



T: 024 321 6708 | Email rho_lims@yahoo.com |

Degrees

BSc, MPhil (University of Ghana, Legon)

Active Affiliations

<https://www.linkedin.com/in/rhoda-lims-b2667913/>

Research Interests

1. Fish Health: Reducing infectious diseases caused by pathogenic organisms in aquaculture industry re
2. Population Genetics in Fish: Characterization of molecular genetic variants that can be used as genet

Profile

Rhoda is a Research Scientist at the Council for Scientific and Industrial Research, Fisheries Division, with expertise in fisheries molecular genetics, and fish health. She holds a Bachelor's Degree in Oceanography and Fisheries and Masters in Oceanography from University of Ghana, Legon. She has as well received diverse specialized trainings at the United Nations University, Japan, Duquesne University and Rhode Island University, USA in various backgrounds on issues of global concern such as, climate change, sustainable exploitation of natural resources, fish health and molecular studies.

With her strong passion for maximizing local fish production, maintaining fish health, and with expertise in fisheries molecular studies, Rhoda has worked on related research areas including; parasitic infestation of cultured and wild caught fish in Ghana, chemical contamination of fish from the coastal waters of Ghana, genetic variation in fish, molecular characterization of shrimps and the diagnosis of fish diseases. She is currently undertaking her PhD in Aquaculture with University of Cape Coast /University of Rhode Island on a research topic 'Molecular diagnosis of fish diseases in Ghana.

This project seeks to develop molecular diagnostic markers for rapid detection of pathogens of infectious diseases in fish, towards the development of vaccines and probiotics for effective control and to facilitate the monitoring and surveillance of infectious diseases in aquaculture systems. This research interest is to enhance the reduction of mass mortalities of fish in production systems resulting from disease conditions, for maximum economic benefit in aquaculture and greater food security in Ghana. Her current research work is under the sponsorship of USAID/UCC Fisheries and Coastal Management Capacity Building Support Project. Rhoda has a number of publications to her credit and a number of draft manuscripts under review.

Current Research

My research is in the area of molecular genetics, that is, the application of molecular techniques in fisheries-related research. Thus, my research activities encompass topics like:

1. Disease diagnosis in fish: Involved with the development of molecular diagnostic markers that can as rapidly as an outpatient basis, identify the presence or absence of pathogenic organisms (bacterial, fungal, viral, and parasitics infections) in fish showing clinical symptoms of diseases, to ascertain the causative agent and for specificity in treatment. QPCR techniques are also employed to quantify the pathogen load in the fish or the environment. The development of a system that could accurately assess the carrier state of fish within an area containing a disease causative agent would aid in the development of management programs. Thus, my research also focuses on utilizing the sensitivity and specificity of molecular tools in the detection of pathogens from asymptomatic fish, water and feed samples, so that changes in abundance of these organisms could be monitored, for reduction in disease outbreak, antibiotic treatments and the creation of antibiotic-resistant bacteria. Histopathological assessments of disease conditions are also undertaken.

2. Genetic expressions in fish: Determination of the differences in growth and immune expressions between disease, healthy, probiotic fed and vaccinated fish

3. Development of vaccines and probiotics as a preventive measure for diseases in fish in aquaculture systems: This involve research into the mechanism and processes in the development of probiotics, immunostimulants, plant products and oral vaccines in immunomodulation, that is, stimulation of the innate, cellular and/or humoral immune response in fish for the control of bacterial fish diseases.

4. Species identification in fish/shellfish: obtaining conclusive information regarding the identity of a species

5. Genetic variation in fish/shellfish: This is involved with DNA analyses to identify genetic differences, particularly at the subspecies level, which are not identifiable with morphological analyses. Thus, DNA markers (Microsatellites) are developed and used to examine patterns of genetic variation and distances among different populations of *Oreochromis niloticus* (the most commonly cultured fish Ghana) in farms in Southern Ghana.

The analyses allow

1) estimates of genetic differentiation between/within populations

2) estimates of genetic diversity within/between populations and

3) phylogenetic analysis among populations.

This is to support the efficiency of ongoing selective breeding programme, into the potential identity of more productive strains of *O. niloticus* as far as traits like reproductive efficiency, temperature tolerance, survival rate, fecundity rate, and disease resistance are concerned. It is also a means to monitor the system regarding the introduction of exotic species which can endanger indigenous species through competition.

Publications

1. Ecological assessment of the Odaw River Basin – Evaluating the impact of anthropogenic

activities on benthic macro-invertebrate communities.

2. Stomach content analysis and concentrations of chemical pollutants in the Clymene dolphin (*Stenella clymene*, gray 1846) from the coastal waters of Ghana