

Supplementary Information

Environmental dissemination of pathogenic *Listeria monocytogenes* in flowing surface waters in Switzerland

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Table S1: Geographical features of water samples collected from surface water bodies throughout Switzerland, 2020.

Water sample ID*	Sampling date (dd.mm.yy)	Location of isolation (DMS)	Weather conditions (temperature)	Altitude (m)	Type of water body	Name of water body	Downstream of WWTP**
L_1	14.01.20	47°36'23" 9°6'40"	fair (0-5°C)	470	stream	Chemibach	+
L_2	14.01.20	47°35'39" 8°57'55"	fair (0-5°C)	400	stream	Chemebach	+
L_3	14.01.20	47°32'29" 8°54'27"	fair (0-5°C)	430	river	Murg	+
L_4	14.01.20	47°29'33" 8°59'0"	fair (0-5°C)	510	river	Murg	+
L_5	14.01.20	47°34'6" 9°6'23"	fair (0-5°C)	430	river	Giessen	+
L_6	14.01.20	47°38'19" 9°13'8"	fair (0-5°C)	410	stream	Töbelibach	-
L_7	14.01.20	47°35'18" 8°56'27"	fair (0-5°C)	390	river	Thur	-
L_8	16.01.20	47°26'27" 8°42'13"	fair (-2-8°C)	480	river	Kempt	+
L_9	16.01.20	47°22'15" 8°48'34"	fair (-2-8°C)	620	river	Luppen	+
L_10	16.01.20	47°15'13" 8°47'46"	fair (-2-8°C)	490	stream	Klausbach	+
L_11	16.01.20	47°17'45" 8°43'13"	fair (-2-8°C)	450	stream	Lieburgerbach	+
L_12	16.01.20	47°19'42" 8°36'54"	fair (-2-8°C)	580	stream	Chliweidlibach	+
L_13	16.01.20	47°31'6" 8°39'17"	fair (-2-8°C)	410	river	Töss	+
L_14	20.01.20	47°39'42" 8°58'17"	fair (-2-1°C)	400	stream	Feldbach	+
L_15	20.01.20	47°38'20" 8°46'25"	fair (-2-1°C)	430	stream	Mülibach	+
L_16	20.01.20	47°45'14" 8°41'37"	fair (-2-1°C)	440	river	Biber	-
L_17	20.01.20	47°41'18" 8°27'14"	fair (-2-1°C)	410	inland canal	Klingengraben	+
L_18	20.01.20	47°34'10" 8°28'47"	fair (-2-1°C)	350	river	Glatt	+
L_19	20.01.20	47°35'57" 8°17'43"	fair (-2-1°C)	320	river	Rhein	+
L_20	20.01.20	47°29'6" 8°17'49"	fair (-2-1°C)	350	river	Limmat	-
L_21	20.01.20	47°29'2" 8°12'52"	fair (-2-1°C)	340	river	Aare	+
L_22	20.01.20	47°27'33" 8°14'42"	fair (-2-1°C)	340	river	Reuss	+
L_23	20.01.20	47°31'7" 8°0'55"	fair (-2-1°C)	340	stream	Sissle	+
L_24	20.01.20	47°24'46" 8°5'4"	fair (-2-1°C)	370	river	Aare	+
L_25	27.01.20	47°34'36" 7°50'26"	cloudy (1-3°C)	290	stream	Möhlin	+

