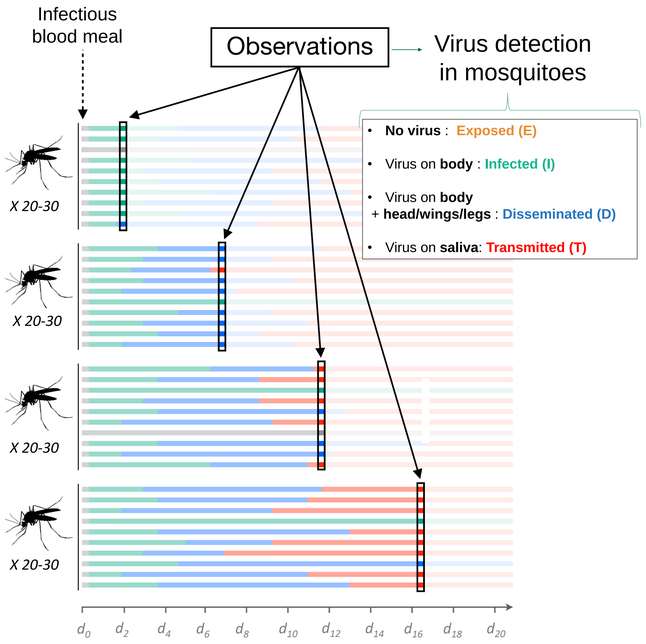
Revisiting the representation of extrinsic incubation period: finding from modelling within-vector viral dynamics for major arboviruses: Dengue, Zika, and Chikungunya

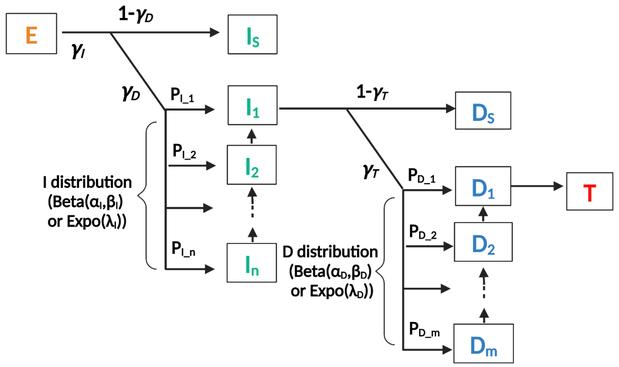
Léa Loisel, Pauline Ezanno, Vincent Raquin, Maxime Ratinier, Gael Beaunée

Revisiting the representation of extrinsic incubation period: finding from modelling intra-vector viral dynamics for major arboviruses.

Extrinsic incubation period of mosquitoes is not always exponentially distributed

