

(Andre P. Seale)
College of Tropical Agriculture and Human Resources
 (Human Nutrition Food and Animal Sciences)
 FTE Distribution: 30% I; 70% R; 0% E

Education

<u>Degree</u>	<u>University</u>	<u>Major</u>
Bachelors	University of Miami	Marine Science and Biology
Masters		
PhD	University of Hawai‘i at Mānoa	Zoology

Lifetime and Fellow Achievement Awards (peer nominated and endorsed national and International-
 important for those without accreditation that is peer nominated and endorsed, recognized)

Professional Appointments

<u>Title</u>	<u>Employer</u>	<u>Dates Employed</u>
<i>Associate Researcher and Professor</i>	HNFAS - UHM	2020- present
<i>Assistant Researcher and Professor</i>	HNFAS - UHM	2016- 2020
<i>Assistant Researcher</i>	HIMB - UHM	2011- 2016
<i>Postdoctoral fellow</i>	HIMB - UHM	2009- 2010
<i>Senior Research Scientist</i>	Proteonik Inc.	2004- 2006
<i>Postdoctoral fellow</i>	PBRC – UHM	2002- 2003

Courses Taught

Course Number and Title (credits)

- ANSC450/OCN450 (3 cr.) - Aquaculture Production
- ANSC472 (3 cr.) - Comparative Endocrinology
- ANSC682 (1cr.) – Advanced Topics in Animal Sciences
- ANSC641 (1 cr.)- Seminar in Human Nutrition, Food and Animal Sciences
- FSHN681 (1 cr.) - Seminar in Human Nutrition, Food and Animal Sciences
- ANSC491 (1 cr.) - Topics in Animal Sciences
- ANSC699 (1-9 cr.) - Directed Research
- ANSC499 (1-9 cr.) - Directed Research
- CMB700 (3 cr.) Directed thesis research
- MBBE699 (3 cr.) Directed research
- MBBE691 (1 cr.)– Topics Comparative Endocrinology

Publications (reverse chronological order)

Books

Seale, A. P. and Seale L. A. (2009). "Tropical Marine Gardens" 240 pps. Metalivros, São Paulo. ISBN 978-85-85371-83-8.

Book Chapters

Seale, A. P., Hirano, T., and Grau, E. G. (2006). Osmoreception: a fish model for a fundamental sensory modality. *In* "Fish Endocrinology" (G. Zaccane and M. Reinecke, Eds.), pp. 419-440 Oxford & IBH Publishing Company.

Seale, A. P., Hirano, T., and Grau, E. G. (2005). Stimulus-secretion coupling in the osmoreceptive prolactin cell of the tilapia. *In* "Mechanosensitivity of the Cells from Various Tissues" (A. Kamkin and I. Kiseleva, Eds.), pp. 371-389. Academia, Moscow.

Shepherd, B. S., Weber, G. M., Vijayan, M. M., **Seale, A. P.**, Riley, L. G., Richman, N. H., Hirano, T., and Grau, E. G. (2005). Control of growth in tilapia: developments and prospects. *In* "Tilapias: Culture, Nutrition and Feeding" (C. D. Webster and C. E. Lim, Eds.). Haworth Press.

Meredith, H. O., Richman, N. H., Collier, J. T., **Seale, A. P.**, Riley, L. G., Ball, C. H., Shimoda, S. K., Stetson, M. H., and Grau, E. G. (1999). Pesticide effects on prolactin release from the rostral pars distalis in vitro and their effects on growth in vivo in the tilapia (*Oreochromis mossambicus*). *In* "Environmental Toxicology and Risk Assessment: Eighth volume, ASTM STP 1364" (D. S. Henshel, M. C. Black, and M. C. Harrass, Eds.). American Society for Testing and Materials, West Conshohocken, PA.

