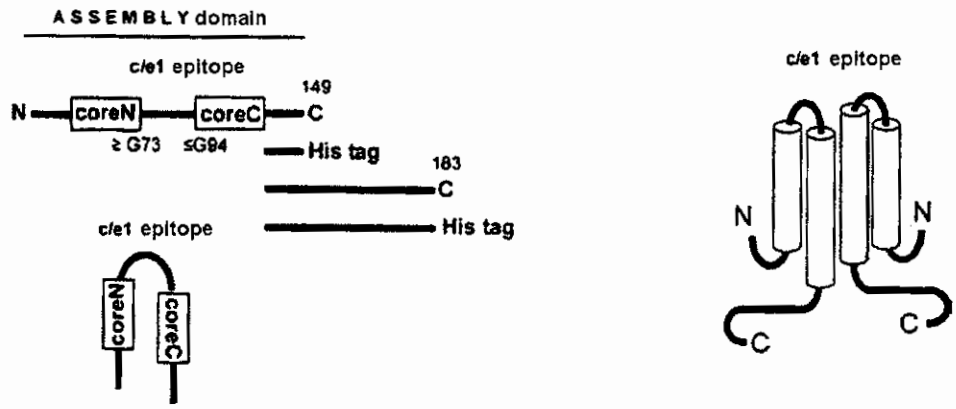


Fig. 1: Diagrammatic representation of the core protein structure

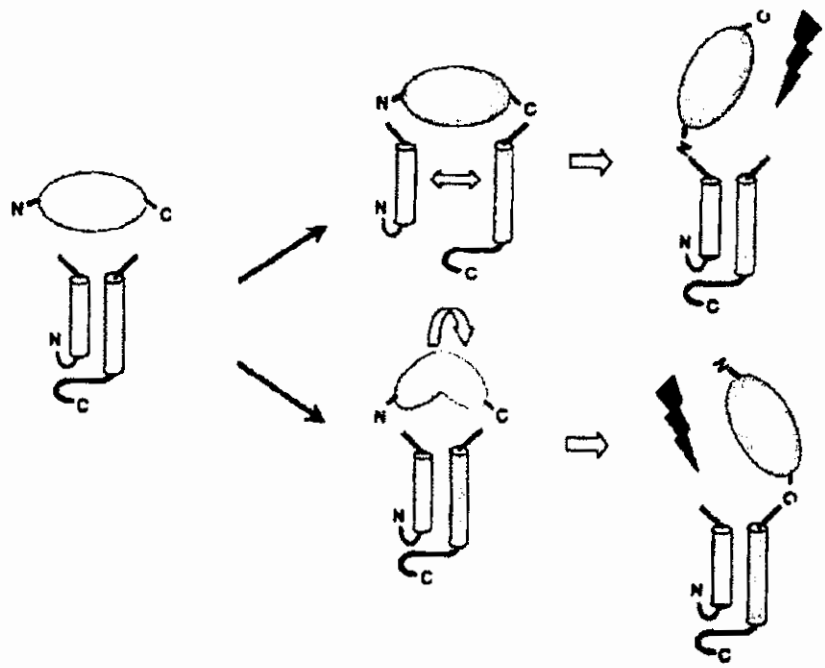


Fig. 2: Principle of the split-core system

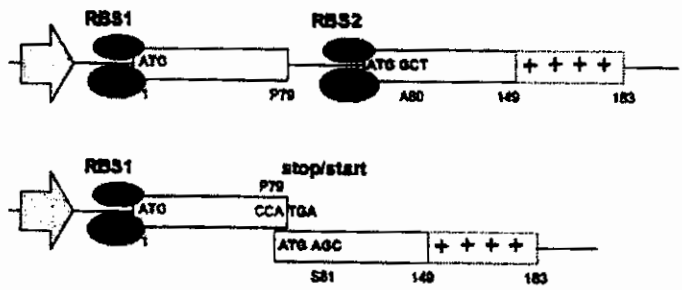


Fig. 3 Diagrammatic representation of two implementations of bacterial expression vectors for approximately equimolar production of the two coreN and coreC fragments

