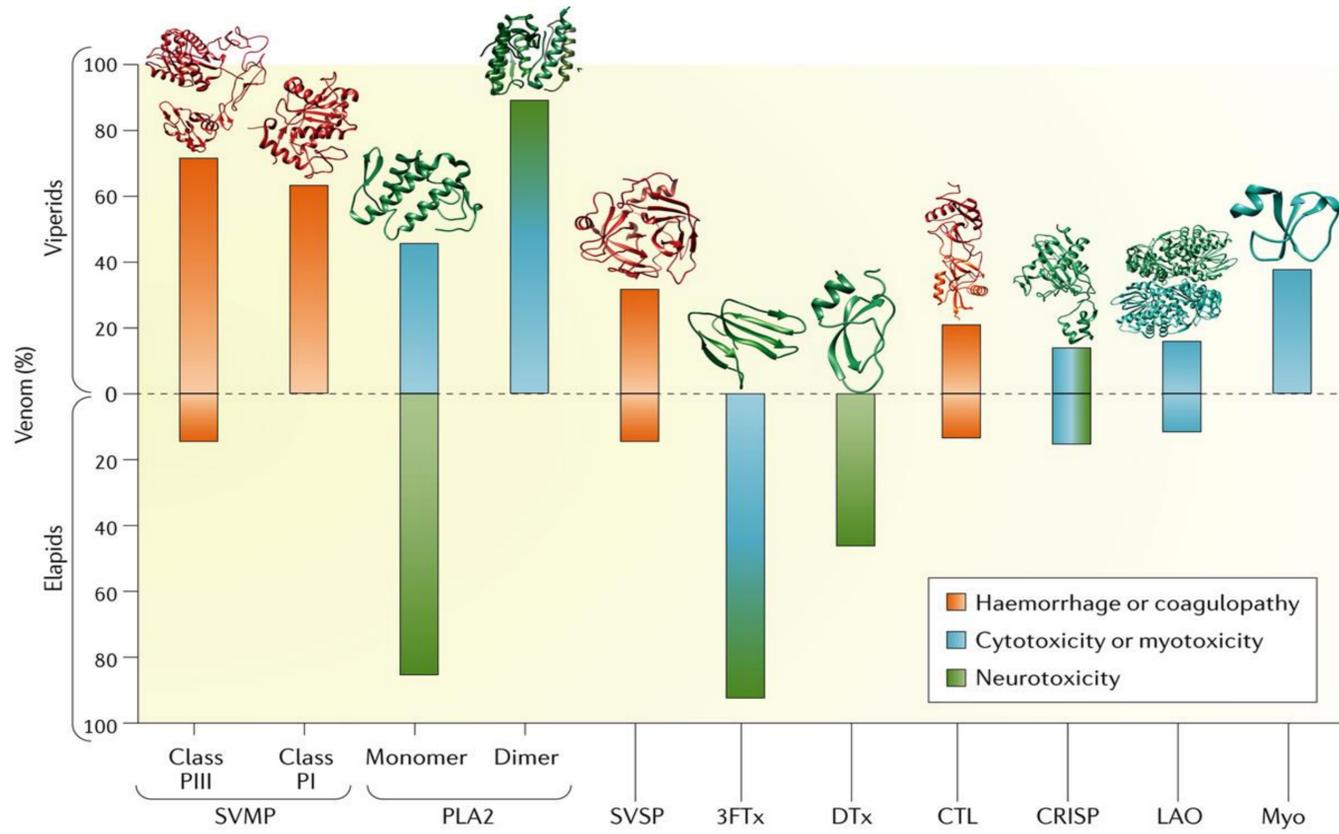
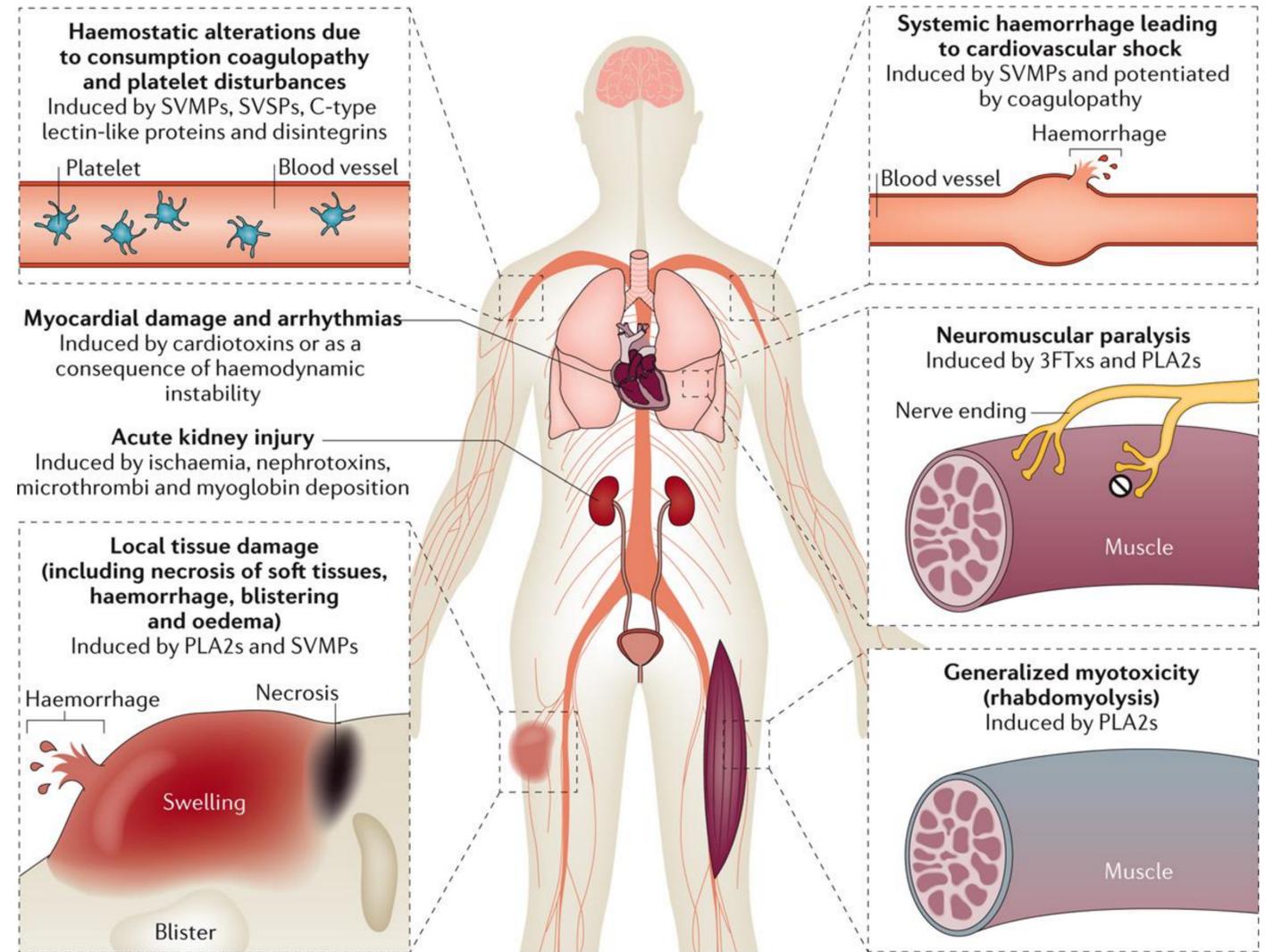
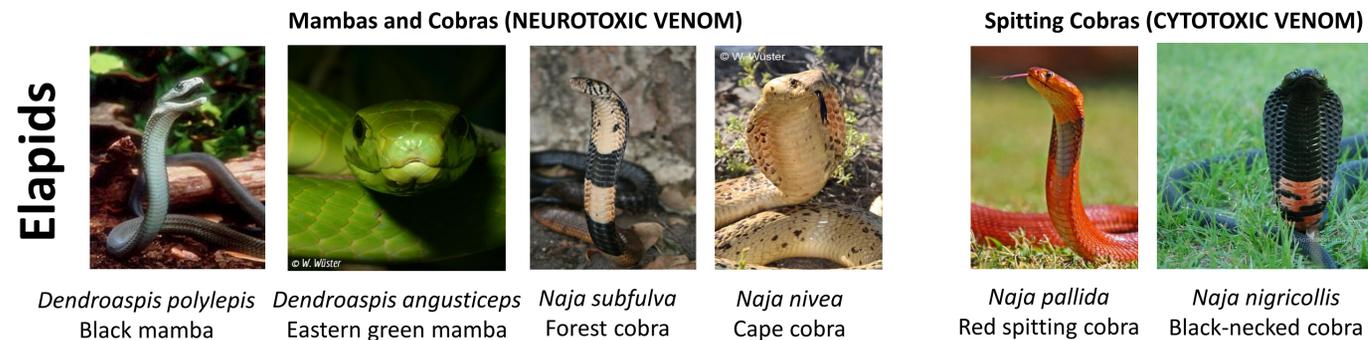
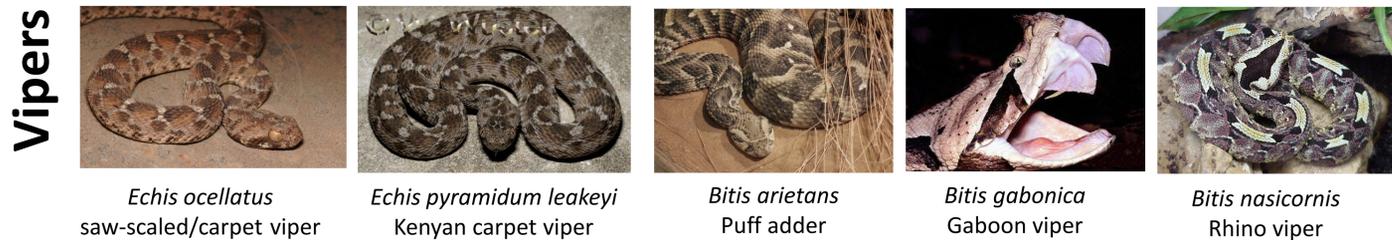


The diverse pathologies caused by venom toxins of medically-important snakes

The toxin composition, and pathological effects of viper and elapid venoms vary considerably. The range of protein levels (expressed as % of the total venom proteome) and the distinct distribution of the most abundant toxin families in venoms of viper and elapid snakes are shown below. Bars are colour-coded to illustrate the pathological effect of the toxin groups. Colour gradients indicate concentration dependency of the pathological effect, with some toxin groups exerting one effect at low doses and another effect at high doses. Structures