Conference Proceedings

Nelson, N., Petro-Sakuma, C., Celino-Brady, F., **Seale, A. P.**, Breves, J. P. (2020). Coordinated Gene Expression of *Na⁺/Cl⁻ cotransporter 1 (ncc1)* and *Clc family Cl⁻ channel 2 (clcn2c)* in Kidney and Urinary Bladder of Euryhaline Tilapia. *FASEB J.* 34, 1-1. <https://doi.org/10.1096/fasebj.2020.34.s1.04903>

Keith, P. L., Hunt, B. L., Inokuchi, M., Yamaguchi, Y., **Seale, A. P.**, Lerner, D. T., Grau, E. G., and Breves, J. P. (2016). Prolactin and Extracellular Osmolality Regulate Branchial *clc2c* Expression in Tilapia. *FASEB J.* 30, 760.5-760.5.

Rowell, T.R., Seale, L. A., **Seale, A. P.**, Banuelos, G. S., Grau, E. G., Riley, L.G. (2013). Effects of selenium-enriched meal on growth performance, endocrine control of growth and selenoprotein expression in tilapia (*Oreochromis mossambicus*). *Integr. Comp. Biol.* 53, E185-E185.

Seale, A. P., Weber, G. M., Richman, N. H., 3rd, Stetson, M., Hirano, T., and Grau, E. G. (2004). Cell size regulates hormone release in the osmoreceptive prolactin cell of the euryhaline tilapia, *Oreochromis mssambicus*. *In* "Trends in Comparative Endocrinology. Proceedings of the Fifth Congress of Asia and Oceania Society for Comparative Endocrinology" (T. Oishi, K. Tsutsui, S. Tanaka, and S. Kikuyama, Eds.), pp. 138-140.

Hirano, T., Leedom, T. A., **Seale, A. P.**, and Grau, E. G. (2002). Facilitative effects of angiotensin II on prolactin cell responses to osmotic stimulation in tilapia. *Symp. Soc. Exp. Biol.* 97-108.

Seale, A. P., Richman, N. H., Riley, L. G., Hirano, T., and Grau, E. G. (2000). The Control of Prolactin Secretion in Tilapia: Hypothalamic and Environmental Factors. *In* "Proceedings of the Japan Society for Comparative Endocrinology" (Y. Sasayama and N. Suzuki, Eds.), Vol. 15, pp. 2, Noto, Japan.

Refereed Journal Publications

Woo, D. W., Malintha, G. H. T., Celino-Brady, F. T., Yamaguchi, Y., Breves, J. P., **Seale, A. P.** (2021). Tilapia prolactin cells are thermosensitive osmoreceptors. *Res. Square*. Preprint; <https://doi.org/10.21203/rs.3.rs-993437/v1>

Seale, L. A., Gilman, C. L., Zavacki, A. M., Larsen, P. R., Inokuchi, M., Breves, J. P., **Seale, A. P.** (2021) Regulation of thyroid hormones and branchial iodothyronine deiodinases during freshwater acclimation in tilapia. *Mol. Cell. Endocrinol.* 538: 111450. doi: 10.1016/j.mce.2021.111450

Breves, J. P., Nelson, N. N., Koltenyuk, V., Petro-Sakuma, C., Celino-Brady, F. T., **Seale, A. P.** (2021) Enhanced expression of *ncc1* and *clc2c* in the kidney and urinary bladder accompanies freshwater acclimation in Mozambique tilapia. *Comp. Biochem. Physiol.* 260: 111021; doi: 10.1016/j.cbpa.2021.111021

Inokuchi, M., Moorman, B., Yamaguchi, Y., **Seale, A. P.** (2021). Age-dependent decline in salinity tolerance in a euryhaline fish. *Front. Aging.* 2: 15.

