

Table S1. Seroprevalence of *Borrelia burgdorferi* sensu lato and *Borrelia miyamotoi* among the population of St. Petersburg and Leningrad Oblast, stratified by region and sex.

Region	Sex	Number of patients, N	<i>B. burgdorferi</i> s.l.		<i>B. miyamotoi</i>	
			IgM, n, % (95% CI)	IgG, n, % (95% CI)	IgM, n, % (95% CI)	IgG, n, % (95% CI)
St. Petersburg	F	1130	21 1.9 (1.2–2.8)	32 2.8 (1.9–4.0)	1 0.1 (0.0–0.5)	9 0.8 (0.4–1.5)
	M	406	9 2.2 (1.0–4.2)	16 3.9 (2.3–6.4)	0 0.0 (0.0–0.9)	6 1.5 (0.5–3.2)
Leningrad Oblast	F	1610	37 2.3 (1.6–3.2)	41 2.5 (1.8–3.5)	13 0.8 (0.4–1.4)	21 1.3 (0.8–2.0)
	M	579	9 1.6 (0.7–3.0)	25* 4.3 (2.8–6.4)	3 0.5 (0.1–1.5)	10 1.7 (0.8–3.2)

Note: Data are presented as number of positive cases (n) and percentage (%) with 95% confidence intervals (CI) in brackets. Confidence intervals for proportions were calculated using the Pearson exact method.

Seropositivity was defined as the presence of specific IgM and/or IgG antibodies against the respective pathogen, as determined by microarray. No statistically significant differences between sexes within each region were observed for either pathogen, except for *B. burgdorferi* s.l. IgG in Leningrad Oblast, where males showed a higher seroprevalence compared to females ($p < 0.05$, chi-square test).

Table S2. Age-stratified seroprevalence of *Borrelia burgdorferi* s.l. and *Borrelia miyamotoi*.

Region	age	Number of patients, N	<i>B. burgdorferi</i> s.l.		<i>B. miyamotoi</i>	
			IgM, n, % (95% CI)	IgG, n, % (95% CI)	IgM, n, % (95% CI)	IgG, n, % (95% CI)
St. Petersburg	1–5	42	2 4.8 (0.5–17.2)	0 0.0 (0.0–8.8)	0 0.0 (0.0–8.8)	1 2.4 (0.0–13.3)
	6–11	100	3 3.0 (0.6–8.8)	3 3.0 (0.6–8.8)	0 0.0 (0.0–3.7)	0 0.0 (0.0–3.7)
	12–17	76	2 2.6 (0.3–9.5)	1 1.3 (0.0–7.3)	0 0.0 (0.0–4.8)	0 0.0 (0.0–4.8)
	18–29	211	5 2.4 (0.8–5.2)	6 2.8 (1.0–6.2)	1 0.5 (0.0–2.6)	0 0.0 (0.0–1.8)
	30–39	206	7 3.4 (1.4–7.0)	4 1.9 (0.5–5.0)	0 0.0 (0.0–1.8)	3 1.5 (0.3–4.3)
	40–49	209	4 1.9 (0.5–4.9)	6 2.9 (1.0–6.2)	0 0.0 (0.0–1.8)	2 1.0 (0.1–3.4)
	50–59	208	0 0.0 (0.0–1.8)	5 2.4 (0.8–5.6)	0 0.0 (0.0–1.8)	4 1.9 (0.5–4.9)
	60–69	234	3 1.3 (0.2–3.8)	7 3.0 (1.2–6.2)	0 0.0 (0.0–1.6)	1 0.4 (0.0–2.4)
	70–94	250	4 1.6 (0.4–4.1)	16* 6.4 (3.7–10.4)	0 0.0 (0.0–1.5)	4 1.6 (0.4–4.1)

Leningrad Oblast	1–5	63	1 1.6 (0.0–8.8)	4 6.3 (1.7–16.3)	1 1.6 (0.0–8.8)	0 0.0 (0.0–5.9)
	6–11	101	3 3.0 (0.6–8.7)	2 2.0 (0.2–7.2)	0 0.0 (0.0–3.7)	0 0.0 (0.0–3.7)
	12–17	155	3 1.9 (0.4–5.7)	6 3.9 (1.4–8.4)	0 0.0 (0.0–2.4)	2 1.3 (0.2–4.7)
	18–29	284	10 3.5 (1.7–6.5)	1 0.4 (0.0–2.0)	2 0.7 (0.0–2.5)	1 0.4 (0.0–2.0)
	30–39	318	8 2.5 (1.1–5.0)	7 2.2 (0.9–4.5)	2 0.6 (0.0–2.3)	6 1.9 (0.6–4.1)
	40–49	321	5 1.6 (0.5–3.6)	4 1.2 (0.3–3.2)	3 0.9 (0.2–2.7)	5 1.6 (0.5–3.6)
	50–59	320	9 2.8 (1.3–5.3)	14 4.4 (2.4–7.3)	3 0.9 (0.2–2.7)	4 1.3 (0.3–3.2)
	60–69	313	5 1.6 (0.5–3.7)	8 2.6 (1.1–5.0)	2 0.6 (0.0–2.3)	4 1.3 (0.3–3.3)
	70–94	314	2 0.6 (0.0–2.3)	20** 6.4 (3.9–9.8)	3 1.0 (0.2–2.8)	9 2.9 (1.3–5.4)

