Annexe 1

2) Spider silk fiber

Our enzymes are fixed on a protein scaffold, the spider silk. We chose silk protein MaSp1 (Major ampullate Spidroin 1), which is the radial fiber of a spider web, because it's a very strong and flexible part of the silk. The goal is to polymerize the silk proteins together to mimic the natural formation of a spider's web. The role of silk is both to attach and link the proteins but also to condense the ambient humidity in order to filter the particulates present in the air and to solubilize the degraded pollutants.

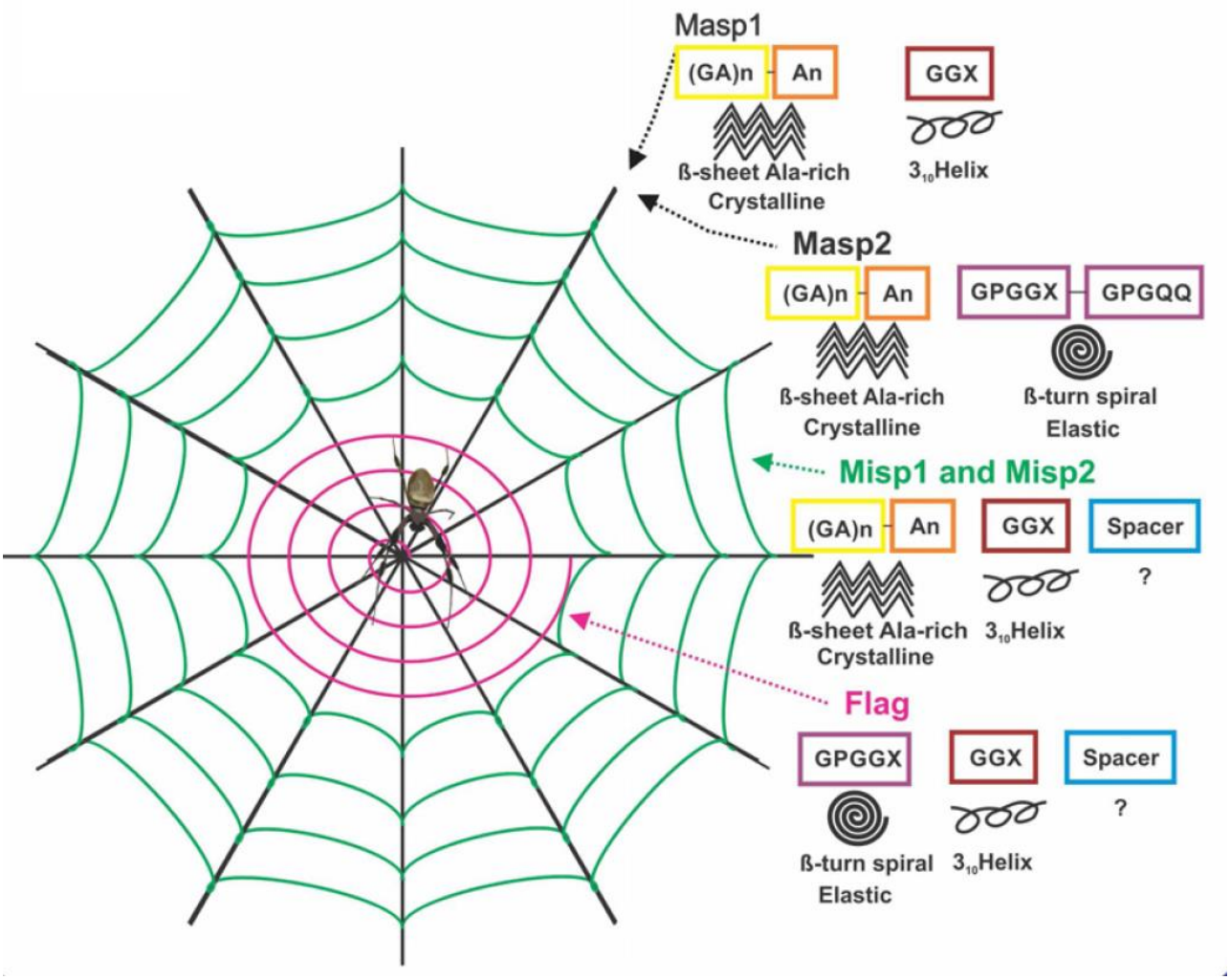

Figure 5: Different spider silk proteins and their structures

Tokareva O, Michalczechen-Lacerda VA, Rech EL, Kaplan DL ; Recombinant DNA production of spider silk proteins ; Microb Biotechnol. 2013