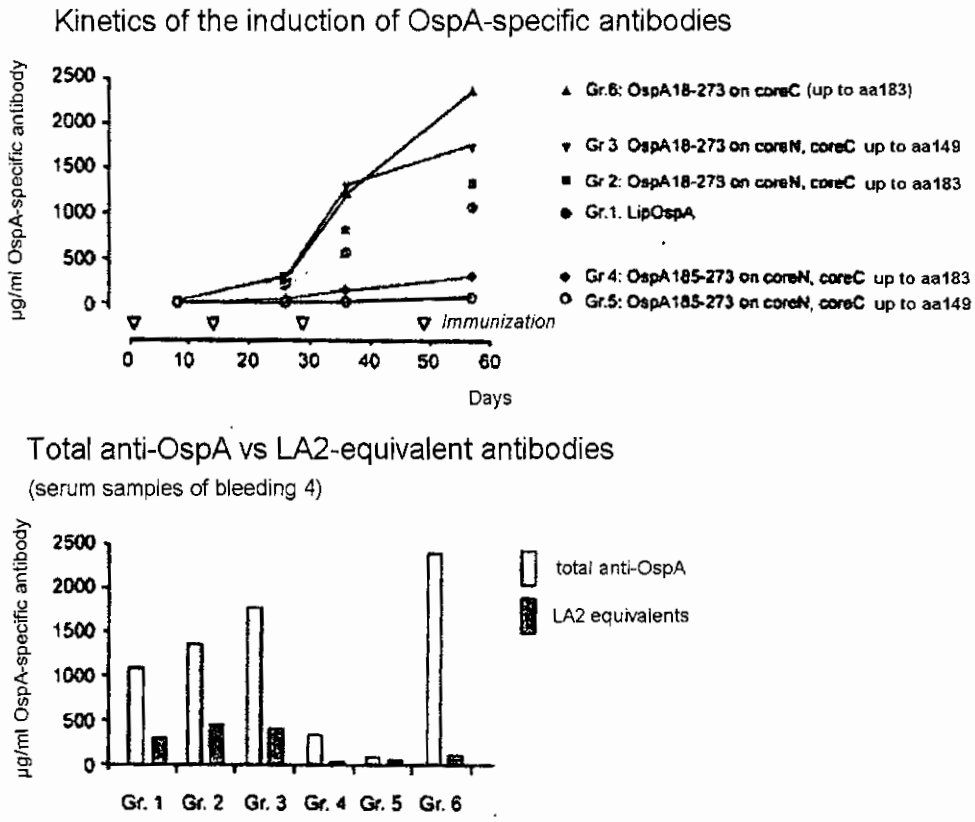

Kinetics of the induction of OspA-specific antibodies
µg/ml OspA-specific antibody
2500
2000
1500
1000
500
0
Immunization
0 10 20 30 40 50 60
Days
Gr.6: OspA18-273 on coreC (up to aa183)
Gr 3 OspA18-273 on coreN, coreC up to aa149
Gr 2: OspA18-273 on coreN, coreC up to aa183
Gr.1. LipOspA
Gr 4: OspA185-273 on coreN, coreC up to aa183
Gr.5: OspA185-273 on coreN, coreC up to aa149
Total anti-OspA vs LA2-equivalent antibodies
(serum samples of bleeding 4)
µg/ml OspA-specific antibody
2500
2000
1500
1000
500
0
Gr. 1 Gr. 2 Gr. 3 Gr. 4 Gr. 5 Gr. 6
total anti-OspA
LA2 equivalents

Figure 4

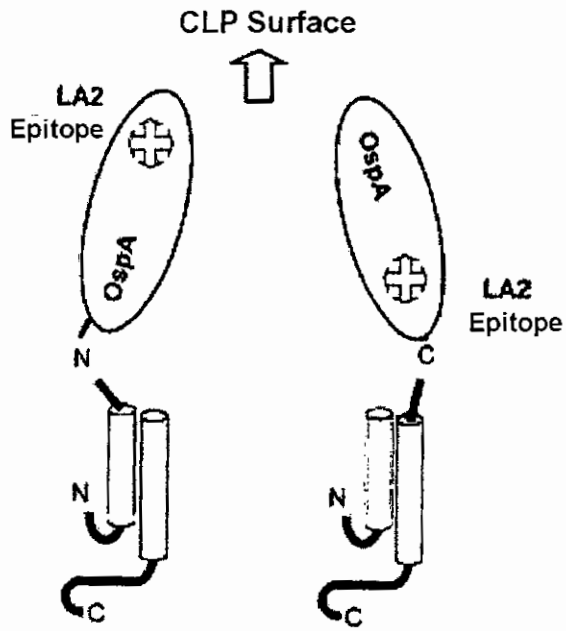


Fig. 5: Principle of region-specific directed induction of antibodies to a foreign protein in the split-core system

