

DOCTORAL CANDIDATE: Taiwo Crossby Omotoriogun
DEGREE: Philosophiae Doctor
FACULTY: Faculty of Mathematics and Natural Sciences
DEPARTMENT: Natural History Museum
AREA OF EXPERTISE: Evolutionary biology
SUPERVISORS: Jan T. Lifjeld, Ulf Ottosson, Tomas Albrecht, Melissah Rowe
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DISSERTATION TITLE: *The evolution of sperm morphology and sperm competition in Afrotropical passerine birds*

Taiwo Crossby Omotorioguns doktoravhandling er den første store komparative analyse av sædcellers morfologi hos afrikanske fuglearter. Avhandlingen gir ny innsikt i sædcellers variasjon i et evolusjonært perspektiv.

Sperm cells are extremely variable in size and shape among species. Related species tend to show similarities but there are often species-specific differences in sperm morphology. For his doctoral thesis, Taiwo Crossby Omotoriogun has analysed the sperm morphology of 128 songbird species from West-Africa. Most of the material he has collected himself over the last four years in Nigeria, and some samples have been collected in Cameroon by a collaborating research team. For these analyses, the candidate has measured more than 10 000 sperm cells using a high-resolution microscope at the Natural History Museum, University of Oslo. This is the first large-scale comparative study of bird sperm from the African continent.

Mr. Omotoriogun has used modern comparative methods in combination with time-calibrated phylogenies to estimate evolutionary rates and diversification in sperm size for African songbirds. He shows that African birds have the same variability in sperm size as songbirds from the northern temperate zone that have been studied previously. African songbirds also seem to vary as much in the level of sperm competition (promiscuity) as those from the temperate regions.

A more novel discovery is that the rate of evolution in sperm size is variable among songbird lineages and that certain groups have a higher sperm diversification rate than others. The factors underlying this difference are yet unknown. The thesis indicates that sperm competition is an insufficient explanation to understand the high diversity in sperm size among African songbirds.

The thesis expands our understanding of sperm size variation, sperm evolution and sperm competition among tropical birds, but also generates a number of new questions for further study of sperm evolution in birds in general.