Caetano-Anolles, K., Ewers, B., Iyer, S., Lucas, J. R., Pavlic, T. R., **Seale, A. P.**, Zeng, Y. (2021). A minimal framework for describing living systems: a multi-dimensional view of life across scales. *Integr. Comp. Biol.*

Celino-Brady, F., Lerner, D. T., **Seale, A. P.** (2021). Experimental Approaches for Characterizing the Endocrine Disrupting Effects of Environmental Chemicals in Fish. *Front. Endocrinol.* 11:1170. <https://doi.org/10.3389/fendo.2020.619361>

Seale, A. P., Malintha, T., Celino-Brady, F. T., Head, T., Belcaid, M., Yamaguchi, Y., Lerner, D. T., Baltzegar, D. A., Borski, R. J., Stoytcheva, Z. R. and Breves, J. P. (2020). Transcriptional regulation of prolactin in a euryhaline teleost: characterization of gene promoters through in silico and transcriptome analyses. *J. Neuroendocrinol.* 32: e12905.

Petro-Sakuma, C. K., Celino-Brady, F., Breves, J. P., **Seale, A. P.** (2020). Growth hormone regulates intestinal gene expression of nutrient transporters in tilapia, *Oreochromis mossambicus*. *Gen. Comp. Endocrinol.* 292: 113464.

Seale, A. P., Pavlosky, K. K., Celino-Brady, F., Lerner, D. T. (2020). Sex, salinity and sampling period dependent patterns of growth hormone mRNA expression in Mozambique tilapia. *Aquaculture.* 519: 734766.

Celino-Brady, F., Petro-Sakuma, C. K., Breves, J. P., Lerner, D. T., **Seale, A. P.** (2019). Early-life exposure to 17 β -estradiol and 4-nonylphenol impacts the growth hormone/insulin-like growth-factor system and estrogen receptors in Mozambique tilapia, *Oreochromis mossambicus*. *J. Aqua. Tox.* <https://doi.org/10.1016/j.aquatox.2019.105336>

Seale, A. P., Pavlosky, K. K., Celino-Brady, F., Yamaguchi, Y., Breves, J. P., Lerner, D. T. (2019). Systemic versus tissue-level modulation of prolactin signaling in a euryhaline teleost subjected to tidally changing salinities. *J. Comp. Physiol.* doi: 10.1007/s00360-019-01233-9.

Pavlosky, K. K., Yamaguchi, Y., Lerner, D. T., **Seale, A. P.** (2019). The effects of transfer from steady-state to tidally-changing salinities on plasma and branchial osmoregulatory parameters in adult Mozambique tilapia. *Comp. Biochem. Physiol.* 227, 134-145. doi: 10.1016/j.cbpa.2018.10.005.

