

Curriculum Vitae for Yniv Palti

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Current Position: Research Geneticist (since Sep. 2001); Lead Scientist of the Genomics Unit (since April 2008)

Research Interests and Ongoing Projects in my Lab:

My main focus is in developing genomic tools and protocols for improving selective breeding strategies in aquaculture, primarily in rainbow trout and other salmonids. I am also interested in using genomics and genetics to dissect complex traits and improve our knowledge of the underline fish biology and physiology. Current ongoing projects in my lab and in collaboration with other labs include:

- Assembly of an improved reference genome map for rainbow trout.
- Validation of a 50K SNP chip that we have recently developed for rainbow trout.
- Use RAD SNPs genotyping and the 50K SNP chip for evaluating the accuracy of whole genome breeding values for disease resistance in rainbow trout aquaculture breeding programs.
- Conduct genome-wide association analyses to identify SNPs and genome regions affecting disease resistance and other aquaculture production traits in rainbow trout aquaculture breeding programs.
- Fine mapping of previously identified QTL in the NCCCWA rainbow trout germplasm and chromosome walking to identify the causative genes and alleles affecting variation in resistance to bacterial cold water disease (BCWD).
- Use RNAseq to characterize changes in global gene expression in response to various environmental stressors and infection with BCWD to enable identification of physiological and metabolic pathways involved and to evaluate candidate SNPs through detection of allele specific expression between high and low response lines.

University Education and Additional Training

- 2000 - 2001 Research Associate, Cardeza Foundation for Hematologic Research, Thomas Jefferson University, Philadelphia, PA, USA.
- 1999 – 2000 Visiting Lecturer and Head of the DNA Analysis and Sequencing Unit, Dept. of Food Engineering and Biotechnology, Technion – Israel Institute of Technology, Haifa, Israel.
- 1998 – 1999 Postdoctoral fellow, Animal Science Institute, Agricultural Research Organization, Beit-Dagan, Israel.
- 1994 - 1997 Ph.D., Genetics & Cell Biology, Washington State University, Pullman, WA, USA.
- 1992 - 1994 M.S., Genetics & Cell Biology, Washington State University, Pullman, WA, USA.
- 1988 - 1991 B.Sc., Economics, Faculty of Agriculture of the Hebrew University of Jerusalem, Rehovot, Israel.

Research grants

- 2011 Project Director. NIFA-AFRI-Animal Breeding, Genetics and Genomics. Production of a High Density SNP Chip for Genomic Analyses in Rainbow Trout. (\$678,000)
- 2007 Co-PI. BARD. Genetic basis of cyprinid herpes virus-3 resistance in common carp. (\$320,000)
- 2006 Project Director. CSREES-NRI-Animal Genome:Tool and Reagent Development. Production of an Integrated Physical and Genetic Map for Rainbow Trout. (\$696,416)
- 2005 Sub-contractor. USDA-CSREES-SBIR (Phase II). Genetics of growth and reproduction in rainbow trout (*Oncorhynchus mykiss*) fed a plant-based diet. (\$255,695)
- 2003 Sub-contractor. USDA-CSREES-SBIR (Phase I). Genetic basis of growth improvement in rainbow trout (*Oncorhynchus mykiss*) using plant-based diets. (\$65,000)
- 2002 Sub-contractor. USDA-CSREES-NRI: Animal Genome Reagent and Tool Development. Genomic resources for examining disease resistance in rainbow trout. (\$622,000)
- 2000 Postdoctoral NIH training grant at the Cardeza Foundation for Hematologic Research, Thomas Jefferson University, Philadelphia, PA.
- 1998 BARD postdoctoral fellowship. Title: Identification of candidate DNA markers linked to sex determination in tilapia (*Oreochromis aureus*). Postdoctoral fellow for two years.

Adjunct Faculty positions

- Division of Forestry, Davis College of Agriculture, Forestry and Consumer Science, West Virginia University.
- Dept. of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University.

Editorial Boards

Marine Biotechnology

BMC Molecular Biology

Frontiers in Genetics: Livestock Genomics

List of Recent Publications

- 1) Silverstein, J.T., Vallejo, R.L., **Palti, Y.**, Leeds, T.D., Rexroad III, C.E., Welch, T.J., Wiens, G.D., and Ducrocq, V. Rainbow trout resistance to bacterial cold-water disease is moderately heritable and is not adversely correlated with growth. *Journal of Animal Science* 87: 860-867. 2009.
- 2) *Kongchum, P.*, Rexroad III, C.E., Hallerman, E.M., David, L., and **Palti, Y.** SNP identification, genetic mapping and tissue expression of the rainbow trout *TLR9* gene. *Animal Genetics* 40: 1001. 2009.
- 3) **Palti, Y.**, Luo, M.-C., Hu, Y., Genet, C., You, F.M., Vallejo, R.L., Thorgaard, G.H., Wheeler, P.A., and Rexroad III, C.E. A First Generation BAC-Based Physical Map of the Rainbow Trout Genome. *BMC Genomics* **10**: 462. 2009.