of some members of each protein family are also shown. Adapted from Gutiérrez, J. M. et al. Snakebite envenoming. Nat. Rev. Dis. Primers 3, 17063 (2017).



(HAEMOTOXIC AND CYTOTOXIC VENOM)



A) Bilateral ptosis (paralysis of both upper eyelids and **B)** External ophthalmoplegia (paralysis of the eye muscles; the patient cannot look to the right) in patients bitten by Papuan taipans (*Oxyuranus scutellatus*; family Elapidae) in Papua New Guinea. **C)** Bilateral ptosis of patient bitten by a black mamba (*Dendroaspis polylepis*; family Elapidae). **D:** Bleeding gums and **E)** persistent bleeding from bite site and incoagulable blood demonstrated using the 20 minute whole blood clotting test in a patient bitten by a saw-scaled viper (*Echis ocellatus*; family Viperidae) in Nigeria. **F)** Swelling and blistering following a bite on the dorsum of the foot by a jararaca (*Bothrops jararaca*; family Viperidae) in Brazil. **G)** Use of "Black stones" or "Snake stones", a traditional medicine often used by patients prior to seeking hospital treatment. **H)** Extensive necrosis of skin and subcutaneous tissue following a bite on the elbow by a black-necked spitting cobra (*Naja nigricollis*; family Elapidae) in Nigeria. **I)** Subcutaneous necrosis in patient bitten by a West-African saw-scaled viper (*Echis ocellatus*; family Viperidae) which subsequently required extensive debridement. Images courtesy of D.A.W., University of Oxford, UK. Adapted from Gutiérrez, J. M. et al. Snakebite envenoming. Nat. Rev. Dis. Primers 3, 17063 (2017).