- Douros, J. D., Baltzegar, D. A., Reading, B. J., **Seale, A. P.**, Lerner, D. T., Grau, E. G., Borski, R. J. (2018). Leptin stimulates cellular glycolysis through a STAT3 dependent mechanism in tilapia. *Front. Endocrinol.* 9, 465. doi: 10.3389/fendo.2018.00465
- Yamaguchi, Y., Breves, J. P., Haws, M. C., Lerner, D. T., Grau, E. G., **Seale, A. P.** (2018). Acute salinity tolerance and the control of prolactin 177 and prolactin 188 release and gene expression by extracellular osmolality in the Nile tilapia: a comparative study. *Gen. Comp. Endocrinol.* 257, 168-176.
- Breves, J. P., Keith, P. L. K., Hunt, B. L., Pavlosky, K. K., Inokuchi, M., Yamaguchi, Y., Lerner, D. T., **Seale, A. P.**, Grau, E. G. (2017). *clc-2c* is regulated by salinity, prolactin and extracellular osmolality in tilapia gill. *J. Mol. Endocrinol.* 59(4):391-402
- Douros, J. D., Baltzegar, D. A., Mankiewicz, J. L.; Taylor, J. D., Yamaguchi, Y., Lerner, D. T., **Seale, A. P.**, Grau, E. G., Breves, J. P., Borski, R. J. (2017). Control of leptin by metabolic state and its regulatory interactions with pituitary growth hormone and hepatic growth hormone receptors and insulin like growth factors in the tilapia (*Oreochromis mossambicus*). *Gen. Comp. Endocrinol.* 240, 227-237.
- Breves, J., Inokuchi, M., Yamaguchi, Y., **Seale, A. P.**, Hunt, B. L., Watanabe, S., Lerner, D. T., S., Kaneko, T., Grau, E. G. (2016). Hormonal regulation of aquaporin 3 in tilapia gill: opposing actions of prolactin and cortisol. *J. Endocrinol.* 230, 325-337.
- Moorman, B. P., Yamaguchi, Y., Lerner, D. T., Grau, E. G., **Seale, A. P.** (2016) Rearing Mozambique tilapia in tidally-changing salinities: effects on growth and the growth hormone/ insulin-like growth factor I axis. *Comp. Physiol. Biochem.* 198, 8-14.
- Yamaguchi, Y., Moriyama S., Lerner, D. T., Grau, E. G., **Seale, A. P.** (2016). Autocrine regulation of prolactin release from tilapia prolactin cells: modulation of hormonal responses by extracellular osmolality. *Endocrinology.* 157, 3505-16.
- Yamaguchi, Y., Takagi, W., Kuraku, S., Moriyama, S., Bell, J. D., **Seale, A. P.**, Lerner, D. T., Grau, E. G., Hyodo, S. (2015). Discovery of conventional prolactin from the holocephalan elephant fish, *Callorhynchus milii*. *Gen. Comp. Endocrinol.* 224, 216-227.
- Inokuchi, M., Breves, J., Moriyama, S., Watanabe, S., Kaneko, T., Lerner, D. T., Grau, E. G., **Seale, A. P.** (2015). Prolactin 177, prolactin 188 and extracellular osmolality independently regulate the expression of ion transport effectors in the gills of Mozambique tilapia. *Am. J. Physiol.* 309(10): R1251-1263.
- Nakamura, M., Nozu, R., Ijiri, S., Kobayashi, T., Yamaguchi, Y., **Seale, A. P.**, Lerner, D.T., Grau, E. G. (2015). Sexual characteristics of high-temperature sterilized male Mozambique tilapia, *Oreochromis mossambicus*. *Zool. Lett.* 1-21
- Furukawa, F., Watanabe, S., **Seale, A. P.**, Breves, J. P., Lerner, D. T., Grau, E. G., Kaneko, T. (2015). In vivo and *in vitro* studies reveal that branchial expression of ROMKa in seawater-acclimated Mozambique tilapia directly responds to high-K⁺ stress. *Comp. Biochem. Physiol.* 187, 111-118.
- Moorman, B. P., Lerner, D. T., Grau, E. G., **Seale, A. P.** (2015). The effects of acute salinity challenges on Osmoregulation in Mozambique tilapia reared in a tidally changing salinity. *J. Exp. Biol.* 218, 731-9.
- Zikos, A., **Seale, A. P.**, Lerner, D. T., Grau, E. G., Korsmeyer, K. E. (2014). Effects of salinity on metabolic rate and branchial expression of genes involved in metabolism and mitochondrial biogenesis in Mozambique Tilapia (*Oreochromis mossambicus*). *Comp. Biochem. Physiol.* 178, 121-31.

Seale, A.P., Stagg, J. J., Yamaguchi, Y., Breves, J. P., Soma, S., Watanabe, S., Kaneko, T., Cnaani, A., Harpaz, S., Lerner, D. T., Grau, E.G. (2014). Effects of salinity and prolactin on the transcription of ion transporters, ion pumps and prolactin receptors in Mozambique tilapia intestine. *Gen. Comp. Endocrinol.* 206, 146-54.

Seale, L. A., Gilman, C. L., Moorman, B. P., Berry, M. J., Grau, E.G., **Seale, A.P.** (2014). Effects of acclimation salinity on the expression of selenoproteins in the tilapia, *Oreochromis mossambicus*. *J. Tr. El. Med. Biol.* 28(3), 284-92.

