**Resume**

Alistair M. Senior

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## Current Employment

ARC DECRA Fellow

Charles Perkins Centre and School of Life and Environmental Sciences

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## Education

2010-2013. Doctor of Philosophy (PhD), Zoology, University of Otago, New Zealand.

2008-2009. Master of Science and Diploma of Imperial College (MSc. DIC), Ecology, Evolution and Conservation, Imperial College London, United Kingdom.

2005-2008. Bachelor of Science with Honours (BSc. Hons.), Biological Sciences, The University of Hull, United Kingdom.

## Publication Record

To date I have authored 73 peer-reviewed scientific publications (41% as lead/senior author; 16% as lead statistician). These papers have been cited over 2000 times, I have an h-index of 24 and an i-10 index of 47 (Google Scholar 05/21). Below is a complete list of publications grouped by my contribution. IF = 5yr Impact Factor. Joint authorship as indicated.

Publications as Lead/Senior Author

30. Usui, T., Macleod, M.R., McCann, S.K., **Senior, A.M.** & Nakagawa, S. 2021. Embrace heterogeneity to improve reproducibility: A perspective from meta-analysis of variation in preclinical research. *PLOS Biology*. Online Early. (IF 7.1; **AMS and SN contributed equally to this paper**)

29. Nakagawa, N., Lagisz, M., O’Dea, R.E, Rutkowska, J., Yang, Y., Noble, D.W.A & **Senior, A.M**. 2021.The orchard plot: Cultivating forest plots for use in ecology and evolution. *Research Synthesis Methods*. **12**: 4-12. (IF 6.8)

28. **Senior, A.M.**, Nakagawa, S., Raubenheimer, D. & Simpson, S.J. 2020. Global associations between macronutrient supply and age-specific mortality. *PNAS*. **117**: 30824-30835. (IF 10.6)

27. **Senior, A.M.**, Viechtbauer, W., Nakagawa, S. 2020. Revisiting and expanding the meta-analysis of variation: the log coefficient of variation ratio, lnCVR. *Research Synthesis Methods*. **11**: 553-567. (IF 6.8)

26. **Senior, A.M.**, Solon-Biet, S.M., Cogger, V.C., Le Couteur, D.G., Nakagawa, S., Raubenheimer, D. & Simpson, S.J. 2019. Dietary macronutrient content, age-specific mortality and lifespan. *Proceedings of the Royal Society B*. **286**: 20190393. (IF 5.3)

25. Hosking, C.J., Charleston, M., Raubenheimer, D., Simpson, S.J. & **Senior, A.M.** 2019.Macronutrient intakes and the lifespan-fecundity trade-off: a geometric framework agent-based model. *Journal of the Royal Society Interface*. **16**: 20180733. (IF 4.3)

24. Crean, A.J. & **Senior, A.M.** 2019. High fat diets reduce reproductive success in animal models: a systematic review and meta-analysis. *Obesity Reviews*. **20**: 921-933. (IF 10.2)

23. Morimoto, J., **Senior, A.M.**, Ruiz, K., Wali, J., Pulpitel, T., Solon-Biet, S.M., Cogger, V.C, Raubenheimer, D., Le Couteur, D.G., Simpson, S.J & Eberhard, J. 2019. Sucrose and starch intake contribute to reduced alveolar bone height in a rodent model of naturally occurring periodontitis. *PLOS ONE*. **14**: e0212796. (IF 3.3, **JM and AMS contributed equally to this paper**)

22. Grueber, C.E., Gray, L.J., Morris, K.M., Simpson, S.J. & **Senior, A.M.** 2018. Intergenerational effects of diet on immunity: systematic review and meta-analyses. *Biological Reviews*. **93**: 1108-1124. (IF 11.5)

21. **Senior, A.M.**, Nakagawa, S., Raubenheimer, D., Simpson, S.J. & Noble, D.W.A. 2017. Dietary restriction increases variability in longevity. *Biology Letters*, **13**:2017557. (IF 3.5)

20. Nakagawa, S., Noble, D.W.A, **Senior, A.M.** & Lagisz, L. 2017. Meta-evaluation of meta-analysis: 10 appraisal questions for biologists. *BMC Biology*, **15**: 18. (IF 7.5, **All Authors Contributed Equally**)

19. **Senior, A.M.**, Grueber, C.E., Kamiya, T., Lagisz, M., O’Dwyer, K., Santos, E.S.A. & Nakagawa, S. 2016. Heterogeneity in ecological and evolutionary meta-analyses: its magnitude and implications. *Ecology*, **97**: 3293-3299. (IF 5.5)

18. Geoghegan, J.L., **Senior, A.M.**, & Holmes, E.C. 2016. Pathogen population bottlenecks and adaptive landscapes: overcoming the barriers to disease emergence. *Proceedings of Royal Society B.* **283**: 20160727. (IF 5.3, **JLG and AMS contributed equally to this paper**)

17. **Senior, A.M.**, Grueber, C.E., Machovsky-Capuska, G.E., Simpson, S.J. & Raubenheimer, D. 2016. Macronutritional consequences of food generalism in an invasive mammal, the wild boar. *Mammalian Biology*, **81**: 523-526. (IF 1.9)

16. **Senior, A.M.**, Gosby, A., Lu, J., Simpson, S.J. & Raubenheimer, D. 2016. Meta-analysis of variation: an illustration comparing the effects of two dietary interventions on variability in weight. *Evolution, Medicine and Public Health*, **2016**: 244-255. (IF 4.4 – 5yr IF not available)