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L_26	27.01.20	47°33'11" 7°47'41"	cloudy (1-3°C)	280	stream	Magdenbach	-
L_27	27.01.20	47°33'5" 7°45'55"	cloudy (1-3°C)	270	river	Rhein	+
L_28	27.01.20	47°30'56" 7°43'14"	cloudy (1-3°C)	290	river	Ergolz	+
L_29	27.01.20	47°35'18" 7°35'22"	cloudy (1-3°C)	250	river	Rhein	+
L_30	27.01.20	47°32'47" 7°37'23"	cloudy (1-3°C)	260	stream	Birs	+
L_31	27.01.20	47°25'41" 7°26'42"	cloudy (1-3°C)	420	stream	Lützel	+
L_32	27.01.20	47°21'54" 7°21'1"	cloudy (1-3°C)	410	stream	La Sorne	-
L_33	27.01.20	47°21'31" 7°8'19"	cloudy (1-3°C)	440	stream	Risseau du Doubs	+
L_34	27.01.20	47°25'59" 7°4'49"	cloudy (1-3°C)	410	stream	Lällaine	+
L_35	27.01.20	47°16'42" 7°23'48"	cloudy (1-3°C)	550	stream	La Raus	-
L_36	27.01.20	47°16'49" 7°31'41"	cloudy (1-3°C)	680	stream	Dünner	+
L_37	27.01.20	47°77'26" 8°27'74"	cloudy (1-3°C)	1893	stream	Tannenbach	-
L_38	09.01.20	46°36'47" 9°35'21"	fair (-8-2°C)	1330	river	Julia	+
L_39	09.01.20	46°44'34" 9°25'55"	fair (-8-2°C)	630	river	Hinterrhein	+
L_40	09.01.20	46°49'29" 9°24'26"	fair (-8-2°C)	580	river	Vorderrhein	-
L_41	11.02.20	47°33'6" 9°19'34"	heavy rain (-1-5°C)	420	stream	Aach	+
L_42	11.02.20	47°29'56" 9°13'51"	heavy rain (-1-5°C)	470	river	Thur	+
L_43	11.02.20	47°24'52" 9°12'3"	heavy rain (-1-5°C)	570	river	Glatt	+
L_44	11.02.20	47°19'25" 9°5'6"	heavy rain (-1-5°C)	600	stream	Lederbach	-
L_45	11.02.20	47°13'30" 9°11'20"	heavy rain (-1-5°C)	730	river	Thur	+
L_46	11.02.20	47°19'44" 9°17'43"	heavy rain (-1-5°C)	800	stream	Urnäsch	+
L_47	11.02.20	47°20'49" 9°23'48"	heavy rain (-1-5°C)	780	river	Sitter	+
L_48	11.02.20	47°22'12" 9°34'11"	heavy rain (-1-5°C)	420	stream	Rietaach	+
L_49	11.02.20	47°29'31" 9°33'56"	heavy rain (-1-5°C)	400	river	Rhein	+
L_50	11.02.20	47°21'16" 9°7'45"	heavy rain (-1-5°C)	630	river	Necker	+
L_51	11.02.20	47°22'0" 9°24'9"	heavy rain (-1-5°C)	800	stream	Rotbach	+

