNRS, Gif-sur-Yvette, France. Group leaders: Sylvie Dufour and Philippe Vernier.
- 2002-2003 Postdoctoral fellow at Department of Biology, UoO. Group leader: Kjell B. Døving.
- 1997-2001 PhD-student at Institute of Marine Research, Austevoll, Norway. Group leader: Birgitta Norberg

4. Scientific supervision (2003-2015)

Postdocs

Christiaan Henkel, Norwegian University of Life Sciences, Norway (2018-2021)
Gersende Maugars, Norwegian University of Life Sciences, Norway (2017-2020)
Kjetil Hodne, Norwegian University of Life Sciences, Norway (2015-2019)
Eirill Ager-Wick, Norwegian University of Life Sciences, Norway (2015-2019)
Romain Fontaine, Norwegian University of Life Sciences, Norway (2015-2020)
Guro K. Sandvik, Norwegian University of Life Sciences, Norway (2014-2018)
Jon Hildahl, Norwegian University of Life Sciences, Norway (2009-2012)
David Sanchez Penaranda, Norwegian University of Life Sciences (2009-2011)

Salima Aroua, University of Oslo, Norway (2010-2011)

PhD-students

Khadeeja Siddique, Norwegian University of Life Sciences, Norway (2017-2020)

Elia Ciani, Norwegian University of Life Sciences, Norway (2015-2019)

Susann Burow, Norwegian University of Life Sciences, Norway (2014-2018)

Abdolrahman Khezri, Norwegian University of Life Sciences, Norway (2014-2018)

Kristine von Krogh, Norwegian University of Life Sciences, Norway (2010-2019)

Isabelle Heikkinen, University of Oslo, Norway (2010-)

Eirill Ager-Wick, Norwegian University of Life Sciences, Norway (2009-2013)

Rønnaug Strandabø, University of Oslo, Norway (2009-2013)

Kjetil Hodne, University of Oslo / Norwegian University of Life Sciences, Norway (2008-2012)

Salima Aroua, Université de Paris VI, France (2004-2008)

Marie Emilie Sébert, Université de Lyon, France (2004-2007)

MSc-students

Eirik Hovind, Department of Mathematical Sciences and Technology, Norwegian University of Life Sciences (2016)

Erin Siv McFadden, Department of Molecular Biosciences, University of Oslo (2013-2015)

Marie Fongaard, Department of Molecular Biosciences, University of Oslo (2013-2015)

Ida Andersen, Department of Production Animal Clinical Sciences, NMBU (2012-2014)

Michelle Rocha Lu, Department of Molecular Biosciences, University of Oslo (2012-2014)

Line Victoria Moen, Department of Molecular Biosciences, University of Oslo (2010-2012)

Gunnveig Toft Bjørndal, Department of Molecular Biosciences, University of Oslo (2010-2012)

Rikke Lifjeld, Department of Molecular Biosciences, University of Oslo (2010-2011)

Stine Berg Vaule, Department of Molecular Biosciences, University of Oslo (2009-2011)

Kjetil Hodne, Department of Molecular Biosciences, University of Oslo (2005-2007)

Marie Emilie Sébert, University of Lyon, France (2003-2004)

5. Selected external grants following PhD dissertation

1. <i>Regulation of TH and dopamine D2-type receptors in the teleost brain</i> Marie Curie Individual Postdoc Fellowship, European Commission (2003 – 2005)	NOK 1 010 000
2. <i>Neuroendocrine and environmental control of puberty in fish</i> Research Council of Norway (RCN) (2005 – 2008). Project leader	NOK 3 000 000
3. <i>Differential neuroendocrine regulation of FSH and LH in Atlantic cod and gfp-transgenic medaka</i> RCN, Outstanding Young Investigator Program (2008 – 2013). Project leader	NOK 8 200 000
4. <i>Characterization of the Kiss system in medaka during development</i> RCN (2014 – 2017). Project leader	NOK 3 800 000
5. <i>Impress</i> , Marie Skłodowska Curie Actions – Innovative Training Network European Commission (2015 – 2019). Project Coordinator	NOK 35 000 000
6. <i>Melatonin - Direct effects on gonadotrope cells in the fish pituitary?</i> RCN (2015 – 2017). Project leader	NOK 2 060 000
7. <i>Transcriptome sequencing of Atlantic salmon pituitary to identify novel genes involved in pubertal activation in fish.</i> RCN (2015 – 2017). Project leader	NOK 2 020 000
8. <i>DigiBrain: From genes to brain function in health and disease</i> RCN (2016 – 2020). WP-leader	NOK 5 000 000
9. <i>EvoSize: Size-dependent anthropogenic perturbations -from genes to ecosystems and back</i> RCN (2016 – 2020). Project leader	NOK 8 500 000
10. <i>Productivity and Resilience Enhancement of Exploited Fish stocks: an experimental approach</i> RCN (2016 – 2020). Project leader	NOK 8 500 000