15. **Senior, A.M.**, Lim, J. N., Adolfsson, S., Lamatsch, D.K. & Nakagawa, S. 2016. Condition and reproductive investment in the western mosquitofish *Gambusia affinis*: little evidence for condition-dependent sex biased investment. *Biological Journal of the Linnean Society*, **119**: 430-435. (IF 2.2)

14. Machovsky-Capuska, G.E, **Senior, A.M.**, Simpson, S.J. & Raubenheimer, D. 2016. The multidimensional nutritional niche. *Trends in Ecology and Evolution*, **31**: 355-365. (IF 19, **GEMC and AMS contributed equally to this paper**)

13. **Senior, A.M.**, Lihoreau, M., Charleston, M., Buhl, J., Raubenheimer, D & Simpson, S.J. 2016. Adaptive collective foraging in groups with conflicting nutritional needs. *Royal Society Open Science*, **3**: 150638. (IF 2.7)

12. Geoghegan, J.L., **Senior, A.M.**, Di Giallonardo, F. & Holmes, E.C. 2016. Virological factors that increase the transmissibility of emerging human viruses. *PNAS*, **113**: 4170-4175. (IF 10.6, **JLG and AMS contributed equally to this paper**)

11. **Senior, A.M.**, Lihoreau, M., Buhl, J., Raubenheimer, D & Simpson, S.J. 2016. Social network analyses and nutritional behavior: an integrated modeling approach. *Frontiers in Psychology*, 7: 18. (IF 2.9)

10. **Senior, A.M.**, Johnson, S.L. & Nakagawa, S. 2016. Sperm traits of masculinised fish relative to wild-type males: a systematic review and meta-analyses. *Fish and Fisheries*, **17**: 143-164. (IF 8.1)

9. **Senior, A.M.**, Nakagawa, S., Lihoreau, M., Simpson, S.J. & Raubenheimer, D. 2015. An overlooked consequence of dietary mixing: a varied diet reduces inter-individual variance in fitness. *American Naturalist*, **186**: 649-659. (IF 4.1)

8. **Senior, A.M.**, Charleston, M., Lihoreau, M., Buhl, J., Raubenheimer, D. & Simpson, S.J. 2015. Evolving nutritional strategies in the presence of competition: a geometric agent-based model. *PLOS Computational Biology*, **11**: e1004111. (IF 5.0)

7. **Senior, A.M.**, Lokman, P.M., Closs, G.P. & Nakagawa, S. 2015. Ecological and evolutionary applications for environmental sex reversal of fish. *The Quarterly Review of Biology*, **90**: 23-44. (IF 4.6)

6. Nakagawa, S., Poulin, R., Mengersen, K., Reinhold, K., Engqvist, L., Lagisz, M. & **Senior, A.M.** 2015. Meta-analysis of variance: ecological and evolutionary applications and beyond. *Methods in Ecology and Evolution*, **6**: 143-152. (IF 9.5)

5. Lim, J.N., **Senior, A.M.** & Nakagawa, S. 2014. Heterogeneity in individual quality and reproductive trade-offs within species. *Evolution*, **68**: 2306-2318. (IF 4.1, **JNL and AMS contributed equally to this paper**)

4. **Senior, A.M.**, Nakagawa, S. & Grimm, V. 2014. The evolutionary consequences of disrupted male mating signals: an agent-based modelling exploration of endocrine disrupting chemicals in the guppy. *PLOS ONE*, **9**: e103100. (IF 3.3)

3. **Senior, A.M.**, Krkosek., M. & Nakagawa, S. 2013. The practicality of Trojan sex chromosomes as a biological control: an agent based model of two highly invasive *Gambusia* species. *Biological Invasions*, **15**: 1765-1782. (IF 2.9)

2. **Senior, A.M.** & Nakagawa, S. 2013. A comparative analysis of chemically induced sex reversal in teleosts: challenging conventional suppositions. *Fish and Fisheries*, **14**: 60-76. (IF 8.1)

1. **Senior, A.M.**, Lim, J.N. & Nakagawa, S. 2012. The fitness consequences of environmental sex reversal in fish: a quantitative review. *Biological Reviews*, **87**: 900-911. (IF 11.5)

Publications as Lead Statistician

12. Rodriguez-Paris, V. Solon-Biet, S.M., **Senior, A.M.**, Edwards, M., Cox, M., Ledger, W., Gilchrist, R., Simpson, S.J., Handelsman, D. & Walters, K. 2020. Defining the impact of dietary macronutrient balance on PCOS traits. *Nature Communications*. **11**: 5262. (IF 13.6)

11. Myers, J.N., **Senior, A.M.**, Zadmajid, V. & Butts, I.A.E. 2020. Associations between ovarian fluid and sperm swimming trajectories in marine and ‎freshwater teleosts‎: A meta-analysis. *Reviews in Fisheries Science and Aquaculture*. **28**: 322-339. (IF 4.6)

10. Freire, T., **Senior, A.M.**, Perks, R., Pulpitel, T., Clark, X., Brandon, A., Wahl, D., Hatchwell, L., Le Couteur, D.G., Cooney, G., Larance, M., Simpson, S.J. & Solon-Biet, S.M. 2020. Sex-specific responses to time-restricted feeding in mice. *Journal of Physiology*. **598**: 2081-2092. (IF 4.6)