Note: Data are expressed as number of seropositive individuals (n) and percentage (%) with exact 95% confidence intervals (CI) based on the binomial distribution (Clopper–Pearson method). Age groups are presented in years. Statistical significance of differences between age groups was assessed using the chi-square test for trend or Fisher's exact test, with the youngest age group (1–5 years) serving as the reference category. * — $p < 0.05$, ** — $p < 0.01$ indicate significantly higher seroprevalence compared to the reference group. A marked increase in IgG seropositivity to *B. burgdorferi* s.l. was observed in individuals aged 70 years and older in both regions, likely reflecting cumulative exposure over lifetime.

Table S3. Seroprevalence of *Borrelia* species in different administrative districts of St. Petersburg and Leningrad Oblast.

District	N	<i>B. burgdorferi</i> s.l			<i>B. miyamotoi</i>		
		IgM, n, % (95% CI)	IgG, n, % (95% CI)	IgM/IgG, n, % (95% CI)	IgM, n, % (95% CI)	IgG, n, % (95% CI)	IgM/IgG, n, % (95% CI)
St. Petersburg							
Vasileostrovsky	2	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)
Vyborgsky	420	10 2.4 (1.1–4.4)	6 1.4 (0.5–3.1)	15 3.8 (2–5.9)	0 0 (0–0.9)	5 1.2 (0.4–2.8)	5 1.2 (0.4–2.8)
Kalininsky	4	1 25 (0.6–13.9)	1 25 (0.6–13.9)	1 25 (0.6–13.9)	0 0 (0–9.2)	0 0 (0–9.2)	0 0 (0–9.2)
Kirovsky	1	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)
Kolpinsky	54	1 1.9 (0–10.3)	2 3.7 (0–13.4)	2 3.7 (0–13.4)	0 0 (0–6.3)	0 0 (0–6.3)	0 0 (0–6.3)
Krasnogvardeisky	214	5 2.4 (0.8–5.4)	6 2.8 (1.0–6.1)	10 4.7 (2.2–8.6)	0 0 (0–1.7)	5 2.3 (0.8–5.4)	5*** 2.3 (0.8–5.4)
Krasnoselsky	138	5 3.6 (1.2–8.4)	5 3.6 (1.2–8.4)	8 5.8 (2.5–11.4)	0 0 (0–2.7)	3 2.2 (0.4–6.4)	3 2.2 (0.4–6.4)

