

Individual Based Models Applied to Epidemiology

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Individual-Based Models are computational representations of systems consisting of heterogeneous micro-entities that can interact, change, or adapt over time in response to other sorts of micro-entities, to environmental features or to changes in that environment. In such models, macro-scale process dynamics emerge from interactions and adaptations taking place in the micro-scale, but also emerge from macro/micro-scale feedback. In epidemiology, these dynamic models may enhance the traditional epidemiological analysis, provide further insights into those scale-variable processes and suggest effective measures to be implemented as control.

The models presented in this study oversee the epidemiology of dengue and investigate *Aedes aegypti* mosquito control: (1) via ovitraps inundation and (2) via environmental insertion of *Wolbachia*-bacterium-infected mosquitoes.