

## Description for the general public

Snake envenomation in Poland and Europe is still considered as a quite exotic topic. This is partly because in this area it is not often to have an opportunity to meet the representative of these reptiles. In addition, generally, such encounters are not very dangerous for European people. For these reasons, most people are not aware of the importance of the problem that is caused by snakebites in some world regions. In fact, the statistics are quite alarming, as in relation to snake envenomations, 100 000 people die every year worldwide, whereas at least four times as many end up with serious body injuries. Currently, there is only one effective treatment that has the ability to inhibit the negative effects of venom and it relies on immediate administration of certain antivenom. The use of antivenins, however, is in many cases limited, mainly due to their high cost as well as the narrow range of specificity. That is because each antivenom shows their therapeutic activity only against one venom or eventually the venoms of closely related snake species, which have similar protein composition. In this context, a major difficulty comes from the huge diversity of venoms, especially visible between different species of snakes. In recent years, attention has also been drawn by the intra-species differences in venom composition which possibly could result in serious medical consequences. Such a picture is observed in sub-Saharan Africa in relation to Mozambique spitting cobras (*Naja mossambica*) which commonly reside in this region. Antivenoms, which are currently used to treat *N. mossambica* envenomations are effective in most countries of southern Africa, with the exception of Mozambique and Eswatini. Unfortunately, in these countries, common antivenoms do not exhibit therapeutic properties, which lead to terrible consequences in people from this region. Therefore, it seems that geography-induced changes in protein composition of venoms might reduce the effectiveness of antivenoms in some regions of Africa.

In the first stage, the project is aimed at the analysis of differences in protein composition of venoms obtained from different part of Africa including Eswatini and Republic of South Africa. Next, the analysis will be made in order to establish specifically which venom toxins are neutralized by antivenom immunoglobulins. Every difference will be identified as it can be responsible for the ineffectiveness of antivenoms.