Abstract:

Artificial binding proteins derived from small protein domains attract attention as a promising alternative to monoclonal antibodies and can be used in many kinds of applications. They are useful in diagnosis of human diseases, seem to be a clue for more efficient vaccine development preventing from global diseases such as AIDS, can exhibit a therapeutic potential or improve purification techniques. For the selection of protein variants with desired properties such as high specificity and binding affinity, more than 10 different selection techniques have been developed.

So called display techniques such as phage display, yeast display, retroviral display or baculovirus display are based on protein expression from different vectors. Contrary that, ribosome display, mRNA display and CIS display are cell-free systems based on in vitro translation. Development of different selection approaches allows production of post-translationally glycosylated, phosphorylated and acetylated proteins, increased yield of the produced binders and improved their binding properties. The submitted work provides an overview of current selection techniques, compare their parametres regarding to combinatorial libraries, describes their advantageous properties and limitations, and focus on a practical utilization of protein binders derived from small protein domains.