Water sample ID*	Sampling date (dd.mm.yy)	Location of isolation (DMS)	Weather conditions (temperature)	Altitude (m)	Type of water body	Name of water body	Downstream of WWTP**
L_52	11.02.20	47°33'23" 9°22'42"	heavy rain (-1-5°C)	400	river	Aach	+
L_53	17.02.20	47°19'35" 7°50'32"	cloudy (6-12°C)	420	river	Dünner	+
L_54	17.02.20	47°18'54" 7°53'43"	cloudy (6-12°C)	400	river	Wigger	-
L_55	17.02.20	47°15'3" 7°46'14"	cloudy (6-12°C)	430	river	Aare	+
L_56	17.02.20	47°12'17" 7°41'52"	cloudy (6-12°C)	450	stream	Önz	+
L_57	17.02.20	47°6'35" 7°32'8"	cloudy (6-12°C)	480	stream	Aefligen	+
L_58	17.02.20	47°1'28" 7°38'52"	cloudy (6-12°C)	560	river	Emme	+
L_59	17.02.20	46°56'55" 7°45'23"	cloudy (6-12°C)	650	stream	Ilfis	+
L_60	17.02.20	46°54'18" 7°55'51"	cloudy (6-12°C)	830	stream	Lombach	-
L_61	17.02.20	47°1'25" 8°4'2"	cloudy (6-12°C)	610	river	Kleine Emme	+
L_62	17.02.20	47°5'55" 7°57'31"	cloudy (6-12°C)	620	stream	Nollentalbach	-
L_63	17.02.20	47°13'57" 7°58'12"	rainy (6-12°C)	460	stream	Wigger	+
L_64	16.02.20	47°6'9" 9°20'6"	fair (6-12°C)	435	stream	Schils	+
L_65	16.02.20	47°6'15" 9°20'5"	fair (6-12°C)	430	stream	Seez	+
L_66	16.02.20	47°5'52" 9°18'21"	fair (6-12°C)	960	stream	Tobelbach	-
L_67	16.02.20	47°4'59" 9°19'3"	fair (6-12°C)	950	stream	Ruslenbach	-
L_68	16.02.20	46°54'59" 9°45'29"	fair (6-12°C)	790	river	Landquart	+
L_69	17.02.20	47°6'1" 7°57'45"	cloudy (6-12°C)	610	stream	Wigger	-
L_70	24.02.20	47°18'58" 8°3'5"	cloudy (12-15° C)	450	river	Suhre	+
L_71	24.02.20	47°13'41" 8°4'32"	cloudy (12-15° C)	480	river	Suhre	+
L_72	24.02.20	47°17'21" 8°8'1"	cloudy (12-15° C)	490	stream	Wyna	+
L_73	24.02.20	47°10'43" 8°16'39"	cloudy (12-15° C)	470	inland canal	Ron	+
L_74	24.02.20	47°4'15" 8°17'32"	cloudy (12-15° C)	430	river	Reuss	+
L_75	24.02.20	46°56'46" 8°16'0"	cloudy (12-15° C)	430	river	Sarner Aa	+
L_76	24.02.20	46°58'17" 8°20'26"	fair (12-18°C)	440	inland canal	Vorlauter	+
L_77	24.02.20	46°58'39" 8°25'3"	fair (12-18°C)	440	stream	Engelburger Aa	+

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L_78	24.02.20	46°57'30" 8°31'33"	fair (12-18°C)	720	stream	Choltalbach	-
L_79	24.02.20	46°53'17" 8°37'6"	fair (12-18°C)	440	inland canal	Giessenkanal	+
L_80	24.02.20	46°53'0" 8°37'7"	fair (12-18°C)	440	river	Reuss	-
L_81	24.02.20	47°0'45" 8°37'10"	fair (12-18°C)	440	stream	Seeweren	+
L_82	24.02.20	47°6'41" 8°27'4"	fair (12-18°C)	430	stream	Elibach	-
L_83	24.02.20	47°11'58" 8°26'27"	fair (12-18°C)	430	stream	Bach Lorze	-
L_84	24.02.20	47°12'9" 8°25'57"	fair (12-18°C)	390	inland canal	Kanal Lorze	+
L_85	24.02.20	47°0'42" 8°37'55"	fair (12-18°C)	440	river	Muota	-
L_86	02.03.20	47°13'14" 7°34'25"	cloudy (2-8°C)	420	river	Aare	+
L_87	02.03.20	47°10'21" 7°25'14"	cloudy (2-8°C)	430	river	Aare	+
L_88	02.03.20	47°10'33" 7°24'59"	cloudy (2-8°C)	430	stream	Witibachkanal	+
L_89	02.03.20	47°7'10" 7°15'31"	cloudy (2-8°C)	410	inland canal	Büren	+
L_90	02.03.20	47°11'16" 7°12'17"	cloudy (2-8°C)	630	stream	Schüss	+
L_91	02.03.20	47°13'32" 7°7'48"	cloudy (2-8°C)	860	stream	Trame	+
L_92	02.03.20	47°9'47" 7°1'56"	cloudy (2-8°C)	730	stream	Schüss	+
L_93	02.03.20	47°7'35" 6°51'25"	cloudy (2-8°C)	960	stream	la Ronde	+
L_94	02.03.20	47°1'10" 6°53'46"	cloudy (2-8°C)	730	stream	la Sagnetanna	+
L_95	02.03.20	47°0'38" 7°1'55"	cloudy (2-8°C)	430	inland canal	Zihlkana	+
L_96	02.03.20	46°58'0" 7°10'52"	cloudy (2-8°C)	430	inland canal	Maria Brunnenbach	+
L_97	02.03.20	47°5'32" 7°18'28"	cloudy (2-8°C)	440	river	Alte Aare	+
L_98	02.03.20	46°57'1" 7°9'43"	cloudy (2-8°C)	440	inland canal	Galmizkanal	+
L_99	02.03.20	46°42'16" 8°51'41"	fair (0-7°C)	1100	stream	Acletta	+
L_100	02.03.20	46°46'49" 9°13'49"	fair (0-7°C)	680	river	Vorderrhein	+
L_101	02.03.20	47°10'35" 8°54'39"	rainy (3-7°C)	440	stream	Färlibach	-
L102	09.03.20	47°26'17" 8°33'29"	rain (4-7°C)	420	river	Glatt	+
L103	09.03.20	47°27'2" 8°25'12"	rain (4-7°C)	420	stream	Furtbach	+