Kronshtadtsky	10	0 0 (0–36.9)	1 10 (0.3–55.7)	1 10 (0.3–55.7)	0 0 (0–36.9)	0 0 (0–36.9)	0 0 (0–36.9)
Kurortny	31	0 0 (0–11.9)	1 3.2 (0–18.0)	1 3.2 (0–18.0)	0 0 (0–11.9)	0 0 (0–11.9)	0 0 (0–11.9)
Moskovsky	8	0 0 (0–46.1)	0 0 (0–46.1)	0 0 (0–46.1)	0 0 (0–46.1)	1 12.5 (0.3–69.7)	1 12.5 (0.3–69.7)
Nevsky	5	0 0 (0–73.8)	0 0 (0–73.8)	0 0 (0–73.8)	0 0 (0–73.8)	0 0 (0–73.8)	0 0 (0–73.8)
Petrogradsky	1	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)
Petrodvortsovy	37	0 0 (0–10.0)	1 2.7 (0–15.0)	1 2.7 (0–15.0)	0 0 (0–10.0)	0 0 (0–10.0)	0 0 (0–10.0)
Primorsky	490	5 1.0 (0.3–2.4)	18 3.7 (2.2–5.8)	23 4.7 (2.8–7.0)	1 0.2 (0–1.1)	1 0.2 (0–1.1)	2 0.4 (0–1.5)
Pushkinsky	120	3 2.5 (0.5–7.3)	6 5.0 (1.8–10.9)	9 7.5 (3.4–14.2)	0 0 (0–3.1)	0 0 (0–3.1)	0 0 (0–3.1)
Centralny	1	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)	0 0 (0–100)
Leningrad Oblast							
Boksitogorsky	134	4 3.0 (0.8–7.6)	9 6.7 (3.1–12.8)	13** 9.7 (5.2–16.6)	0 0.0 (0.0–2.8)	1 0.7 (0.0–4.2)	1 0.7 (0.0–4.2)
Volosovsky	140	2 1.4 (0.2–5.2)	5 3.6 (1.2–8.3)	7 5.0 (2.0–10.3)	2 1.4 (0.2–5.2)	2 1.4 (0.2–5.2)	4 2.9 (0.8–7.3)
Volkhovsky	120	0 0.0 (0.0–3.1)	2 1.7 (0.2–6.0)	2 1.7 (0.2–6.0)	1 0.8 (0.0–4.6)	1 0.8 (0.0–4.6)	2 1.7 (0.2–6.0)
Vsevolozhsky	139	2 1.4 (0.2–5.2)	5 3.6 (1.2–8.4)	7 5.0 (2.0–10.4)	1 0.7 (0.0–4.0)	1 0.7 (0.0–4.0)	2 1.4 (0.2–5.2)
Vyborgsky	141	2 1.4 (0.2–5.1)	3 2.1 (0.4–6.2)	5 3.5 (1.1–8.3)	1 0.7 (0.0–4.0)	0 0.0 (0.0–2.6)	1 0.7 (0.0–4.0)
Gatchinsky	131	1 0.8 (0.0–4.3)	3 2.3 (0.5–6.7)	4 3.1 (0.8–7.8)	1 0.8 (0.0–4.3)	1 0.8 (0.0–4.3)	2 1.5 (0.2–5.5)
Kingiseppsky	112	3 2.7 (0.6–7.8)	2 1.8 (0.2–6.5)	5 4.5 (1.5–10.4)	1 0.9 (0.0–5.0)	2 1.8 (0.2–6.5)	3 2.7 (0.6–7.8)
Kirishsky	138	2 1.4 (0.2–5.2)	3 2.2 (0.5–6.4)	5 3.6 (1.2–8.5)	2 1.4 (0.2–5.2)	2 1.4 (0.2–5.2)	3 2.2 (0.5–6.4)
Kirovsky	138	3 2.2 (0.5–6.4)	5 3.6 (1.2–8.5)	8 5.8 (2.5–11.4)	4 2.9 (0.8–7.4)	5 3.6 (1.2–8.5)	9*** 6.5 (3.0–12.4)
Lomonosovsky	137	3 2.2 (0.5–6.4)	3 2.2 (0.5–6.4)	5 3.6 (1.2–8.5)	0 0.0 (0.0–2.7)	0 0.0 (0.0–2.7)	0 0.0 (0.0–2.7)
Lodeynopolsky	54	1 1.9 (0.0–10.3)	0 0.0 (0.0–6.8)	1 1.9 (0.0–10.3)	0 0.0 (0.0–6.8)	1 1.9 (0.0–10.3)	1 1.9 (0.0–10.3)
Luzhsky	139	1 0.7 (0.0–4.0)	6 4.3 (1.6–9.4)	7 5.0 (2.0–10.4)	0 0.0 (0.0–2.7)	5 3.6 (1.2–8.4)	5 3.6 (1.2–8.4)
Priozersky	139	1 0.7 (0.0–4.0)	3 2.2 (0.4–6.3)	4 2.9 (0.8–7.4)	0 0.0 (0.0–2.7)	2 1.4 (0.2–5.2)	2 1.4 (0.2–5.2)
Podporozhsky	125	6	7	13**	1	1	2

		4.8 (1.8–10.5)	5.6 (2.2–11.5)	10.4 (5.5–17.8)	0.8 (0.0–4.5)	0.8 (0.0–4.5)	1.6 (0.2–5.8)
Slantsevsky	128	4 3.1 (0.8–8.0)	4 3.1 (0.8–8.0)	7 5.5 (2.2–11.3)	1 0.8 (0.0–4.4)	2 1.6 (0.2–5.6)	3 2.3 (0.5–6.8)
Tikhvinsky	133	5 3.8 (1.2–8.8)	3 2.3 (0.5–6.6)	8 6.0 (2.6–11.9)	0 0.0 (0.0–2.8)	1 0.8 (0.0–4.2)	1 0.8 (0.0–4.2)
Tosnensky	141	6 4.3 (1.6–9.3)	3 2.1 (0.4–6.2)	9 6.4 (2.9–12.1)	1 0.7 (0.0–4.0)	4 2.8 (0.8–7.3)	5 3.5 (1.1–8.3)

Note: Data are presented as number of positive cases (n) and percentage (%) with exact 95% confidence intervals (CI) calculated using the Pearson method. The "Total" column represents individuals positive for either IgM and/or IgG antibodies against the respective pathogen. Only districts with at least one positive case are shown in detail; full data are available upon request. Asterisks indicate districts with significantly elevated seroprevalence compared to the regional average: * — $p < 0.05$, ** — $p < 0.01$ (chi-square test with Yates' correction or Fisher's exact test where appropriate). Notably, Kirovsky district features the highest seroprevalence of *B. miyamotoi* (6.5%), while Boksitogorsky and Podporozhsky districts showed the highest exposure to *B. burgdorferi* s.l. (9.7% and 10.4%, respectively), suggesting localized foci of heightened transmission risk.