## **Supporting Information**

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Movie 51. One-on-one interaction between a red blood cell and a *Borrelia* spirochete. Blood from a C3H/HeJ mouse infected with *B. duttonii* 1120 was drawn into sodium citrate buffer. Video was taken under light microscopy. Note the tight yet reversible interaction where the blood cell rolls across the length of the spirochete.

Movie S1 (AVI)

Table S1. Binding of <sup>35</sup>S-labeled *Borrelia* to glycosphingolipids on thin-layer chromatograms

| No. trivial name   | Structure   | B. recurrentis | B. duttonii | B. hermsii | B. crocidurae |
|--------------------|---|----------------|-------------|------------|---------------|
| Simple compounds   |   |                |             |            |               |
| Galactosylceramide | Galβ1Cer  | _              | _           | _          | _             |
| Glucosylceramide   | Glc <i>β</i> 1Cer   | _              | _           | _          | _             |
| Sulfatide          | SO₃-3Galβ1Cer   |                | _           | _          | _             |
| LacCer non-OH      | $Gal\beta 4Glc\beta 1Cer$   | _              | _           | _          | _             |
| LacCer OH          | $Gal\beta 4Glc\beta 1Cer$   | (+)            | (+)         | (+)        | ND            |
| Globo series       |   |                |             |            |               |
| Globotetra         | GalNAc $\beta$ 3Gal $\alpha$ 4Gal $\beta$ 4Glc $\beta$ 1Cer   | _              | _           | _          | _             |
| Forssman           | GalNAc $\alpha$ 3GalNAc $\beta$ 3Gal $\alpha$ 4Gal $\beta$ 4Glc $\beta$ 1Cer                            | _              | _           | _          | _             |
| Ganglio seies      |   |                |             |            |               |
| Fuc-gangliotetra   | Fuc $\alpha$ 2Gal $\beta$ 3GalNAc $\beta$ 4Gal $\beta$ 4Glc $\beta$ 1Cer                                | (+)            | _           | _          |               |
| Neolacto series    |   |                |             |            |               |
| Neolactotetra      | $Gal\beta 4GlcNAc\beta 3Gal\beta 4Glc\beta 1Cer$  | +              | +           | +          | +             |
| H5-2               | Fuc $\alpha$ 2Gal $\beta$ 4GlcNAc $\beta$ 3Gal $\beta$ 4Glc $\beta$ 1Cer                                | (+)            | _           | _          | _             |
| B5                 | $Gal\alpha 3Gal\beta 4GlcNAc\beta 3Gal\beta 4Glc\beta 1Cer$   | (+)            | (+)         | _          | ND            |
| B6-2               | $Gal\alpha 3$ (Fuc $\alpha 2$ ) $Gal\beta 4GlcNAc\beta 3Gal\beta 4Glc\beta 1Cer$                        | _              | _           | _          | _             |
| A6–2               | GalNAc $\alpha$ 3(Fuc $\alpha$ 2)Gal $\beta$ 4GlcNAc $\beta$ 3Gal $\beta$ 4Glc $\beta$ 1Cer             | _              | _           | _          | _             |
|                    | Gal $\beta$ 4GlcNAc $\beta$ 3Gal $\beta$ 4GlcNAc $\beta$ 3Gal $\beta$ 4Glc $\beta$ 1Cer                 | _              | _           | _          | +             |
| NeuAcα3SPG         | NeuAc $\alpha$ 3Gal $\beta$ 4GlcNAc $\beta$ 3Gal $\beta$ 4Glc $\beta$ 1Cer                              | _              | _           | _          | _             |
| NeuAcα6SPG         | NeuAc $\alpha$ 6Gal $\beta$ 4GlcNAc $\beta$ 3Gal $\beta$ 4Glc $\beta$ 1Cer                              | _              | _           | _          | _             |
|                    | NeuGc $\alpha$ 3Gal $\beta$ 4GlcNAc $\beta$ 3Gal $\beta$ 4GlcNAc $\beta$ 3Gal $\beta$ 4Glc $\beta$ 1Cer | _              | _           | _          | _             |
| Lacto series       |   |                |             |            |               |
| Lactotetra         | Gal $\beta$ 3GlcNAc $\beta$ 3Gal $\beta$ 4Glc $\beta$ 1Cer  | +              | +           | +          | +             |
| Le <sup>a</sup> -5 | $Gal\beta 3$ (Fuc $\alpha 4$ ) $GlcNAc\beta 3Gal\beta 4Glc\beta 1Cer$                                   | _              | _           | _          | _             |
| Le <sup>b</sup> -6 | Fuc $\alpha$ 2Gal $\beta$ 3(Fuc $\alpha$ 4)GlcNAc $\beta$ 3Gal $\beta$ 4Glc $\beta$ 1Cer                | _              | _           | _          | _             |

Binding is defined as follows: + denotes a binding when  $4 \mu g$  of the GSL was applied on the thin-layer chromatogram; (+) denotes an occasional binding at  $4 \mu g$ ;—denotes no binding even at  $4 \mu g$ . ND, not determined.