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L104	09.03.20	47°24'19" 8°28'13"	rain (4-7°C)	390	river	Limmat	+
L105	09.03.20	47°21'21" 8°20'45"	rain (4-7°C)	370	river	Reuss	+
L106	09.03.20	47°21'49" 8°25'9"	rain (4-7°C)	450	stream	Reppisch	+
L107	09.03.20	47°17'28" 8°25'59"	rain (4-7°C)	460	stream	Jonen	+
L108	09.03.20	47°12'51" 8°34'53"	rain (4-7°C)	540	stream	Sarbach	+
L109	09.03.20	47° 8'34" 8°45'5"	rain (4-7°C)	860	river	Alp	+
L110	09.03.20	47°10'54" 8°57'42"	rain (4-7°C)	410	inland canal	Wildbachkanal	+
L111	09.03.20	47°10'3" 9°0'51"	rain (4-7°C)	430	inland canal	Linthkanal	+
L112	09.03.20	47°5'53" 9°3'49"	rain (4-7°C)	430	stream	Mülibach	-
L113	09.03.20	47°3'31" 9°3'8"	rain (4-7°C)	460	stream	Löntsch	-
L114	09.03.20	47°2'35" 9°4'17"	rain (4-7°C)	470	river	Linth	-
L115	09.03.20	46°59'3" 9°8'41"	rain (4-7°C)	770	river	Senft	+
L116	09.03.20	46°56'14" 9°0'55"	rain (4-7°C)	590	river	Linth	-
L117	09.03.20	47°14'2" 8°55'29"	rain (4-7°C)	400	stream	Wagnerbach	+
L118	08.03.20	46°42'41" 9°32'22"	rain (4-7°C)	1600	stream	Sporz	-
L119	08.03.20	46°42'31" 9°33'7"	rain (4-7°C)	1400	stream	Rain digl Lai	+
L120	08.03.20	46°45'14" 9°47'12"	rain (4-7°C)	1440	river	Landwasser	+
L121	09.03.20	47°25'33" 8°32'30"	rain (4-7°C)	430	stream	Chatzenbach	-
L122	15.03.20	46°30'49" 9°51'47"	fair (2-13°C)	1710	river	Inn	+
L123	15.03.20	46°30'30" 9°52'53"	fair (2-13°C)	1730	river	Flaz repp	-
L124	15.03.20	46°57'43" 10°24'53"	fair (2-13°C)	1560	stream	Schergenbach	-
L125	15.03.20	46°47'57" 10°19'9"	fair (2-13°C)	1170	river	Inn	+
L126	15.03.20	46°46'1" 10°6'37"	fair (2-13°C)	1420	stream	Lavinuoz	-
L127	16.03.20	46°57'14" 6°43'35"	fair (-1-10°C)	730	stream	Noirigue	+
L128	16.03.20	46°54'60" 6°36'39"	fair (-1-10°C)	730	river	Areuse	+
L129	16.03.20	46°48'32" 6°33'1"	fair (-1-10°C)	580	stream	L'Arnon	+