Total: NOK 77 090 000

6. Peer-reviewed scientific publications (last 10 years)

1. Sébert M-E, **Weltzien F-A**, Moisan C, Pasqualini C, Dufour S (2008a) Dopaminergic systems in the European eel: characterization, brain distribution, and potential role in migration and reproduction. *Hydrobiologia* 602, 27-46
2. Sébert M-E, Legros C, **Weltzien F-A**, Malpoux B, Chemineau P, Dufour S (2008b). Melatonin inhibits eel (*Anguilla anguilla*) sexual maturation, possibly via a stimulatory effect on brain dopaminergic systems. *J. Neuroendocrinol.* 20, 917-929.
3. **Weltzien F-A**, Sébert M-E, Pasqualini C, Dufour S (2009a). Dopamine inhibition of eel puberty. In: The spawning migration of the European eel – Estimation of the reproductive success of silver eel. Van den Thillart G (ed). Springer Verlag (Book chapter).
4. Pasqualini C, **Weltzien F-A**, Vidal B, Baloché S, Dufour S, Vernier P (2009b). Two distinct dopamine D2 receptors in the European eel display differential distribution and regulation by androgens. *Endocrinology* 150, 1377-1392.
5. Taranger GL, Carrillo M, Schulz RW, Fontaine P, Zanuy S, Felip A, **Weltzien F-A**, Dufour S, Karlsen O, Norberg B, Andersson E, Hansen T (2010a). Control of puberty in farmed fish. *Gen. Comp. Endocrinol.* 165, 483-515.
6. Dufour S, Sébert M-E, **Weltzien F-A**, Rousseau K, Pasqualini C (2010b). Neuroendocrine control of reproduction by dopamine in teleosts. *J. Fish Biol.* 76, 129-160.
7. Edeline E, Haugen TO, **Weltzien F-A**, Claessen D, Winfield IJ, Stenseth NC, Vøllestad LA (2010c). The demographic cost of social stress in an aquatic top predator. *Proc. Roy. Soc. B* 277, 843-851.
8. Hodne K, Haug TM, **Weltzien F-A** (2010d). Single-cell qPCR on dispersed primary pituitary cells –an optimized protocol. *BMC Mol. Biol.* 11:82.
9. Hildahl J, Sandvik GK, Edvardsen RB, Fagernes C, Norberg B, Haug TM, **Weltzien F-A** (2011a). Identification and gene expression analysis of three GnRH genes in Atlantic cod during puberty provides insight into transition from three to two GnRH variants in fish. *Gen Comp. Endocrinol.* 172, 458-467.
10. Hildahl J, Sandvik GK, Edvardsen RB, Norberg B, Haug TM, **Weltzien F-A** (2011b). Four gonadotropin releasing hormone receptor genes in Atlantic cod are differentially expressed in the brain and pituitary during puberty. *Gen Comp. Endocrinol.* 173, 333-345
11. Aroua S, Maugars G, Jeng SR, Chang CF, **Weltzien F-A**, Rousseau K, Dufour S (2012a). Pituitary gonadotropins FSH and LH are oppositely regulated by the activin/follistatin system in a basal teleost, the eel. *Gen. Comp. Endocrinol.* 175(1), 82-91
12. Henkel CV, Burgerhout E, de Wijze DL, Dirks RP, Minegishi Y, Jansen HJ, Spaik HP, Dufour S, **Weltzien F-A**, et al. (2012b). Primitive duplicate Hox clusters in the European eel's genome. *PLoS One* 7(2), e32231.
13. Hodne K, von Krogh K, **Weltzien F-A**, Sand O, Haug TM (2012c). Optimized conditions for primary culture of pituitary cells from the Atlantic cod (*Gadus morhua*). The importance of osmolality, pCO₂, and pH. *Gen. Comp. Endocrinol.* 178, 206-215
14. Mazzeo I, Peñaranda DS, Gallego V, Hildahl J, Nourizadeh-Lillabadi R, Asturiano JF, Pérez L, **Weltzien F-A** (2012d). Variations in the gene expression of zona pellucida proteins, *zpb* and *zpc*, in female European eel (*Anguilla anguilla*) during induced sexual maturation. *Gen. Comp. Endocrinol.* 178, 338-346
15. Hildahl J, Sandvik GK, Lifjeld R, Hodne K, Nagahama Y, Haug TM, Okubo K, **Weltzien F-A** (2012e). Developmental tracing of luteinizing hormone β -subunit gene expression using green fluorescent protein transgenic medaka (*Oryzias latipes*) reveals a putative novel developmental function. *Dev. Dyn.* 241, 1665-1677
16. Henkel CV, Dirks RP, de Wijze DL, Minegishi Y, Aoyama J, Jansen HJ, Turner B, Knudsen B, Bundgaard M, Hvam KL, Boetzer M, Pirovano W, **Weltzien F-A**, Dufour S, Tsukamoto K, Spaik HP, van den Thillart GE (2012f). First draft genome of the Japanese eel, *Anguilla japonica*. *Gene* 511, 195-201
17. Hildahl J, Taranger GL, Norberg B, Haug TM, **Weltzien F-A** (2013a). Differential regulation of GnRH ligand and receptor genes in the brain and pituitary of Atlantic cod exposed to different photoperiod. *Gen. Comp. Endocrinol.* 180, 7-14
18. Peñaranda DS, Mazzeo I, Hildahl J, Gallego V, Nourizadeh-Lillabadi R, Pérez L, Asturiano JF, **Weltzien F-A** (2013b). Molecular characterization of three GnRH receptor paralogs in the European eel, *Anguilla anguilla*: Tissue-distribution and changes in transcript abundance during artificially induced sexual development. *Mol. Cell. Endocrinol.* 369, 1-14
19. Strandabø RAU, Hodne K, Ager-Wick E, Sand O, **Weltzien F-A**, Haug TM (2013c). Signal transduction involved in GnRH2-stimulation of identified LH-producing gonadotropes from lhb-GFP transgenic medaka (*Oryzias latipes*). *Mol. Cell. Endocrinol.* 372, 128-139
20. Hodne K, Strandabø RAU, von Krogh K, Nourizadeh-Lillabadi R, Sand O, **Weltzien F-A**, Haug TM (2013d). Electrophysiological differences between fshb- and lhb-expressing gonadotropes in primary culture. *Endocrinology* 154, 3319-3330
21. Hodne K, **Weltzien F-A**, Oka Y, Okubo K (2013e). Expression and putative function of kisspeptins and their receptors during early development in medaka. *Endocrinology* 154, 3437-3446
22. Ager-Wick E, Dirks RP, Burgerhout E, Nourizadeh-Lillabadi R, de Wijze DL, Spaik HP, van den Thillart GEEJM, Tsukamoto K, Dufour S, **Weltzien F-A**, Henkel CV (2013f). The pituitary gland of European eel reveals massive expression of genes involved in the melanocortin system. *PlosOne* 8(10):e77396