Douros, J. D., Baltzegar, D. A., Breves, J. P., Lerner, D. T., **Seale, A. P.**, Grau, E. G., Borski, R. J. (2014) Prolactin is a major inhibitor of hepatic Leptin A synthesis and secretion: studies utilizing a homologous Leptin A ELISA in the tilapia. *Gen. Comp. Endocrinol.* 207, 86-93.

Breves, J. P., Tipsmark, C. K., Stough, B. A., **Seale, A. P.**, Flack, B. R., Moorman, B. P., Lerner, D. T., Gau, E. G. (2014) Nutritional status and growth hormone regulate insulin-like growth factor binding protein (IGFBP) transcripts in Mozambique tilapia. *Gen. Comp. Endocrinol.* 207, 66-73.

Moorman, B. P., Inokuchi, M., Yamaguchi, Y., Lerner, D. T., Grau, E. G., **Seale, A. P.** (2014). The osmoregulatory effects of rearing Mozambique tilapia in a tidally changing salinity. *Gen. Comp. Endocrinol.* 207, 94-102.

Breves J. P., **Seale, A.P.**, Moorman, B. P., Lerner, D. T., Moriyama, S., Hopkins, K. D., Grau, E.G. (2014). Pituitary control of branchial NCC, NKCC and Na⁺, K⁺-ATPase α -subunit gene expression in Nile tilapia, *Oreochromis niloticus*. *J. Comp. Physiol.* 184, 513-523.

Seale, A.P., Yamaguchi, Y., Johnstone III, W.M., Borski, R.J., Lerner, D.T. Grau, E.G. (2013). Endocrine regulation of prolactin cell function and modulation of osmoreception in the Mozambique tilapia. *Gen. Comp. Endocrinol.* 192, 191-203.

Seale, A.P., Watanabe, S., Breves, J. P, Lerner D.T., Grau, E.G. (2012). Differential regulation of TRPV4 by acclimation salinity and extracellular osmolality in euryhaline tilapia. *Gen Comp. Endocrinol.* 178, 123-130.

Seale, A.P., and Watanabe, S., Grau, E. G. (2012). Osmoreception: perspectives on signal transduction and environmental modulation. *Gen. Comp. Endocrinol.* 176, 354-360.

Seale, A.P., Moorman B. P., Stagg, J. J., Breves, J. P., Lerner, D. T., Grau, E.G. (2012). Prolactin₁₇₇, prolactin₁₈₈ and prolactin receptor 2 in the pituitary of the euryhaline tilapia, *Oreochromis mossambicus*, are differentially osmosensitive. *J. Endocrinol.* 213, 89-98.

Watanabe, S., **Seale, A.P.**, Grau, E.G, Kaneko, T. (2012). TRPV4 stretch-activated cation channel mediates hyposmolality-induced prolactin release from prolactin-producing cells of Mozambique tilapia, *Oreochromis mossambicus*. *Am. J. Physiol.* 302, R1004-1011.

Tipsmark, C. K., Breves, J. P., **Seale, A. P.**, Lerner, D. T., Hirano, T., Grau, E. G. (2011). Switching of Na⁺, K⁺-ATPase isoform gene expression by salinity and prolactin in the gill of a euryhaline cichlid. *J. Endocrinol.* 209, 237-44.

Breves, J. P., **Seale, A. P.**, Helms, R. E., Tipsmark, C. K., Hirano, T., Grau, E. G. (2011). Dynamic gene expression of GH/PRL-family hormone receptors in gill and kidney during freshwater-acclimation of Mozambique tilapia. *Comp. Biochem. Physiol. A Mol. Integr. Physiol.* 158, 194-200.