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L130	16.03.20	46°47'3'' 6°35'6''	fair (-1-10°C)	430	stream	le Bey	+
L131	16.03.20	46°42'56'' 6°23'21''	fair (-1-10°C)	740	river	l'Orbre	+
L132	16.03.20	46°36'11'' 6°14'25''	fair (-1-10°C)	1010	river	l'Orbre	+
L133	16.03.20	46°24'49'' 6°15'20''	fair (-1-10°C)	430	river	Promenthoux	-
L134	16.03.20	46°16'35'' 6°9'59''	fair (-1-10°C)	380	stream	la Versoix	-
L135	16.03.20	46°11'40'' 6°5'19''	fair (-1-10°C)	350	river	Rhone	+
L136	16.03.20	46°10'36'' 6°0'28''	fair (-1-10°C)	350	river	Rhone	+
L137	16.03.20	46°10'57'' 6°0'36''	fair (-1-16°C)	350	river	Allondon	-
L138	16.03.20	46°10'59'' 6°11'1''	fair (-1-16°C)	400	stream	Seymaz	-
L139	16.03.20	46°10'45'' 6°10'54''	fair (-1-16°C)	390	river	Arve	+
L140	16.03.20	46°32'36'' 6°33'2''	fair (-1-16°C)	390	river	Venoge	+
L141	16.03.20	46°38'26'' 6°37'29''	fair (-1-16°C)	600	river	le Talent	+
L142	16.03.20	46°50'7'' 6°56'16''	fair (-1-16°C)	450	stream	Broye	+
L143	16.03.20	46°47'3'' 7°6'57''	fair (-1-16°C)	580	river	la Glane	+
L144	17.03.20	46°48'54'' 7°9'52''	fair (-1-8°C)	535	river	Saane	+
L145	17.03.20	46°55'5'' 7°14'23''	fair (-1-8°C)	480	river	Saane	+
L146	17.03.20	46°54'15'' 7°14'9''	fair (-1-8°C)	490	river	Sense	-
L147	17.03.20	46°58'23'' 7°25'40''	fair (-1-8°C)	470	river	Aare	+
L148	17.03.20	46°52'48'' 7°32'45''	fair (-1-8°C)	520	river	Giessen	+
L149	17.03.20	46°46'52'' 7°35'56''	fair (5-18°C)	550	river	Aare	+
L150	17.03.20	46°39'14'' 7°34'32''	fair (5-18°C)	670	stream	Simmen	-
L151	17.03.20	46°35'51'' 7°39'39''	fair (5-18°C)	750	river	Entschligen	+
L152	17.03.20	46°40'59'' 7°39'35''	fair (5-18°C)	620	river	Kander	-
L153	17.03.20	46°39'11'' 7°52'12''	fair (5-18°C)	610	river	Lütschine	-
L154	17.03.20	46°40'28'' 7°50'36''	fair (5-18°C)	560	river	Aare	+
L155	17.03.20	46°43'59'' 8°9'37''	fair (5-18°C)	600	river	Aare	+