9. Saner, C., Tassoni, D., Harcourt, B.E., Kao, K.T., Alexander, E.J., McCallum, Z., Olds, T., Rowlands, A.V., Burgner, D.P., Simpson, S.J., Raubenheimer, D., **Senior, A.M.**, Juonala, M. & Sabin, M.A. 2020. Evidence for protein leverage in children and adolescents with obesity. *Obesity*. **28**: 822-829. (IF 4.5)

8. Genoud, S., **Senior, A.M.**, Hare, D.J & Double, K.L. 2020. Copper and iron levels in Parkinson’s disease brain and biofluids: a meta-analysis. *Movement Disorders*. **35**: 662-671. (IF 8.1)

7. Nie, Y., Wei, F., Zhou, W, Hu, Y., **Senior, A.M.**, Wu, Q., Yan, L. & Raubenheimer, D. 2019. Giant pandas are macronutritional carnivores. *Current Biology*. **29**: 1677-1682. (IF 10.1)

6. Ngo, T.T.N, **Senior, A.M.**, Culina, A., Santos, E.S.A, Vlak, J.M. & Zwart, M.P. 2018. Quantitative analysis of the dose of white spot syndrome virus in shrimp. *Journal of Fish Disease*. **41**: 1733-1744. (IF 2.1)

5. Campbell, G.J., **Senior, A.M.** & Bell-Anderson, K.S. 2017. Metabolic effects of high glycemic index diets: a systematic review and meta-analysis of feeding studies in mice and rats. *Nutrients*. **9**: 646. (IF 4.8)

4. Machovsky-Capuska, G.E., **Senior, A.M.**, Benn, E., Tait, A., Schuckard, R., Stockin, K., Cook, W., Ogle, M., Barna, K., Melville, D., Wright, B., Purvin, C. & Raubenheimer, D. 2016. Sex-specific macronutrient foraging strategies in a monomorphic marine predator: The Australasian Gannet. *Marine Biology*, **163**: 1-14. (IF 2.5)

3. Marchovsky-Capuska, G.E., **Senior, A.M.**, Zantis, S.P., Barna, K., Cowieson, A.J., Pandya, S., Pavard, C., Shiels, M., Raubenheimer, D. 2016. Dietary protein selection in a free-ranging urban population of common myna birds. *Behavioral Ecology*, **27**: 216-227. (IF 3.2)

2. Jarvie, S., **Senior, A.M.**, Recio, M.R. Adolf, S., Seddon, & Cree, A. 2015. Captive rearing affects growth but not survival in translocated juvenile tuatara. *Journal of Zoology*, **297**: 184-193. (IF 2.1)

1. Schadewinkel, R.B., **Senior, A.M.**, Wilson, D.J. & Jamieson, I.G. 2014. Effect on South Island Robins (*Petroica australis*) of pest control using aerially applied 1080 poison. *New Zealand Journal of Ecology*, **38**: 315-321. (IF 1.5)

Collaborative Publications

28. Nakagawa, S., **Senior, A.M.**, Viechtbauer, W. & Noble, D.W.A. An assessment of statistical methods for non-independent data in ecological meta-analyses: Comment. *Ecology*. In press.

27. Francis, D., Ghazanfar, S., Havula, E., Krycer, J.R., **Senior, A.M.**, Minard, A.Y., Geddes, T.A., Weiss, F., Yang, J.Y.H. & James D.E. Genome-wide analysis of diet by gene interactions uncovers CG4607 as a diet-responsive gene. *G3: Genes|Genomes|Genetics*. In Press.

26. Wali, J.A., Milner, A., Luk, A., Pulpitel, T., Dodgson, T., Facey, H., Wahl, D., Kebede, M., **Senior, A.M.**, Sulliven, M., Brandon, A., Yau, B., Lockwood, G., Koay, Y.C., Ribeiro, R.V., Solon-Biet, S.M., Bell-Andersen, K.S., O’Sullivan, J., Macia, L., Forbes, J., Cooney, G.J., Cogger, V.C., Holmes, A., Raubenheimer, D., Le Couteur, D.G. & Simpson, S.J. The impact of dietary carbohydrate type and protein-carbohydrate interaction on metabolic health. *Nature Metabolism*. In Press.

25. Norris, D.M., Yang, P., Shin, A., Kearney, A.L., Kim, H.J., Geddes, T., **Senior, A.M.**, Fazakerley, D.J., Nguyen, L.K., James, D.E. & Burchfield, J.G. Signalling heterogeneity is defined by pathway architecture and inter-cellular variability in protein expression. *iScience*. **24**: 202118. (IF 4.4)

24. Zajitschek, S.R.K, Zajitschek, F., Bonduriansky, R., Brooks, R.C., Cornwell, W.K., Falster, D.S., Lagisz, M., Mason, J., **Senior, A.M.**, Noble, D. & Nakagawa, S. Sex and power: sexual dimorphism in trait variability and its eco-evolutionary and statistical implications. *eLife*. **9**: e63170. (IF 8.2)

23. Xu, X., Solon-Biet, S.M., **Senior, A.M.**, Raubenheimer, D., Simpson, S.J., Fontana, L., Mueller, S. & Yang, J. LC-N2G: A local consistency approach for nutrigenomics analysis. *BMC Bioinformatics*. **21**: 530. (IF 3.2)

