



*Elende, Cameroon*

*Co-habitation with malaria*

*by Mary Kefi*

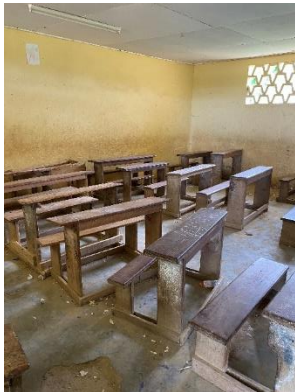


*Leslie, a 12-year-old girl from Cameroon, has been sleeping under a bed-net since she can remember herself. She does not really understand why, but she listens to her mother: "they say it protects us from malaria". Her three-year old brother has been in a serious danger due to this illness and many children of her village have died of the bite of these annoying little insects*

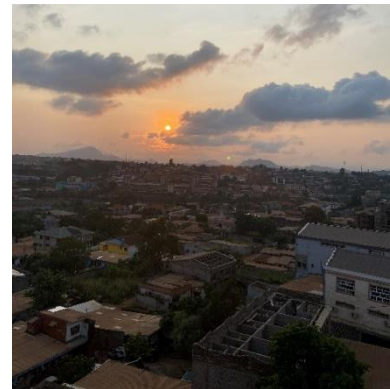


*that appear after sunset. She can recall people spraying her house and distributing these huge nets. Afterwards, all the villagers thought they had gotten rid of the problem. However, the last years these measures do not seem to make a difference anymore.*

*Mosquitoes are everywhere when the dawn comes and they do not seem to be affected at all. A teacher at school mentioned that*



*they cannot take the same precautionary measures forever because mosquitoes become stronger and learn how to avoid them. Scientists should work on new tools. Leslie really needs an explanation on that. Why do not mosquitoes die anymore? What are they going to do without any new ways of protection?*



*Leslie's dream is to become a great scientist and work hard on finding a solution to the problem. There must be one and she is determined to discover it!*

Malaria is a serious, and sometimes fatal disease for humans. It is caused by a parasite that infects certain types of mosquitos. It is transmitted to humans who were bitten by an infected female



mosquito. There is no cure yet but many scientists all over the world are working on developing an effective vaccine. Current methods of fighting malaria, include drugs, insecticides and insecticide-treated bed nets. Insecticides enter into the mosquito body through their legs and act in the nervous system where they interfere with the generation and transfer of nerve signals. Insecticides and bed nets have been routinely

used the past decades in malaria-stricken African countries to restrain mosquitos but have not succeeded in eliminating the disease. Mosquitoes have become resistant to insecticides!



Mary Kefi is one of the many scientists struggling to deal with this problem. She completed her PhD in the lab of Molecular Entomology at FORTH-IMBB under the supervision of Prof. John Vontas. During her PhD she studied the legs of insecticide-resistant mosquitoes and discovered that a molecule called the ABCH2 transporter in the legs of the mosquito *Anopheles coluzzi* (malaria vector) confers resistance to insecticides. In fact, upon insecticide exposure, this molecule's presence increases even further, pumping out insecticides!

Mary discovered that removal of this transporter increased mortality in mosquitoes' populations treated with insecticides. Thus, this molecule could synergize existing insecticides, restoring their toxicity.

Nowadays, Mary continues her postdoctoral studies at Johns Hopkins Bloomberg School of Public Health, hoping to conclude her research and contribute to the fight against malaria.