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L156	17.03.20	46°49'57" 8° 10'45"	fair (5-18°C)	480	stream	Lau	-
L157	03.05.20	47°13'2" 9°29'60"	fair (4-14°C)	440	river	Rhein	+
L158	03.05.20	47°1'24" 9°30'0"	fair (4-14°C)	500	river	Rhein	+
L159	03.05.20	46°52'18" 9°31'42"	fair (4-14°C)	510	river	Rhein	+
L160	03.05.20	46°33'18" 9°19'55"	fair (1-12°C)	1440	river	Hinterrhein	+
L161	03.05.20	46°17'35" 9°10'48"	fair (6-20°C)	400	river	Moesa	+
L162	03.05.20	46°10'30" 8°59'28"	fair (6-20°C)	220	river	Ticino	+
L163	03.05.20	46°2'8" 8°58'20"	fair (6-20°C)	320	river	Cassarate	+
L164	03.05.20	46°0'23" 8°54'48"	fair (6-20°C)	280	river	Veduggio	+
L165	03.05.20	45°53'33" 8°58'24"	fair (6-20°C)	280	river	Laveggio	+
L166	03.05.20	45°50'31" 9°2'13"	fair (6-24°C)	230	river	Breggia	+
L167	03.05.20	46°10'15" 8°51'31"	fair (6-24°C)	200	river	Versasca	-
L168	03.05.20	46°10'47" 8° 45'3"	fair (6-24°C)	220	river	Melezza	-
L169	03.05.20	46°16'48" 8°39'59"	fair (6-24°C)	360	river	Maggia	-
L170	03.05.20	46°19'52" 8°58'29"	fair (6-24°C)	270	river	Ticino	+
L171	03.05.20	46°29'21" 8°44'39"	fair (6-20°C)	940	river	Ticino	+
L172	03.05.20	46°31'29" 8°37'36"	Fair(6-18°C)	1100	river	Canaria	+
L173	03.05.20	46°46'19" 8°40'11"	fair (5-15°C)	510	river	Kärstelenbach	-
L174	12.05.20	46°38'14" 7°3'20"	light rain (3-6°C)	730	stream	La Sionge	-
L175	12.05.20	46°36'40" 7°5'29"	light rain (3-6°C)	680	river	Saane	+
L176	12.05.20	46°28'8" 6°50'53"	light rain (3-6°C)	400	river	la Veveyse	-
L177	12.05.20	46°22'30" 6°55'45"	light rain (3-6°C)	380	stream	Eau Froide	+
L178	12.05.20	46°13'2 7°0'29"	light rain (3-6°C)	400	river	Rhone	+
L179	12.05.20	46°7'11" 7°4'10"	light rain (3-6°C)	470	inland canal	Canal du Syndicat	+
L180	12.05.20	46°7'7" 7°4'5"	light rain (3-6°C)	460	river	la Drance	-
L181	12.05.20	46°13'12" 7°21'36"	light rain (3-6°C)	480	river	Rhone	+

Water sample ID*	Sampling date (dd.mm.yy)	Location of isolation (DMS)	Weather conditions (temperature)	Altitude (m)	Type of water body	Name of water body	Downstream of WWTP**
L182	12.05.20	46°10'53" 7°25'4"	light rain (3-6°C)	500	river	la Borgne	+
L183	12.05.20	46°16'35" 7°30'30"	light rain (3-6°C)	520	river	Rhone	+
L184	12.05.20	46°18'23" 7°41'33"	light rain (3-6°C)	620	stream	Turtmäna	-
L185	12.05.20	46°18'17" 7°51'21"	cloudy (5-13°C)	640	river	Rhone	+
L186	12.05.20	46°14'43" 7°52'30"	cloudy (5-13°C)	650	river	Vispa	+
L187	12.05.20	46°18'25" 7°56'50"	cloudy (5-13°C)	660	river	Rhone	+
L188	12.05.20	46°23'30" 8°7'32"	cloudy (5-13°C)	990	river	Rhone	+
L189	12.05.20	46°29'11" 8°15'46"	cloudy (5-13°C)	1380	stream	Mistigerbach	-
L190	12.05.20	46°32'10" 8°21'26"	cloudy (5-13°C)	1360	stream	Goneri	-
L191	12.05.20	46°38'32" 8°35'26"	cloudy (5-13°C)	1430	river	Reuss	+

* Cells highlighted in grey indicate samples that tested positive for *L. monocytogenes*. Strain ID and clonal complex (CC) are indicated in brackets.

