Monobodies and nanobodies: The era of diagnostic miniature antibodies

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Monobodies, as the name suggests, are the simplest synthetic version of antibodies engineered to mimic antibodies (antibody mimetics) without their complexity.[1] These are constructed using a fibronectin type III domain (FN3) as a molecular scaffold.[2,3] With a molecular mass of not more than 20 kDA at max, monobodies are excellent tools for *in vivo* diagnosis.[4] Unlike the conventional Ab that needs particular treatment protocols to enable them to enter into cells, mono, and nano bodies can be expressed inside the cells with expression cassettes. With high affinity and selectivity, mono and nanobodies can be developed in the shortest possible time with ease that otherwise cannot be done by conventional antibodies.[5] Produced from combinatorial libraries and diversified using phage display techniques, monobodies can be generated that are highly specific for their intracellular targets, like monobodies to detect COVID antigens.[6] Similarly, monobodies against KRAS mutants using protein engineering technologies can be sued to detect mutant KRAS in solid tumors.[7] They have a strong tendency to bind to functional sites of specific intracellular target proteins and, thus, exhibit drug-like properties as well as specific inhibitors.[8,9] Monobodies are evolving with additional diverse functions and may soon be used as an indispensable tool in biology and medicine.[10]

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