23. **Weltzien F-A**, Hildahl J, Hodne K, Okubo K, Haug TM (2014a). Embryonic development of gonadotropins and gonadotrope cells –lessons from model fish. *Mol. Cell. Endocrinol.* 385, 18-27 Invited review.
24. Peñaranda DS, Mazzeo I, Gallego V, Hildahl J, Nourizadeh-Lillabadi R, Pérez L, **Weltzien F-A**, Asturiano JF (2014b). The regulation of aromatase and androgen receptor expression during gonad development in male and female European eel. *Reprod. Dom. Anim.* 49, 512-521
25. **Weltzien F-A**, Almeida F, Karlsen Ø (2014c). Reproductive biology of the Atlantic cod. In: *The Biology and Ecology of Atlantic cod* (Eds Ian Mayer and Ian Bricknell). Science Publishers, New Hampshire, USA.
26. Mazzeo I, Peñaranda DS, Gallego V, Baloché S, Nourizadeh-Lillabadi R, Tveiten H, Dufour S, Asturiano JF, **Weltzien F-A**, Pérez L (2014d). Temperature modulates the vitellogenesis progression in European eel. *Aquaculture* 434, 38-47
27. Ager-Wick E, Henkel CV, Haug TM, **Weltzien F-A** (2014e). Using normalization to resolve RNA-seq biases caused by amplification from minimal input. *Physiological Genomics* 46, 808-820
28. Sandvik GK, Hodne K, Haug TM, **Weltzien F-A** (2014f). RF-amide peptides in vertebrate development. *Frontiers in Neuroendocrine science* 5, 203. Invited review
29. Morini M, Peñaranda DS, Vílchez MC, Gallego V, Nourizadeh-Lillabadi R, Asturiano JF, **Weltzien F-A**, Pérez L (2015). Transcript levels of the soluble sperm factor protein phospholipase C zeta 1 (PLCζ1) increase through induced spermatogenesis in European eel. *Comp. Biochem. Physiol. A* 187, 168-176
30. Strandabø RAU, Grønlien HK, Ager-Wick E, Nourizadeh-Lillabadi R, Hildahl JP, **Weltzien F-A**, Haug TM (2015). Identified lhb-expressing cells from medaka (*Oryzias latipes*) show similar Ca²⁺-response to all endogenous GnRH forms, and reveal expression of a novel fourth GnRH receptor). *Gen. Comp. Endocrinol.* 229, 19-31
31. Griffiths GW, Muller F, Ledin J, Patton EE, Gjøen T, Lobert VH, Winther-Larsen HC, Mullins M, Joly JS, **Weltzien FA**, Press CM, Alestrom P (2016). Fish from Head to Tail: The 9th European Zebrafish Meeting in Oslo. *Zebrafish* 13, 132-137
32. Hodne K, **Weltzien FA** (2016). Single-Cell Isolation and Gene Analysis: Pitfalls and Possibilities. *Int. J. Mol. Sci.* 16, 26832-26849
33. Strandabø RAU, Grønlien HK, Ager-Wick E, Nourizadeh-Lillabadi R, Hildahl JP, **Weltzien FA**, Haug TM (2016). Identified lhb-expressing cells from medaka (*Oryzias latipes*) show similar Ca²⁺-response to all endogenous GnRH forms, and reveal expression of a novel fourth GnRH receptor. *Gen. Comp. Endocrinol.* 229, 19
34. Candelman M, Fontaine R, Colella S, Santojanni A, **Weltzien FA**, Carnevali O (2017). Gonadotropin characterization, localization and expression in the European hake (*Merluccius merluccius*). *Reproduction* 153, 123-132
