Aprendiendo Acuicultura

Acelerando las ganancias genéticas y eficiencia productiva en la salmonicultura

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Bangera, R., Correa, K., Lhorente, J., Figueroa, R. & Yáñez, J. 2017 Genomic predictions can accelerate selection for resistance against Piscirickettsia salmonis in Atlantic salmon (Salmo salar). BMC genomics 18: 1-12.
Barría A, Christensen KA, Yoshida GM, Jedlicki A, Leong JS, Rondeau EB, Lhorente JP, Koop BF, Davidson WS, Yáñez JM (2019) Whole genome linkage disequilibrium and effective population size in a coho salmon (Oncorhynchus kisutch) breeding population using a high-density SNP array. Frontiers in genetics 10: 1-9.
Barría, A., Christensen, K. A., Yoshida, G. M., Correa, K., Jedlicki, A., Lhorente, J. P., ... & Yáñez, J. M. (2018). Genomic predictions and genome-wide association study of resistance against Piscirickettsia salmonis in coho salmon (Oncorhynchus kisutch) using ddRAD sequencing. G3: Genes, genomes, genetics, 8(4), 1183-1194.
Correa K, Bangera R, Figueroa R, Lhorente JP, Yáñez JM (2017) The use of genomic information increases the accuracy of breeding value predictions for sea louse (Caligus rogercresseyi) resistance in Atlantic salmon (Salmo salar). Genetics Selection Evolution 49(1): 1-5.
Desta ZA, Ortiz R (2014) Genomic selection: genome-wide prediction in plant improvement. Trends in plant science 19(9): 592-601.
Falconer DS, Mackay TFC (1996) Introduction to quantitative genetics. Essex. UK: Longman Group.
Fu G, Yuna Y (2022) Phenotyping and phenomics in aquaculture breeding. Aquaculture and Fisheries 7(2): 140-146.
Georges M, Charlier C, Hayes B (2019) Harnessing genomic information for livestock improvement. Nature Reviews Genetics 20(3): 135-156.
Gjedrem T, Robinson N, Rye M (2012) The importance of selective breeding in aquaculture to meet future demands for animal protein: A review. Aquaculture 350: 117-129
Gutierrez AP, Houston RD (2017) Quantitative trait locus mapping in aquaculture species: principles and practice. Bioinformatics in aquaculture: principles and methods, 392-414.
Houston RD, Bean TP, Macqueen DJ, Gundappa MK, Jin YH, Jenkins TL, Selly SLC, Martin SAM, Stevens JR, Santos EM, Davie A, Robledo D (2020) Harnessing genomics to fast-track genetic improvement in aquaculture. Nature Reviews Genetics 21(7): 389-409.
Lhorente JP, Araneda M, Neira R, Yáñez, JM (2019) Advances in genetic improvement for salmon and trout aquaculture: the Chilean situation and prospects. Reviews in Aquaculture 11(2): 340-353.
Meuwissen TH, Hayes BJ, Goddard M (2001) Prediction of total genetic value using genome-wide dense marker maps. Genetics 157(4): 1819-1829.
Neira R (2010) Breeding in aquaculture species: genetic improvement programs in developing countries. 9th World Congress on Genetics Applied to Livestock Production, Leipzig, Germany.
Palti Y, Gao G, Liu S, Kent MP, Lien S, Miller MR, Rexroad III CE, Moen T (2015) The development and characterization of a 57 K single nucleotide polymorphism array for rainbow trout. Molecular ecology resources 15(3): 662-672.
Pérez-Enciso M, Rincón JC, Legarra A (2015) Sequence-vs. chip-assisted genomic selection: accurate biological information is advised. Genetics Selection Evolution 47(1): 1-14.
Robledo D, Matika O, Hamilton A, Houston, RD (2018a) Genome-wide association and genomic selection for resistance to amoebic gill disease in Atlantic salmon. G3: Genes, Genomes, Genetics 8(4): 1195-1203.
Robledo D, Palaiokostas C, Bargelloni L, Martínez P, Houston R (2018b) Applications of genotyping by sequencing in aquaculture breeding and genetics. Reviews in aquaculture 10(3): 670-682.
Sonesson AK, Meuwissen TH (2009) Testing strategies for genomic selection in aquaculture breeding programs. Genetics Selection Evolution 41(1): 1-9.
Song H, Dong T, Yan X, Wang W, Tian Z, Sun A, Dong Y, Zhu H, Hu H (2022) Genomic selection and its research progress in aquaculture breeding. Reviews in Aquaculture 1-18.
Storset A, Strand C, Wetten M, Kjøglum S, Ramstad A (2007) Response to selection for resistance against infectious pancreatic necrosis in Atlantic salmon (Salmo salar L.). Aquaculture 272: S62-S68.
Teng J, Huang S, Chen Z, Gao N, Ye S, Diao S, Ding X, Yuan X, Zhang H, Li J, Zhang Z (2020) Optimizing genomic prediction model given causal genes in a dairy cattle population. Journal of dairy science 103(11): 10299-10310.
Tsai HY, Hamilton A, Tinch AE, Guy DR, Gharbi K, Stear MJ, Matika O, Bishop SC, Houston, R. D. (2015) Genome wide association and genomic prediction for growth traits in juvenile farmed Atlantic salmon using a high density SNP array. BMC genomics 16(1): 1-9.
Tsairidou S, Hamilton A, Robledo D, Bron JE, Houston RD (2020) Optimizing low-cost genotyping and imputation strategies for genomic selection in Atlantic salmon. G3: Genes, Genomes, Genetics 10(2): 581-590.
Ventura RV, Silva FF, Yáñez JM, Brito, LF (2020) Opportunities and challenges of phenomics applied to livestock and aquaculture breeding in South America. Animal Frontiers: the Review Magazine of Animal Agriculture 10(2): 45-52.
Yáñez JM, Houston RD, Newman S (2014) Genetics and Genomics of Disease Resistance in Salmonid Species. Frontiers in Genetics 5: 1–13.
Yáñez JM, Naswa S, López ME, Bassini L, Correa K, Gilbey J, Bernatchez L, Norris A, Neira R, Lhorente JP, Schnable PS, Newman S, Mileham A, Deeb N, Di

Genova A, Maass A (2016) Genomewide single nucleotide polymorphism discovery in Atlantic salmon (Salmo salar): validation in wild and farmed American and European populations. Molecular ecology resources 16(4): 1002-1011.
Yáñez JM, Newman S, Houston RD (2014) Genomics in aquaculture to better understand species biology and accelerate genetic progress. Frontiers in genetics 6: 1-3.
Yoshida GM, Bangera R, Carvalheiro R, Correa K, Figueroa R, Lhorente JP, Yáñez JM (2018a) Genomic prediction accuracy for resistance against Piscirickettsia salmonis in farmed rainbow trout. G3: Genes, Genomes, Genetics 8(2): 719-726.
Yoshida GM, Carvalheiro R, Lhorente JP, Correa K, Figueroa R, Houston RD, Yáñez JM (2018b). Accuracy of genotype imputation and genomic predictions in a two-generation farmed Atlantic salmon population using high-density and low-density SNP panels. Aquaculture 491:147-154.
Yoshida GM, Yáñez JM (2021) Multi-trait GWAS using imputed high-density genotypes from whole-genome sequencing identifies genes associated with body traits in Nile tilapia. BMC genomics 22(1): 1-13.
Zenger KR, Khatkar MS, Jones DB, Khalilisamani N, Jerry DR, Raadsma HW (2019) Genomic selection in aquaculture: application, limitations and opportunities with special reference to marine shrimp and pearl oysters. Frontiers in genetics 693: 1-19.