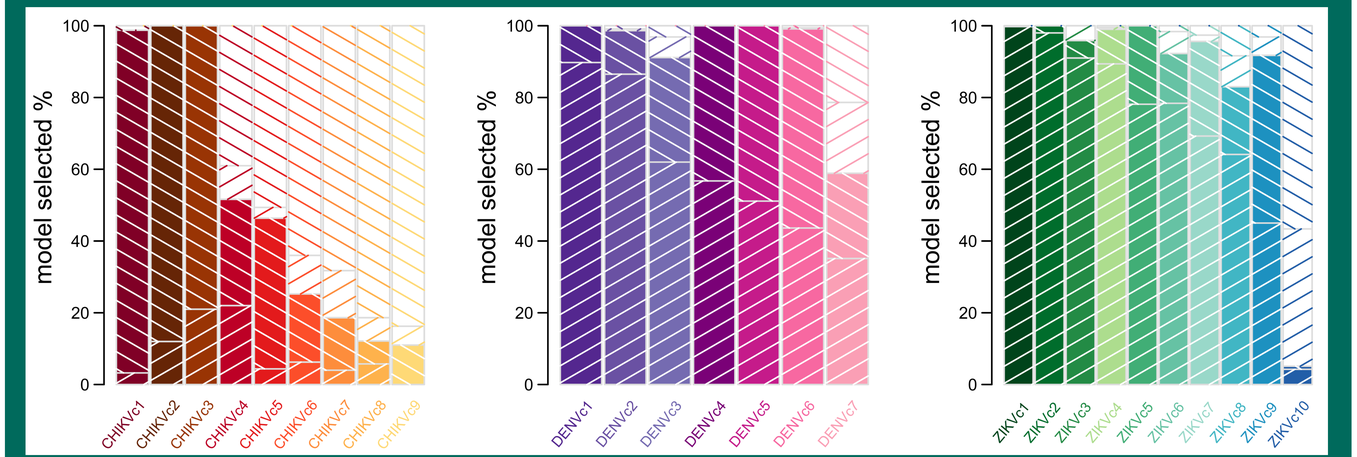


→ ***Systematic review*** *to find* ***vectorial competence*** *experimental data.*



→ *Building a* ***compartmental mechanistic model*** *of intra-vector viral dynamics.*

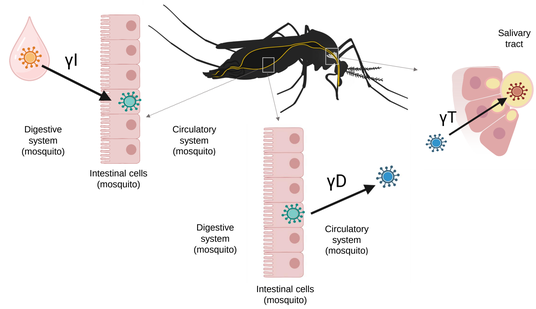
Inference and **model selection** with Approximate Bayesian Computation (ABC-SMC)

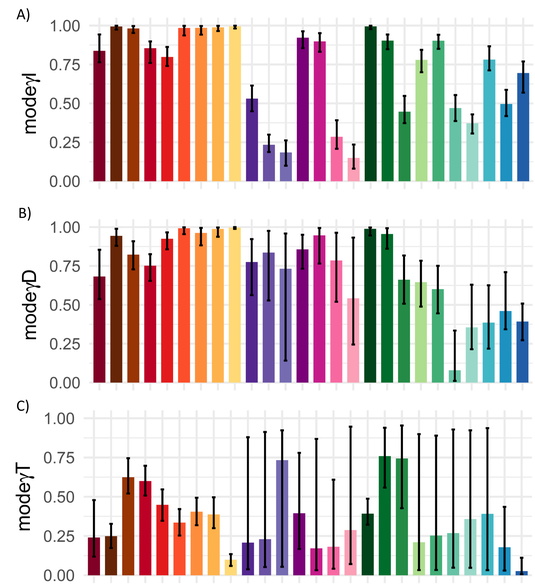


→ *Selected proportion of each model (modBetaExpo, modBetaBeta, modExpoExpo, modExpoBeta) for chikungunya (CHIKV), dengue (DENV) and Zika (ZIKV) viruses in different experimental conditions.*

IbetaDexpo IbetaDbeta IexpoDexpo IexpoDbeta

→ *Values of the crossing barrier parameters inferred for all scenarios tested for CHIKV, DENV and ZIKV. A) infection barrier. B) Dissemination barrier. C) Transmission barrier. Each bar represents the parameter mode for a given scenario, with one colour per scenario and with the 90% credibility interval represented by the error bar.*





Léa Loisel[1], Vincent Raquin[2], Maxime Ratinier[2], Pauline Ezanno[1], Gaël Beaunée[1]

[1]Oniris, INRAE, BIOEPAR, Nantes, France
[2]EPHE, Université PSL, INRAE, Université Claude Bernard Lyon 1, IVPC, UMR754, Lyon, F-69007, France

Corresponding author:lea.loisel@inrae.fr

Acknowledgements:this work was supported by INRAE Metaprogramme DIGIT-BIO (Digital biology to explore and predict living organisms in their environment), through the MIDIIVEC project.