35. Morini M, Peñaranda DS, Vílchez MC, Nourizadeh-Lillabadi R, Lafont AG, Dufour S, Asturiano JF, **Weltzien FA**, Pérez L (2017). Nuclear and membrane progesterin receptors in the European eel: Characterization and expression in vivo through spermatogenesis. *Comp. Biochem. Physiol. A* 207, 79-92
36. Jansen HJ, Liem M, Jong-Raadsen SA, Dufour S, **Weltzien FA**, Swinkels W, Koelewijn A, Palstra AP, Pelster B, Spaik HP, Thillart GEVD, Dirks RP, Henkel CV (2017). Rapid de novo assembly of the European eel genome from nanopore sequencing reads. *Sci. Rep.* 7, 7213
37. von Krogh K, Bjørndal GT, Nourizadeh-Lillabadi R, Hodne K, Ropstad E, Haug TM, **Weltzien FA** (2017). Sex steroids differentially regulate fshb, lhb and gnhr expression in Atlantic cod (*Gadus morhua*) pituitary. *Reproduction* 154, 581-594
38. Fontaine R, Hodne K, **Weltzien FA** (2018). Healthy Brain-pituitary Slices for Electrophysiological Investigations of Pituitary Cells in Teleost Fish. *J. Vis. Exp.* 138, e57790, doi:10.3791/57790
39. Ager-Wick E, Hodn, K, Fontaine R, von Krogh K, Haug TM, **Weltzien FA** (2018). Preparation of a High-quality Primary Cell Culture from Fish Pituitaries. *J. Vis. Exp.* 138, e58159, doi:10.3791/58159
40. Grønlien HK, Fontaine R, Hodne K, Tysseng I, Ager-Wick E, **Weltzien FA**, Haug TM. Gonadotropes display extensions with multiple functions in the teleost fish medaka (*Oryzias latipes*). *Endocrinology* (in Review)
41. Burow S, Fontaine R, von Krogh K, Mayer I, Nourizadeh-Lillabadi R, Hollander-Cohen L, Cohen Y, Shpilman M, Levavi-Sivan B, **Weltzien FA**. Medaka Follicle-stimulating hormone (Fsh) and Luteinizing hormone (Lh): Developmental profiles of pituitary protein and gene expression levels. *Gen. Comp. Endocrinol.* (in Review)
42. Fontaine R, Ager-Wick E, Hodne K, **Weltzien FA**. Plasticity of Lh cells caused by cell proliferation and recruitment of existing cells. *J. Endocrinol.* (in 2nd Review)
43. von Krogh K, Toft Bjørndal G, Nourizadeh-Lillabadi R, Ropstad E, Haug TM, **Weltzien FA**. Cortisol differentially affects cell viability and reproduction-related gene expression in Atlantic cod pituitary dependent on stage of sexual maturation. *J. Neuroendocrinol.* (in 2nd Review)
44. Ciani E, Mizrahi N, Fontaine R, Maugars G, Nourizadeh-Lillabadi R, Levavi-Sivan B, **Weltzien FA**. Pharmacological and physiological characterization of melatonin receptors reveals their ability to increase intracellular cyclic adenosine monophosphate levels and possible direct effects on the pituitary gland in Atlantic salmon (*Salmo salar*). *J. Pineal Res.* (in Review)

Bibliometrics (Google scholar, per 11.09.2018): H-index: 25; i10-index: 43; Citations: 2216