- 4) **Palti, Y.**, Gahr, S.A., Purcell, M.K., Hadidi, S., Rexroad III, C.E., and Wiens, G.D. Identification, characterization and genetic mapping of TLR7, TLR8a1 and TLR8a2 genes in rainbow trout (*Oncorhynchus mykiss*). *Developmental and Comparative Immunology* 34: 219-233. 2010.
- 5) Leeds, T.D., Silverstein, J.T., Weber, G.M., Vallejo, R.L., **Palti, Y.**, Rexroad III, C.E., Welch, T.J., Evenhuis, J.P., Hadidi, S., and Wiens, G.D. Response to selection for bacterial cold water disease resistance in rainbow trout. *Journal of Animal Science* 88: 1936–1946. 2010.
- 6) **Palti, Y.**, *Rodriguez, M.F.*, Gahr, S.A., Purcell, M.K., Rexroad III, C.E., and Wiens, G.D. Identification, characterization and genetic mapping of TLR1 loci in rainbow trout (*Oncorhynchus mykiss*). *Fish and Shellfish Immunology* 28: 918-926. 2010.
- 7) Vallejo, R.L., Wiens, G.D., Rexroad III, C.E., Welch, T.J., Evenhuis, J.P., Leeds, T.D., Janss, L.L.G., and **Palti, Y.** Evidence of major genes affecting resistance to bacterial cold water disease in rainbow trout using Bayesian methods of segregation analysis. *Journal of Animal Science* 88: 3814-3832. 2010.
- 8) *Kongchum, P.*, **Palti, Y.**, Hallerman, E.M., Hulata, G., and David, L. SNP Discovery and Development of Genetic Markers for Mapping Immune Response Genes in Common Carp (*Cyprinus carpio*). *Fish and Shellfish Immunology* 29: 356-361. 2010.
- 9) *Kongchum, P.*, Hallerman, E.M., Hulata, G., David, L., **Palti, Y.** Molecular cloning, characterization and expression analysis of TLR9, MyD88 and TRAF6 genes in common carp (*Cyprinus carpio*). *Fish and Shellfish Immunology* 30: 361-371. 2011.
- 10) Genet, C., Dehais, P., **Palti, Y.**, Gavory, F., Wincker, P., Quillet, E., and Boussaha, M. Analysis of BAC-end sequences in rainbow trout: content characterization and assessment of synteny between trout and other fish genomes. *BMC Genomics* 12: 314. 2011.
- 11) *Kongchum, P.*, Sandel, E., Lutzky, S., Hallerman, E.M., Hulata, G., David, L., and **Palti, Y.** Association between IL-10a single nucleotide polymorphisms (SNPs) and resistance to cyprinid herpesvirus-3 infection in common carp (*Cyprinus carpio*). *Aquaculture* 315: 417-421. 2011.
- 12) **Palti, Y.**, Genet, C., Luo, M.-C., Charlet, A., Gao, G., Hu, Y., Castaño-Sánchez, C., Tabet-Canale, K., Krieg, F., Yao, J., Vallejo, R.L., and Rexroad III, C.E. A first generation integrated map of the rainbow trout genome. *BMC Genomics* 12: 180. 2011.
- 13) Overturf, K., Vallejo, R.L., **Palti, Y.**, Barrows, F.T., and Parsons, J.E. Microarray analysis of differential utilization of plant-based diets by rainbow trout. *Aquaculture International* 20: 213–232. 2011.

