

Poster Presentation

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Bovine antibodies with ultra long H3 Complementarity Determining Regions

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About 10% of the bovine antibody repertoire exhibit extremely long H3 complementarity determining regions (CDRs). These H3 CDRs are usually described as 'loops' in the more familiar mouse and human antibody Fab structures, but the ultra long bovine H3 CDRs are actually small, cysteine-rich protein domains that vary in size from 44 to 64 amino acids. We have recently determined the structures for two bovine antibody Fab fragments, and will describe these, as well as compare them with two other previously determined bovine Fab structures (Wang et al., *Cell*, 2013). One new Fab has a relatively short H3 CDR region of 44 residues, with just one disulfide bond, while the other boasts one of the longest H3 CDRs, with 63 residues and four disulfide bonds. These H3 CDRs fold to form apparently rigid 'stem' regions, that present the disulfide bonded 'knob' domain far above the five other Fab CDR loops. Despite extreme diversity in sequence, length and disulfide bonding patterns, the CDRs share structural homology, both in their long stems and in the more variable knob regions.

[1] Wang F., Ekiert D.C., Ahmad I., et al., *Cell*, 2013, 153, 1379-1393.



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