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**METABOLIC RATES IN ATLANTIC BLUEFIN TUNA LARVAE: FIRST DATA AND
METHODOLOGICAL CHALLENGES**

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Atlantic bluefin tuna is an emblematic scombrid species, but many physiological aspects during the larval stages are still unknown. The mechanisms of how fish larvae balance growth and activity are of great interest since metabolic costs are very high compared to juveniles and adults. However, there is a lack of information about metabolic costs in scombrid larvae. This lack of data is probably related to the challenges associated to larval handling before and during respirometry trials. In this study for the first time, we: i) estimate the relationship between routine metabolic rate and the larval dry weight (mass scaling exponent) at 26°C, ii) measure metabolism under light and darkness and iii) explore the influence of nutritional status (RNA:DNA ratio) on the inter-individual variability in metabolic rates. The relationship between metabolism and size (ranging from 0.6 to 23 mg) was near isometric (slope, $b=0.99$), in contrast to the allometric relationship observed in most species ($b=0.87$). Our results show no significant differences in oxygen consumption under light and darkness. A possible regulation (decrease) of their swimming activity with the consequent decrease in the oxygen consumption in light situations is discussed. Nutritional condition did not explain the inter-individual differences in oxygen consumption. This study first reports metabolic rates of Atlantic bluefin tuna larvae and discusses the challenges of performing bioenergetics studies with early life stages of Scombrids.