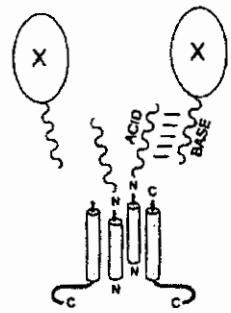


Fig. 6: Split-core fusion with interaction-capable, flexibly exposed foreign molecule

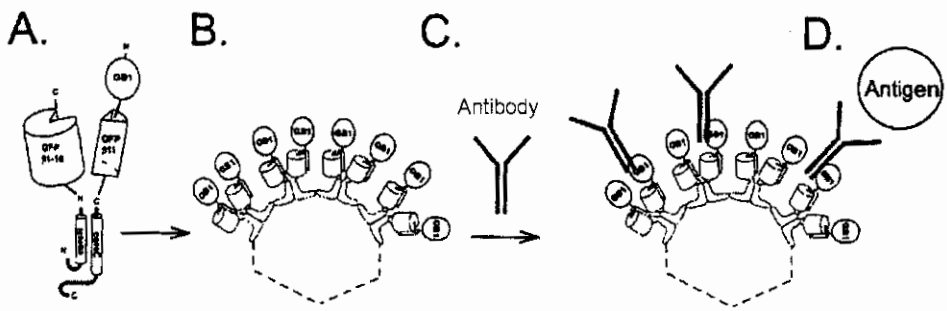


Fig. 7: Principle of self-fluorescent split-core CLPs presenting an interaction-capable foreign molecule, here GB1, on their surface

	Arthritis, Day 52		protected from infection
Mouse group, passively immunized with	**Marked**	**Weak**	
LA-2, 5 µg	1/6	1/6	4/6
LA-2, 1 µg	2/6	3/6	1/6
LipOspA, 5 µg	0/6	1/6	5/6
LipOspA, 1 µg	1/6	0/6	5/6
Split-coreOspA on coreN, 5 µg of LA-2-equivalent antibodies	0/6	0/6	6/6
Split-core OspA on coreN, 1 µg of LA-2-equivalent antibodies	0/6	0/6	6/6
Split-core OspA on coreC, vol. equivalent to 5 µg of LA-2-eq., with OspA on coreN	2/6	0/6	4/6
Split-core OspA on coreC, vol. equivalent to 1 µg of LA-2 eq. with OspA on coreN	3/6	2/6	1/6
Mouse normal serum	3/3	0/3	0/3

Figure 8: Protective potential of different anti-OspA immune sera against challenge of SCID mice with B. burgdorferi

Immunogen	Week (pb = post-boost)	Rec. CSP	NANP	NVDP	Rec. HBc	CSP12 peptide	CSP8 peptide
HBc149 CSP repeat cont.	wk 8	Not determined	1.25×10^5	5×10^3	6.25×10^5	Not determined	Not determined
	wk 6 pb	3×10^6	3×10^6	6.25×10^5	3×10^6	0	0
Split-core149-CSP short	wk8	Not determined	1.25×10^5	5.0×10^3	1.25×10^5	Not determined	Not determined
	wk6 pb	3×10^6	3×10^6	6.25×10^5	1.25×10^5	2.5×10^4	0
Split-core149-CSP full-length	wk8	Not determined	1.25×10^5	2.5×10^4	2.5×10^4	Not determined	Not determined
	wk6 pb	12×10^6	3×10^6	6.25×10^5	1.25×10^5	2×10^2	2.5×10^4

Figure 9: B cell responses to CSP and core carrier after single immunization or two immunizations of B10 mice with the immunogens indicated