22. Wali, J.A., Raubenheimer, D., **Senior, A.M.**, Le Couteur, D.G. & Simpson, S.J. 2020. Cardio-metabolic consequences of dietary carbohydrates: Reconciling contradictions using nutritional geometry. *Cardiovascular Research*. Online Early. (IF 6.9)

21. Yue, K., Jarvie, S., **Senior, A.M.**, Van Meerbeek, K., Peng, Y., Fuzong, W. & Svenning, J.C. 2020. Changed plant diversity and diversity-productivity relationship in response to nitrogen addition, warming and increased rainfall: a meta-analysis. *Oikos*. **129**: 939-952. (IF 3.7)

20. Le Couteur, D.G., Ribeiro, R.V., **Senior, A.M.**, Hsu, B., Hirani, V., Blyth, F.M., Waite, L.M., Simpson, S.J., Naganathan, V., Cumming, R.G. & Handelsman, D. 2020. Branched chain amino acids, cardiometabolic risk factors and outcomes in older men: the Concord Health and Aging in Men Project. *The* *Journals of Gerontology: Series A*. **75**: 1805-1810. (IF 5.8)

19. Solon-Biet, S.M., Cogger, V.C., Pulpitel, T., Wahl, D., Clark, X., Bagley, E., Gregoriou, G.C., **Senior, A.M.**, Wang, Q.P., Brandon, A.E., Perks, R., O’Sullivan, J., Koay, Y.C., Bell-Anderson, K., Kebede, M., Yau, B., Atkinson, C., Svineng, G., Dodgson, T., Wali, J.A., Piper, M.D.W., Juricic, P., Partridge, L., Raubenheimer, D., Cooney, G.J., Le Couteur, D.G. & Simpson, S.J. 2019. Branched chain amino acids impact health and lifespan indirectly via diet balance and appetite control. *Nature Metabolism*. **1**: 532-545. (new journal)

18. Ribeiro, R.V., Solon-Biet, S.M., Pulpitel, T., **Senior, A.M.**, Cogger, V.C., Clark, X., O’Sullivan, J., Koay, Y.C., Hirani, V., Blyth, F.M., Beibel, M.J., Waite, L., Naganathan, V., Cumming R.G., Handelsman, D.J., Simpson, S.J. & Le Couteur. 2019. Of older mice and men: branched chain amino acids and body composition. *Nutrients*. **11**: 1882. (IF 4.8)

17. Gwynn, J.D., Sim, K., Searle, T., **Senior, A.M.**, Lee, A. & Brimblecombe, J. 2019. Effect of nutrition interventions on diet related and health outcomes of Aboriginal and Torres Strait Islander Australians: a systematic review. *BMJ Open*. **9**: e025291. (IF 2.9)

16. Thieltges, D., Goedknegt, A., O’Dwyer, K., **Senior, A.M.** & Kamiya, T. 2019. Parasites and stable isotopes: a comparative analysis of isotopic discrimination in parasitic trophic interactions. *Oikos*. **128**: 1329-1339. (IF 3.7)

15. Wahl, D., Solon-Biet, S.M., Wang, Q., Wali, J., Pulpital, T., Clark, X., Raubenheimer, D., **Senior, A.M.**, Sinclair, D., Cooney, G., de Cabo R., Cogger, V., Simpson, S.J. & Le Couteur, D.G. 2018. Comparing effects of low protein, high carbohydrate diets and caloric restriction on brain aging in mice. *Cell Reports*. **25**: 2234-2243. (IF 8.7)

14. Machovsky-Capuska, G., Miller, M., R. O. Silva, F., Amiot, C., Stockin, K., **Senior, A.M.**, Schuckard, R., Melville, D., & Raubenheimer, D. 2018. The nutritional nexus: linking niche, habitat variability and prey composition in a generalist marine predator. *Journal of Animal Ecology*. **87**: 1286-1298. (IF 5.0)

13. Mijatovic, J., Capling, L., Cheng, S., Louie, J., Cheung, W., Markovic, T., Ross, G., Stamatakis, E., **Senior, A.M.**, Brand-Miller, J. & Flood, V.M. 2018. Associations of diet and physical activity with risk for gestational diabetes mellitus: a systematic review and meta-analysis. *Nutrients*. **10**: 698. (IF 4.8)

12. Wong, A.C., Wang, Q., Morimoto, J., **Senior, A.M.**, Lihoreau, M., Neely, G.G., Simpson, S.J. & Ponton, F. 2017. Gut microbiota modifies olfactory-guided microbial preferences and foraging decisions in Drosophila. *Current Biology*. **27**: 2397-2404. (IF 10.1)

11. Lihoreau, M., Charleston, M., **Senior, A.M.**, Clissold, F., Raubenheimer, D, Simpson, S.J & Buhl, J. 2017. Collective foraging in spatially complex nutritional environments. *Philosophical Transactions of the Royal Society B*, **372**: 20160238. (IF 7.2)

10. Coogan, S., Machovsky-Capuska, G.E. **Senior A.M.**, Martin, J., Major, R. & Raubenheimer, D. 2017. Macronutrient selection of free-ranging urban Australian white ibis (*Threskiornis moluccus*). *Behavioral Ecology*, **28**: 1021-1029. (IF 3.2)