Seale, A.P., Mita, M., Hirano, T., and Grau, E. G. (2011). Involvement of the cAMP messenger system and extracellular Ca²⁺ during hyposmotically-induced prolactin release in the Mozambique tilapia. *Gen. Comp. Endocrinol.* 170, 401-407.

Seale, A. P., de Jesus, L. A., Park, M. C., and Kim, Y. S. (2006). Vanadium and insulin increase adiponectin production in 3T3-L1 adipocytes. *Pharmacol. Res.* 54:30-8.

Seale, A. P., Fiess, J. C., Hirano, T., Cooke, I. M., and Grau, E. G. (2006). Disparate release of prolactin and growth hormone from the tilapia pituitary in response to osmotic stimulation. *Gen. Comp. Endocrinol.* 145, 222-31.

Kajimura, S., **Seale, A.P.**, Hirano, T., and Grau, E. G. (2006). Ouabain as a possible osmoregulatory hormone. *J. Exp. Zool.* 305, 138-138.

Kajimura, S., **Seale, A.P.**, Hirano, T., and Grau, E. G. (2005). Physiological Concentrations of Ouabain Rapidly Inhibit Prolactin Release from the Tilapia Pituitary. *Gen. Comp. Endocrinol.* 143, 240-50.

Seale, A. P., de Jesus, L. A., Kim, S. Y., Choi, Y. H., Lim, H. B., Hwang, C. S., and Kim, Y. S. (2005). Development of an automated protein-tyrosine phosphatase 1B inhibition assay and the screening of putative insulin-enhancing vanadium (IV) and zinc (II) complexes. *Biotechnol. Lett.* 27, 221-5.

Seale, A. P., Cooke, I., Hirano, T., and Grau, G. (2004). Evidence that IP(3) and Ryanodine-sensitive Intra-cellular Ca Stores are not Involved in Acute Hyposmotically-Induced Prolactin Release in Tilapia. *Cell. Physiol. Biochem.* 14, 155-66.

Weber, G. M., **Seale, A. P.**, Richman, N. H., Stetson, M., and Grau, E. G. (2004). Hormone release is tied to changes in cell size in the osmoreceptive prolactin cell of a euryhaline teleost fish, the tilapia, *Oreochromis mossambicus*. *Gen. Comp. Endocrinol.* 138, 8-13

Hyde, G. N., **Seale, A. P.**, Grau, E. G., and Borski, R. J. (2004). Cortisol rapidly suppresses intracellular calcium and voltage-gated calcium channel activity in prolactin cells of the tilapia (*Oreochromis mossambicus*). *Am J. Physiol. Endocrinol. Metab.* 286, E626-33.

Seale, A. P., Richman, N. H., 3rd, Hirano, T., Cooke, I., and Grau, E. G. (2003). Cell volume increase and extracellular Ca²⁺ are needed for hyposmotically induced prolactin release in tilapia. *Am. J. Physiol. Cell Physiol.* 284, C1280-9.

Seale, A. P., Richman, N. H., 3rd, Hirano, T., Cooke, I., and Grau, E. G. (2003). Evidence that signal transduction for osmoreception is mediated by stretch-activated ion channels in tilapia. *Am. J. Physiol. Cell Physiol.* 284, C1290-6.

Seale, A. P., Itoh, T., Moriyama, S., Takahashi, A., Kawauchi, H., Sakamoto, T., Fujimoto, M., Riley, L. G., Hirano, T., and Grau, E. G. (2002). Isolation and characterization of a homologue of mammalian prolactin-releasing peptide from the tilapia brain and its effect on prolactin release from the tilapia pituitary. *Gen. Comp. Endocrinol.* 125, 328-39.

Seale, A. P., Riley, L. G., Leedom, T. A., Kajimura, S., Dores, R. M., Hirano, T., and Grau, E. G. (2002). Effects of environmental osmolality on release of prolactin, growth hormone and ACTH from the tilapia pituitary. *Gen. Comp. Endocrinol.* **128**, 91-101.