- 14) Miller, M.R., Brunelli, J.P., Wheeler, P.A., Liu, S., Rexroad III, C.E., **Palti, Y.**, Doe, C.Q., and Thorgaard, G.H. A conserved haplotype controls parallel adaptation in geographically distant salmonid populations. *Molecular Ecology* 21: 237-249. 2012.
- 15) **Palti, Y.**, Genet, C., Gao, G., Hu, Y., You, F., Boussaha, M., Rexroad III, C.E., and Luo, M.-C. A second generation integrated map of the rainbow trout (*Oncorhynchus mykiss*) genome: Analysis of conserved synteny with model fish genomes. *Marine Biotechnology* 14: 343-357. 2012.
- 16) Salem, M., Vallejo, R.L., Leeds, T.D., **Palti, Y.**, Liu, S., Sabbagh, A., Rexroad III, C.E., and Yao, J. RNA-Seq identifies SNP markers for growth traits in rainbow trout. *PLoS ONE* 7: e36264. 2012.
- 17) Rexroad III, C.E., Vallejo, R., Liu, S., **Palti, Y.**, and Weber, G. QTL affecting stress response to crowding in a rainbow trout broodstock population. *BMC Genetic* 13: 97. 2012.
- 18) Shirak, A., **Palti, Y.**, Bern, O., Kocher, T.D., Gootwine, E., Seroussi, E., Hulata, G., Ron, M., and Avtalion, R.R. A deleterious effect associated with UNH159 is attenuated in twin embryos of an inbred line of blue tilapia (*Oreochromis aureus*). *Journal of Fish Biology* 82: 42-53. 2013.
- 19) Rexroad III, C.E., Vallejo, R., Liu, S., **Palti, Y.** and Weber, G.M. Quantitative Trait Loci Affecting Response to Crowding Stress in an F2 Generation of Rainbow Trout Produced through Phenotypic Selection. *Marine Biotechnology* 15: 613-627. 2013.
- 20) Wiens, G.D., Vallejo, R.L., Leeds, T.D., **Palti, Y.**, Hadidi, S., Liu, S., Evenhuis, J.P., Welch, T.J., and Rexroad III, C.E. Rainbow trout spleen size is highly heritable, genetically correlated with specific disease resistance, and affected by multiple QTL. *PLoS ONE* 8: e75749. 2013.
- 21) Wolters, W.R., Burr, G.S., **Palti, Y.**, and Vallejo, R.L. Phenotypic and genetic variation in two North American arctic charr (*Salvelinus alpinus*) stocks cultured in a recirculating aquaculture system. *Journal of the World Aquaculture Society* 44: 473-485. 2013.
- 22) Vallejo, R.L., **Palti, Y.**, Evenhuis, J.P., Gao, G., Rexroad III, C.E., and Wiens, G.D. Detection of QTL in rainbow trout affecting survival when challenged with *Flavobacterium psychrophilum*. *Marine Biotechnology* 16: 349-360. 2014.
- 23) **Palti, Y.**, Gao, G., Miller, M.R., Vallejo, R.L., Wheeler, P.A., Quillet, E., Yao, J., Thorgaard, G.H., Salem, M., and Rexroad III, C.E. A resource of single-nucleotide polymorphisms for rainbow trout generated by RAD sequencing of doubled haploids. *Molecular Ecology Resources* 14: 588-596. 2014.

- 24) Liu, S., Gao, G., **Palti, Y.**, Cleveland, B.M., Weber, G.M., and Rexroad III, C.E. RNA-seq Analysis of Early Hepatic Response to Handling and Confinement Stress in Rainbow Trout. *PLoS ONE*, 9: e88492. 2014.
- 25) Vallejo, R.L., **Palti, Y.**, Liu, S., Marancik, D., and Wiens, G.D. Validation of linked QTL for bacterial cold water disease resistance and spleen size on rainbow trout chromosome Omy19. *Aquaculture*, 432: 139-143. 2014.
- 26) **Palti, Y.**, Gao, G., Liu, S., Kent, M.P., Lien, S., Miller, M.R., Rexroad III, C.E., and Moen, T. The Development and Characterization of a 57K SNP Array for Rainbow Trout. *Molecular Ecology Resources*, 15: 662-672. 2015.
- 27) Marancik, D., Gao, G., Paneru, B., Ma, H., Hernandez, A.G., Salem, M., Yao, J., **Palti, Y.** and Wiens, G.D. Whole-body transcriptome of selectively bred, resistant-, control-, and susceptible-line rainbow trout following experimental challenge with *Flavobacterium psychrophilum*. *Frontiers in Genetics*, 5: 1-15. 2015.
- 28) Liu, S., Vallejo, R., Gao, G., **Palti, Y.**, Weber, G., Hernandez, A. and Rexroad III, C.E. Identification of Single-Nucleotide Polymorphism Markers Associated with Cortisol Response to Crowding in Rainbow Trout. *Marine Biotechnology*, 17: 328-337. 2015.
- 29) **Palti, Y.**, Vallejo, R.L., Gao, G., Liu, S., Hernandez, A.G., Rexroad, C.E., III and Wiens, G.D. Detection and Validation of QTL Affecting Bacterial Cold Water Disease Resistance in Rainbow Trout Using Restriction-Site Associated DNA Sequencing. *PLoS ONE*, 10: e0138435. 2015.
- 30) Liu, S., Vallejo, R.L., **Palti, Y.**, Gao, G., Marancik, D.P., Hernandez, A.G. and Wiens, G.D. Identification of single nucleotide polymorphism markers associated with bacterial cold water disease resistance and spleen size in rainbow trout. *Frontiers in Genetics*, 6. 2015