9. Ribeiro, R.V., Hirani, V., **Senior, A.M.**, Gosby, A.K., Cumming, R.G., Blyth, F.M., Naganathan, V., Waite, L.M., Handelsman, D.J., Kendig, H., Seibel, M.J., Simpson, S.J., Stanaway, F., Allman-Farinelli, M. & Le Couteur, D.G. 2017. Diet quality and its implications on the cardio-metabolic, physical and general health of older men: the Concord Health and Ageing in Men Project (CHAMP). *British Journal of Nutrition*. **118**: 130-143. (IF 4.1)

8. Cogger, V, Mashani, M., Solon-Biet, S., **Senior, A.M.**, Warren, A., O’Reilly, J., Tung, B.T., Svistounov, D., McMahon, A., Fraser, R., Raubenheimer, R., Holmes, A., Simpson, S.J. & Le Couter, D. 2016. Dietary Macronutrients and the Aging Liver Sinusoidal Endothelial Cell. *American Journal of Physiology - Heart and Circulatory Physiology*, **310**: H1064-H1070. (IF 3.9)

7. Besson, A., Lagisz, M., **Senior, A.M.**, Hector, K. & Nakagawa, S. 2016. Effect of maternal diet on offspring coping styles in rodents: a systematic review and meta- analysis. *Biological Reviews*, **91**: 1065-1080. (IF 11.5)

6. Le Couteur, D.G., Solon-Biet, S., Cogger, V. C., Mitchell, S. J., **Senior, A.M.**, de Cabo, R., Raubenheimer, D. & Simpson, S. J. 2016. The impact of low protein, high carbohydrate diets on aging and lifespan. *Cellular and Molecular Life Sciences*, **73**: 1237-1252. (IF 6.3)

5. Vanderpham, J. P., Nakagawa, S., **Senior, A.M.** & Closs, G.P. 2016. Habitat-related specialisation of lateral-line system morphology in a habitat-generalist and a habitat-specialist New Zealand eleotrid. *Journal of Fish Biology*, **88**: 1631-1641. (IF 1.9)

4. Jones, P., **Senior, A.M.**, Allibone, R.M. & Closs, G.P. 2016. Life history variation in a species- complex of non-migratory galaxiids. *Ecology of Freshwater Fish*, **25**: 174-189. (IF 2.1)

3. Lamatsch, D.K., Adolfsson, S., Christiansen, G., **Senior, A.M.**, Pichler, M., Ozaki, Y., Smeds, L., Schartl, M. & Nakagawa, S. 2015. Sex specific marker development from transcriptome in the invasive mosquitofish *Gambusia affinis*. *PLOS ONE*, **10**: e0118214. (IF 3.3)

2. Grueber, C.E., Knafler, G.J., King, T.M., **Senior, A.M.**, Grosser, S., Robertson, B., Brekke, P., Harris, C.L.W. & Jamieson, I.G. 2015. Toll-like receptor diversity in 10 threatened bird species: relationship with microsatellite heterozygosity. *Conservation Genetics*, **3**: 595-611. (IF 2.2)

1. Kamiya, T., O’Dwyer, K., Westerdhal, H., **Senior, A.M.** & Nakagawa, S. 2014. A quantitative review of MHC-based mating preference: the role of diversity and dissimilarity. *Molecular Ecology*, **23**: 5151-5163. (IF 6.6)

Symposia-Derived Publications

3. Pawelec, G., Bronikowski, A., Cunnane, S.C., Ferrucci, L., Franceschi, C., Fülöp, T., Gaudreau, P., Gladyshev, V.N., Gonos, E.S., Gorbunova, V., Gut, P., Kennedy, B.K., Larbi, A, Lemaître, J.F., Liu, G.H., Maier, A.B., Morais, J.A., Nobrega, O.T., Moskalev, A. Olde-Rikkert, M.G.M., Seluanov, A., **Senior, A.M.**, Ukraintseva, S., Van Haelen, Q., Witkowski, J.M. & Cohen, A.A. 2020. The conundrum of human immune system “senescence”. *Mechanisms of Ageing and Development*. **192**: 111357. (IF 4.3)

2. Cohen, A., Kennedy, B.K., Anglas, U., Bronikowski, A.M., Deelen, J., Dufour, F., Ferbeyre, G., Ferrucci, L., Franceschi, C., Frasca, D., Friguet, B., Gaudreau, P., Gladyshev, V.N., Gonos, E.S., Gorbunova, V., Gut, P., Ivanchenko, M., Legault, V., Lemaître, J.F., Liontis, T., Liu, G.H., Liu, M., Maier, A.B., Nobrega, O.T., Olde-Rikkert, M.G.M., Pawelec, G., Rheault, S., **Senior, A.M.**, Simm, A., Soo, S., Traa, A., Ukraintseva, S., Vanhaelen, Q., Van Raamsdonk, J.M., Witkowski, J.M., Yashin, A.I., Ziman, R. & Fülöp, T. 2020. Lack of consensus on an aging biology paradigm? A global survey reveals an agreement to disagree, and the need for an interdisciplinary framework. *Mechanisms of Ageing and Development*. **191**: 111316. (IF 4.3)

1. Nakagawa, S., Dunn, A.G., Lagisz, M., Bannach-Brown, A., Grames, E.M., Sanchez-Tojar, A., O’Dea, R., Nobel, D.W.A, Westgate, M.J., Arnold, P.A., Barrow, S., Bethel, A., Cooper, E., Foo, Y.Z., Geange, S., Hennessy, E., Mapanga, W., Mengersen, K., Munera, C., Page, M.J., Welch, V., **Evidence Synthesis Hackathon 2019 Participants (inc. Senior, A.M.)** & Haddaway, N.R. 2020. A new ecosystem for evidence synthesis. *Nature Ecology and Evolution*. **4**: 498-501. (IF 12.6)