Extension Publications

Seale, A. P. and Ellis, S. (2019). Sustainable capture-based aquaculture of rabbitfish in Pacific Island Lagoons. College of Tropical Agriculture and Human Resource. Aquaculture and Aquaponics AA-1. ISBN 978-1-929054-15-2.

Haws, M., **Seale A. P.**, Corbin, J., Moss, S., Callan, C., Klinger-Bowen, R., Asuncion, B., Tamaru, C., Sombardier, L., Weidenbach, R., Leung, P., Sims, N. A., Cohen, D. and Yamasaki, L. (2019) Aquaculture in Hawai'i - Ancient Traditions, Modern Innovation. World Aquaculture Society Inc. website (<https://www.was.org>).

Creative Works (i.e., Extension Videos, Websites, Blogs, Creative Designs and Exhibitions, etc.)

Seale, A. P.; Stender, K.; Pickett, M. (2004); Fishes in Hawaii, Bess Press.

Leadership Roles (Committees, Boards, Advisory, etc.)

Member of Curriculum Pathway Development Committee of the Intercollege Nutrition PhD Program, Department of Human Nutrition, Food and Animal Sciences, University of Hawai'i at Mānoa.

Research and extension committee member, Department of Human Nutrition, Food and Animal Sciences, University of Hawai'i at Mānoa.

Member, search committee, HIMB, HNFAS - UHM

Animal facility inspector, Institutional Animal Care and Use Committee, University of Hawai'i at Mānoa

Member, Fish Advisory Committee, Institutional Animal Care and Use Committee, University of Hawai'i at Mānoa.

Voting member, Institutional Animal Care and Use Committee, University of Hawai'i at Mānoa.

Workshop organizer, Edwin Pauley Summer Program in Marine Biology, "Integrative, experimental and environmental physiology of marine organisms," Hawai'i Institute of Marine Biology, University of Hawai'i at Mānoa, Kāne'ohe, HI.

Graduate Students

<u>Category</u>	<u>Current Number of Students</u>	<u>Number Graduated (Career)</u>
Chair of Master's Committees	2	4
Chair of PhD Committees	2	
Member of Master's Committees	1	1
Member of PhD Committees	4	6

Grant Support

PI: University of Hawai'i Sea Grant College Program omnibus grant; "Identifying the physiological responses to extreme environmental changes in native Hawaiian Sea cucumbers found in traditional fishponds"; \$152,467. 2022-2024

Co-PI: Advanced Aquaculture Collaborative Programs (NOAA); "Establishing a Hawai'i-Pacific Aquaculture Consortium: A Revitalization and Expansion of the Aquaculture Development Program"; \$1,196,344. 2019-2022

Co-PI; Department of Commerce, National Oceanic and Atmospheric Administration (NOAA); "Establishing an aquaculture program at the University of Hawai'i that leverages and integrates Land Grant and Sea Grant research, extension and education resources"; \$749,816. 2018-2021

PI; National Science Foundation (IOS-1755016); "Collaborative Research: Identifying osmosensitive molecular targets using a unique vertebrate model" \$348,400. 2018-2021

PI; Travel grant from the Hawai'i Institute of Marine Biology for the 2019 International Marine Biotechnology Conference and the Asia Pacific Marine Biotechnology Conference; \$2,000. 2019

PI; Sea Grant Program Development Project (E/ET-1 OOPD), "Training for extension professionals in sustainable cage farming and rearing methods of Rabbitfishes (Siganidae), in Pohnpei, Federated States of Micronesia"; \$3,467. 2018

Mentor; Undergraduate Research Opportunity Program grant, "*In-silico* analysis of the Prolactin (PRL) promoters to predict elements regulating PRL expression and elucidate mechanisms of osmoregulation in *Oreochromis mossambicus*"; \$5,000. 2018

PI; Travel grant from the Office of the Vice-Chancellor for Research; \$2,000. 2017

