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A semi-automatic dispenser for solid and liquid food in aquatic facilities

We present a novel, low-footprint and low-cost semi-automatic system for delivering solid and liquid food to zebrafish, and more generally to aquatic animals raised in racks of tanks. It is composed of a portable main module equipped with a contactless reader that adjusts the quantity to deliver for each tank, and either a solid food module or a liquid food module. Solid food comprises virtually any kind of dry powder or grains below two millimetres in diameter, and, for liquid-mediated food, brine shrimps (Artemia salina) and rotifers (Rotifera) have been successfully tested. Real-world testing, feedback and validation have been performed in a zebrafish facility for several months. In comparison with manual feeding this system mitigates the appearance of musculoskeletal disorders among regularly feeding staff, and let operators observe the animals' behaviour instead of being focused on quantities to deliver. We also tested the accuracy of both humans and our dispenser and found that the semi-automatic system is much more reliable, with respectively 7-fold and 84-fold drops in standard deviation for solid and liquid food.

Biography

Raphaël Candelier is a biophysicist specialized in neuroscience. He has been working for the last 10 years on larval zebrafish, for which he has developed new ways of recording behaviour and imaging whole-brain activity with single cell-resolution during various tasks. His main research interests are the multi-scale mechanisms of the sensory-motor feedback loop and the general features of multi-sensory processing. He has recently started a research project on chemotaxis (i.e. attraction/repulsion of animals with chemical cues) aiming at exploiting the unique features of zebrafish to reveal general mechanisms of the vertebrate brain.

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