## Submitted Articles

Noble, D.W.A., **Senior, A.M.**, Uller, T. & Schwanz, L. Heightened among-individual variation in life-history but not morphology is related to developmental temperature in reptiles. *Journal of* *Evolutionary Biology*. (**Joint Primary Authorship**)

Tan, J., Ni, D., Wali, J.A., Cox, D.A, Pinget, G.V., Taitz, J., Daien, C.I., **Senior, A.M.**, Read, M.N., Simpson, S.J., King, N.J.C & Macia, L. Dietary carbohydrate, particularly glucose, drives B cell lymphopoiesis and function. *iScience*.

Tan, J., Ni, D., Taitz, J., Pinget, G.V., Read, M., **Senior, A.M.**, Wali, J.A., Nanan, R., King, N.J.C, Grau, G.E., Simpson, S.J. & Macia, L. Dietary protein increases T cell independent sIgA production through changes in gut microbiota-derived extracellular vesicles. *Nature Communications*.

**Senior, A.M.**, Legault, V., Lavoie, F.B. Presse, N., Gaudreau, P., Turcot, V., Raubenheimer, D., Le Couteur, D.G, Simpson, S.J. & Cohen, A.A. Engaging the complexity of diet and healthy aging in humans. *BMC Biology*.

Le Couteur, D.G., Solon-Biet, S.M., Parker, B.L., Pulpitel, T., Brandon, A., Hunt, N., Wali, J., Gorkarn, R., **Senior, A.M.**, Cooney, G., Raubenheimer, D., Cogger, V., James, D.E. & Simpson, S.J. Long term nutritional regulation of the liver proteome targets spliceosome and mitochondria in mice. *Cell Metabolism*.

Havula, E., Ghazanfar S., Lamichane N., Francis D., Hasygar K., Liu Y., Alton L.A., Johnstone J., Needham E.J., Pulpitel T., Clark, T., Niranjan H.N., Shang V., Tong, V., Jiwnani N., Audia G., Alves A.N., Sylow L., Mirth C., Neely G.G., Yang J., Hietakangas V., Simpson S. & **Senior, A.M.** Genetic variation of macronutrient tolerance and identification of novel nutrient sensors in *Drosophila melanogaster*. *Nature Communications*.

Nelson, M.E., Madsen, S., Cooke, K.C., Fritzen, A.M., Thorius, I.H., Stöckli, J., Carroll, L., Mason, S.W., Weiss, F.C., Seldin, M.M., Potter, M., Fazakerley, D.J., Thillainadesan, S., **Senior, A.M.**, Cooney, G.J. & James, D.E. Gene-by-environment interactions determine tissue-specific insulin resistance and implicate glycolytic enzymes in skeletal muscle insulin resistance. *Cell Metabolism*.

**Grants, Scholarships and Awards**

Title and Body Year Value (A$)

National Institute of Health, Exploratory/Developmental Research Grant Award 2019 355,500

Australian Research Council, Discovery Early Career Researcher Award 2018 365,058

University of Sydney, DVCR and Faculty DECRA Project Funding 2018 90,000

NVIDIA GPU Grant Program 2018 2,500

University of Sydney, Intramural Compact Funding 2016 20,000

University of Sydney, International Program Development Fund 2015 12,300

University of Sydney, Start-Up Funding 2015 20,000

University of Sydney, Coffey Fellowship in Complex Systems and Modelling 2015 750,000

DAAD Research Grant for Doctoral Candidates and Young Scientists 2012 4,400

University of Otago, Post Graduate Travel Awards 2011/12 4,000

Marsden Fund, New Zealand, Doctoral Scholarship 2010 89,000

## Prizes

Title Year

Charles Perkins Centre EMCR Symposium Award, Best Post-Doc Oral Presentation 2020

Charles Perkins Centre, Exceptional Contribution to Collaborative Research Prize 2019

University of Otago, Fairlea Prize 2012

## Conference Contributions

19. **Senior, A.M.** 2019. Dietary macronutrient content age-specific mortality and lifespan. *Australasian Evolution Society 2019*. Sydney, Australia.

18. **Senior, A.M.** 2019. Dietary macronutrient composition, age-specific mortality and lifespan. *3rd International Symposium on the Biology of Aging: Understanding Aging to Better Intervene.* Montreal, Canada. Invited Speaker.

17. **Senior, A.M.** 2019. Dietary macronutrient content age-specific mortality and lifespan. *5th Annual Charles Perkins Centre Early-Mid Career Researcher Symposium*. Sydney, Australia.

16. Eberhard, J., Morimoto, J., Wali, J., Ruiz, K., Cogger, V., Solon-Biet, S., Pulpitel, T., Le Couteur, D., Raubenheimer, D., Simpson, S.J. & **Senior, A.M.** 2019. Periodontal bone loss is not modulated by weight gain in an experimental mouse model of periodontitis. *ANZOS-Breakthrough Discoveries Joint Annual Scientific Meeting 2018.* Published in *Obesity Research & Clinical Practice* **13**: 281.

15. **Senior, A.M.** 2019. Dietary macronutrient content age-specific mortality and lifespan. *4th Australian Biology of Aging Conference*. Sydney, Australia.

