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Grande salle + visio.

## **TRANSPOSABLE ELEMENTS CONTRIBUTE TO *ANOPHELES COLUZZII* AND *A. GAMBIAE* ADAPTATION TO URBAN ENVIRONMENTS**

par

Marta Coronado, Institut Botànic de Barcelona, CSIC

- 📌 *Anopheles gambiae* and *A. coluzzii* mosquitoes are major human malaria vectors in Africa, accounting for most of the transmission. While urban environments were until recently considered to be unfit for *Anopheles* larvae development, these mosquito species have rapidly adapted to polluted habitats in the last decades, posing challenges for malaria control. Therefore, understanding the genetic factors driving this adaptability is crucial for the ultimate goal of malaria eradication.
- 📌 In this work, we have analyzed 375 *A. coluzzii* and *A. gambiae* WGS samples from urban and rural areas in six Central African countries. Taking advantage of recent high-quality long-read assemblies for both species, our analysis focused on identifying genetic variants, from SNPs to transposable elements (TEs). We have created the first manually curated TE library for *A. gambiae*, containing 295 consensus sequences and including 53 new TE families. By combining three TE annotation tools, PoPoolation2, TEMP2 and TEFLON, we identified 5,462 and 4,773 euchromatic TE insertions present at high frequencies in *A. coluzzii* and *A. gambiae* populations, respectively, that could be potentially involved in adaptation. By performing genome-wide selection scans and genome-environment association analyses we identified known and new candidate genes associated with urban adaptation, with half of these genes linked to TEs present at high frequencies. We also find evidence of some of these genes being the result of the introgression between these species. Overall, our work shows that beyond SNPs, TEs could play a significant role in the adaptation of *Anopheles* species to urban environments.



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de Barcelona