PI; College of Tropical Agriculture and Human Resources (CTAHR) / United States Department of Agriculture Hatch Proposal (HAW02051-H); "Physiological effects of environmental stressors in a key finfish for aquaculture"; \$40,000. 2017-present

PI; Smith-Lever extension funds; "Integrated Tilapia Aquaculture Research, Education and Outreach"; \$1,000 / year. 2016-2019

PI; National Institutes of Health (1R21DK111775-01); "Integrating Osmosensitivity and Autocrine Signaling in a Model for Osmoregulation"; \$450,830. 2016-2020

PI; University of Hawai'i Sea Grant College Program omnibus grant (R/SB-18) "The use of a euryhaline tilapia to assess the endocrine disrupting effects of anthropogenic chemicals on growth and osmoregulation of a tropical teleost species inhabiting coastal waters and wetlands in Hawai'i and the

tropics.”; \$75,853 + 2 years of funding for Graduate Assistant. 2016-2018

PI; Sub-award from California State University at Fresno / United States Department of Agriculture, “Investigations into the Stress Reducing Effects of Selenium enriched Feed in an Important Aquaculture Species, Tilapia (*Oreochromis mossambicus*)”; \$33,000. 2015-2016

PI; University of Hawai‘i Sea Grant College Program omnibus grant (R/SS-12) “The development of acclimation salinity-based rearing strategies to maximize growth in Mozambique tilapia, *Oreochromis mossambicus*”; \$64,121 + 2 years of funding for Graduate Assistant. 2014-2016

Co-PI and Co-organizer; 2012 Edwin Pauley Summer Program in Marine Biology “Integrative, experimental and environmental physiology of marine organisms”, Pauley Foundation; \$80,000. 2012

Presentations at Conferences

Seale, A.P. and Seale L.A. (2021). A “pair” review of academic careers. 45th Annual Meeting of the Japan Society for Comparative Endocrinology, Tokyo, Japan. Virtual (Nov 12-14).

Lerner, D.T., Okimoto, D.K., Tagarino, K.A., Sudnovsky, M., **Seale, A.P.**, Haws, M., M., Ellis, S. (2021) Establishing a Hawai‘i-Pacific Consortium: A Revitalization and Expansion of an Aquaculture Development Program. Advanced Aquaculture Collaboratives (Hubs) Sea Grant NOAA Aquaculture Research Symposium. Virtual Meeting (Nov 1-3).

Seale, A. P. (2021). A prolactin cell model to study sensory transduction of environmental stimuli in fish. Genes and Animal Biology, Department of Human Nutrition, Food and Animal Sciences, University of Hawai‘i. Virtual (Oct 12).

Seale, A. P. (2021). A fish model to investigate the endocrine integration of environmental stimuli. Seminar in Biomedical Sciences, Department of Cell and Molecular Biology, John A. Burns School of Medicine, University of Hawai‘i. Virtual (Aug 30).

Lucas, J. R., Pavlic, T. R., Caetano-Anolles, K., Ewers, B., Iyer, S., **Seale, A. P.**, Zeng, Y. (2021). Constraints bring clarity to animal behavior: Re-integrating life sciences through resource limitation. The 58th Annual Conference of the Animal Behavior Society, Virtual Meeting; Resource Limitation: A Tie That Binds in the Evolution of Sociality? (Aug 1-7).

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Seale, A. P. (2020). From live cell imaging to radioimmunoassays to animal facilities: approaches in tilapia research. International mini-symposium: Approaches for experimental challenges in aquaculture research, University of Hawai'i at Mānoa (Jan 15).

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Seale, A. P.* (2019). A fish prolactin cell model to investigate the emerging integration between osmoreception, thermoreception and autocrine signaling. The Growth Hormone (GH)/ Prolactin (PRL) Family in Biology and Disease. Federation of American Societies for Experimental Biology (FASEB)

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