14. Rodriguez-Paris, V. Solon-Biet, S.M., **Senior, A.M.**, Edwards, M., Cox, M., Ledger, W., Gilchrist, R., Simpson, S.J., Handelsman, D. & Walters, K. 2019. Dietary interventions can ameliorate polycystic ovary syndrome (PCOS) traits in a PCOS mouse model. *ENDO 2019*. New Orleans, USA.

13. Corbett, S & **Senior, A.M.** 2018.Modelling the evolution of type-II diabetes across the demographic transition. *DOHaD ANZ Conference; Workshop of Evolutionary Medicine and DOHaD*. Sydney, Australia.

12. **Senior, A.M.**, & Corbett, S. 2017.Is fertility selection the key to the double puzzle of diabetes? *Australasian Evolution Society Conference*. Hobart, Australia.

11. Hosking, C., Simpson, S.J. & **Senior, A.M.** 2017.A nutritionally explicit ecological GPU model exploring the evolution of life-history traits. *Australasian Evolution Society Conference*. Hobart, Australia.

10. **Senior, A.M.** 2017. Dietary restriction increases variability in longevity. *2nd* *Australian Biology of Aging Conference*. Sydney, Australia.

9. Lam, Y.Y., **Senior, A.M.**, Solon-Biet, S.M., Rauabenheimer, D. & Simpson, S.J. Systematic analyses of diet composition revealed the impact of energy and macronutrient content on individual response to diet-induced weight changes in C57bl/6 mice. *13th International Congress on Obesity*. Vancouver, Canada. Published in *Obesity Reviews* **17**: 24.

8. **Senior, A.M.**, Lihoreau, M., Buhl, J. & Simpson, S.J. 2016. Linking computational simulation with animal behaviour. *16th International Behavioral Ecology Congress*. Exeter, UK.

7. **Senior, A.M.**, Lihoreau, M., Buhl, J. & Simpson, S.J. 2016. Linking computational simulation with animal behaviour. *43rd Annual Conference of the Australasian Society for the Study of Animal Behaviour*. Katoomba, Australia.

6. **Senior, A.M.**, Lihoreau, M., Charleston, M. Buhl, J., Raubenheimer, D. & Simpson, S.J. 2015. The efficiency of social foraging in groups with conflicting nutritional needs. *34th International Ethological Conference*. Cairns, Australia.

5. Jarvie, S., **Senior, A.M.**, Recio, M.R. Adolf, S., Seddon P. & Cree, A. 2014. Performance of head-started and wild-caught juvenile tuatara following reintroduction to Orokonui Ecosanctuary. *Sanctuaries of New Zealand workshop 2014*. Karitane, New Zealand.

4. Lim, J.N., **Senior, A.M.** & Nakagawa, S. 2013. A meta-analytic assessment of individual heterogeneity and a trade-off between competing life-history traits within species. *Australasian Evolution Society Conference*. Geelong, Australia.

3. **Senior, A.M.**, Nakagawa, S. & Grimm, V. 2013. Exploring the evolutionary consequences of chemically disrupted sexual selection using an agent based model. *Australasian Evolution Society Conference.* Geelong, Australia.

2. **Senior, A.M.**, Krkosek, M. & Nakagawa, S. 2012. Could ecological feedback put the brakes on runaway-sexual-conflict induced evolutionary suicide. *The 14th International Behavioral Ecology Congress*. Lund, Sweden.

1. **Senior, A.M.** & Nakagawa, S. 2011. Induced sex-reversal in fish; an evolutionary perspective. *Australasian Evolution Society Conference*. Townsville, Australia.

## Relevant Employment

2018 – Present. ARC DECRA Fellow. Charles Perkins Centre and School of Life and Environmental Sciences, University of Sydney, Australia.

2015 - 2018. Senior Research Fellow in Complex Systems and Modelling. Charles Perkins Centre and School of Mathematics and Statistics, University of Sydney, Australia.

2014 - 2015. Post-Doctoral Research Associate, Behaviour and Physiology Research Lab. Charles Perkins Centre and School of Biological Sciences (now part of School of Life and Environmental Sciences), University of Sydney, Australia.

2013 - 2014. Post-Doctoral Research Assistant, SN Behavioural Ecology Research Lab. Department of Zoology, University of Otago, New Zealand.

2014. Guest Lecturer, Behavioural & Evolutionary Ecology. Department of Zoology, University of Otago, New Zealand.

2011 - 2014. Statistics Advisor. Department of Zoology, University of Otago, New Zealand.

2012. Developer/Author of Nest Survival in RMark; an example in South Island Robins. A postgraduate teaching tool. Department of Zoology, University of Otago, New Zealand.

2011 - 2012. Field Assistant and Data Analyses. Department of Zoology, University of Otago, New Zealand.

2010 - 2012. Demonstrator for 4 undergraduate courses including Biological Data Analysis & Computing, and Behavioural and Evolutionary Ecology. Department of Zoology, University of Otago, New Zealand.

2010. Proof Reader: Statistical Models with R: An Introduction with Sparrows. Department of Zoology, University of Otago, New Zealand.

## Professional Activities

Editorial Duties

*International Journal of Obesity* – Statistical Editorial Board

Manuscript Review

*Aging Cell*; *AJP: Regulatory, Integrative and Comparative Physiology*; *American Journal of Clinical Nutrition*; *Animal Behavior*; *Anthrozoos*; *Aquaculture*; *Behavioral Ecology*; *BioEssays*; *Biology Letters*; *BMC Ecology*; *BMC Evolutionary Biology*; *Cell Metabolism*; *Cell Reports*; *Ecological Modelling*; *Ecological Monographs*; *Ecology*; *Ecology and Evolution*; *Ecology Letters*; *eLife*; *Entomologia Experimentalis et Applicata*; *Entropy*; *Epidemiology*; *Evolution*; *Evolution, Medicine and Public Health*; *Evolutionary Ecology*; *Experimental Gerontology*; *Frontiers in Ecology and Evolution*; *Frontiers in Zoology*; *Functional Ecology*; *International Journal of Epidemiology*; *International Journal of Molecular Sciences*; *Journal of Animal Ecology*; *Journal of Evolutionary Biology*; *Journal of Gerontology: Biological Sciences*; *Journal of the Royal Society Interface*; *Methods in Ecology and Evolution*; *Nature Communications*; *Nature Ecology and Evolution*; *Nature Metabolism*; *Nutrition Research*; *Ostrich*; *Philosophical Transactions of Royal Society B*; *PLOS ONE*; *Proceedings of the Royal Society B*; *Research Synthesis Methods*; *Review of General Psychology*; *Theriogenology*

Grant Application Review

*Australian Research Council*; *Natural Environment Research Council (UK)*; *National Science Foundation (USA)*

Societal Membership

*The Australasian Society for the Study of Animal Behaviour*; *The Australasian Evolution Society*; *The International Society for Behavioral Ecology*; *The International Society for Evolution, Medicine and Public Health*; *The Society for the Study of Evolution*

Invited Speaker

*Australian National University*; *CSIRO North Ryde*; *Macquarie University*; *UFZ Leipzig (Germany)*; *University of Innesbruck (Austria)*; *University of New South Wales*; *University of Otago*; *University of Sydney; 3rd International Symposium on the Biology of Aging*

Other

Volunteer essay reader for *The Living Rainforest*, a UK-based charitable organisation that educates school children about ecology and the environment.

## Students

Current

2016-2021. PhD. Cameron Hosking. *The evolution of diet breadth, macronutrient appetites and the emergence of trophic interactions*. The University of Sydney, Australia.

2020-2021. Hons. Caitlin Hiu-si Andrews. *Modelling nutrient intake and appetite regulation*. The University of Sydney, Australia.

Completed

2019-2020. Denison Research Scholar. Vivian Shang. *Gene by diet interactions as determinants of lifespan.* The University of Sydney, Australia.

2019-2020. Denison Research Scholar. Kara Harris. *Diet as a moderator of reproductive senescence.* The University of Sydney, Australia.

2019-2020. Denison Research Scholar. Sophia Zheng. *Gene-diet interactions in determining starvation sensitivity in Drosophila.* The University of Sydney, Australia.

2019-2020. CPC Summer Scholar. Helma Niranjan. *Gene-diet interaction and among-individual in circadian rhythm.* The University of Sydney, Australia.

2018-2019. One-Year Exchange (Bath University, UK). Lucy Griffiths. *The impact of dietary branched-chain amino-acids on metabolic health in animal models*. The University of Sydney, Australia.

2015-2016. CPC Summer Scholar. Jing Lu. *Meta-analyses of the effects of dietary interventions on inter-individual variability in weight.* The University of Sydney, Australia.

2015. Hons. Rachel Hu. *The influence of macronutrients on the impact of supplementary feeding*. The University of Sydney, Australia.

## Theses

2013. *The individual and population level consequences of chemically induced sex-reversal in fish.*

* A mixture of lab and computational techniques were used to assess the effects of chemically induced sex-reversal on fish and fish populations.
* Completed under the co-supervision of Dr. Shinichi Nakagawa, Dr. Mark Lokman and Dr. Gerry Closs at the University of Otago as part of a PhD.

2009. *The quantitative genetics of sibling interaction.*

* A field based cross-fostering study in blue tits (*Parus caeruleus*), focusing on the evolution of body size.
* Completed under the co-supervision of Dr. Jarrod Hadfield at the University of Edinburgh and Dr. Ally Phillimore at Imperial College London as part of a MSc. degree.

2008. *Polyandry in the common shore crab, Carcinus maenas.*

* A molecular ecology project, which used microsatellite markers to quantify multiple paternity in the common shore crab (*Carcinus maenas*).
* Completed under the supervision of Dr. Bernd Haenfling at the University of Hull as part of a BSc degree.

## Referees

Professor Stephen Simpson AC FAA FRS – Current Supervisor

Academic Director, Charles Perkins Centre

University of Sydney

Email: [stephen.simpson@sydney.edu.au](mailto:stephen.simpson@sydney.edu.au)

Tel: 02 8627 1613

Professor Shinichi Nakagawa – PhD Advisor and Collaborator

Deputy Director of Research, Evolution and Ecology Research Centre

University of New South Wales

Email: [s.nakagawa@unsw.edu.au](mailto:s.nakagawa@unsw.edu.au)

Tel: 02 9385 9138

Professor David Raubenheimer – Collaborator

Leonard P Ullman Chair in Nutritional Ecology, Charles Perkins Centre

University of Sydney

Email: [david.raubenheimer@sydney.edu.au](mailto:david.raubenheimer@sydney.edu.au)

Tel: 02 9351 3242