** WWTP, wastewater treatment plant; +, WWTP located upstream; -, no WWTP in the vicinity.

Table S2. Internalin A amino acid sequence comparison among 25 *Listeria monocytogenes* isolated from surface water

Amino acid position and substitution ¹	Type of amino acid substitution	Strain ID	Remarks
S32N	Non-conservative	L41	CC4 only
V44I	Conservative	L58, L105, L124, L49	
A51T	Non-conservative	L86, L72, L50, L137, L180, L51, L138, L36	
L94V	Conservative	L28, L44, L42, L128-3, L174, L49, L58, L105, L124, L12, L164, L52, L41, L72, L50	CC1 only
D118N	Non-conservative	L28, L44, L42, L128-3, L174, L49, L58, L105, L124, L12, L164, L52, L41, L72, L50	
S142T	Conservative	L42, L44, L128-3, L28, L174	
L157I	Conservative	L86, L137, L180, L51, L138	
S187N	Non-conservative	L52, L58, L105, L124, L49, L72, L50	CC6 only
A454T	Non-conservative	L28, L44, L42, L128-3, L174, L49, L58, L105, L124, L12, L164, L52, L41, L50, L72, L36, L137, L180, L51, L138,	
N474S	Non-conservative	L28, L44, L42, L128-3, L174, L49, L58, L105, L124, L12, L164, L52, L41, L36, L137, L180, L51, L138,	
S476P	Non-conservative	L28, L44, L42, L128-3, L174, L49, L58, L105, L124, L12, L164, L52, L41, L36, L137, L180, L51, L138,	
A500V	Conservative	L28, L44, L42, L128-3, L174, L49, L58, L105, L124, L12, L164, L52, L41, L50, L72, L36, L137, L180, L51, L138, L57, L111, L127, L188	CC6 only
Y530H	Non-conservative	L28, L44, L42, L128-3, L174, L49, L58, L105, L124, L12, L164, L52, L41, L36, L137, L180, L51, L138,	
I533V	Conservative	L12, L164, L137, L180, L138, L36, L51	
K539Q	Non-conservative	L137, L180, L138, L51	
N544K	Non-conservative	L12, L164	CC6 only
D558N	Non-conservative	L137, L180, L138, L51, L36, L28, L44, L42, L128-3, L174, L49, L58, L105, L124, L12, L164, L52	

Amino acid position and substitution ¹	Type of amino acid substitution	Strain ID	Remarks
L572F	Non-conservative	L12, L164, L137, L180, L138, L36, L51	
E573D	Conservative	L127, L188, L111, L57, L86, L72, L50	
P594A	Non-conservative	L127, L188, L111, L57, L86, L72, L50	
I644V	Conservative	L127, L188, L111, L57, L86	
T648S	Conservative	L36, L137, L180, L51, L138, L86, L57, L111, L127, L188, L28, L44, L42, L128-3, L174, L49, L58, L105, L124, L12, L164, L52, L41	
T652A	Non-conservative	L127, L188, L111, L57, L86	
T664A	Non-conservative	L28, L44, L42, L128-3, L174, L49, L58, L105, L124, L12, L164, L52, L41, L137, L180, L36	
A671T	Non-conservative	L12, L164	CC6 only
-741N	Non-conservative	L12, L164	CC6 only
-742T	Non-conservative	L12, L164	CC6 only
-743S	Non-conservative	L12, L164	CC6 only
D764E	Conservative	L86, L51, L138	
Y774D	Non-conservative	L58, L105, L124, L49, L12, L164	CC4 and CC6

¹ Amino acid positions are relative to *L. monocytogenes* EGDe InlA protein.

Table S3: Presence or absence of virulence factor genes among 25 *Listeria monocytogenes* isolated from surface water

[illegible]

Table S4: Listeriolysin O amino acid sequence comparison among 25 *Listeria monocytogenes* isolated from surface water

Amino acid position and substitution ¹	Type of amino acid substitution	Strains	Remarks
H31N	Non-conservative	L164,L52,L105, L41,L124,L12,L58, L49	CC412 only
V433I	Conservative	L188,L57,L111,L127	
S523K	Conservative	L28, L44, L42, L128-3, L174, L49, L58, L105, L124, L12, L164, L52, L41, L36	

¹ Amino acid positions are relative to *L. monocytogenes* EGDe LLO protein

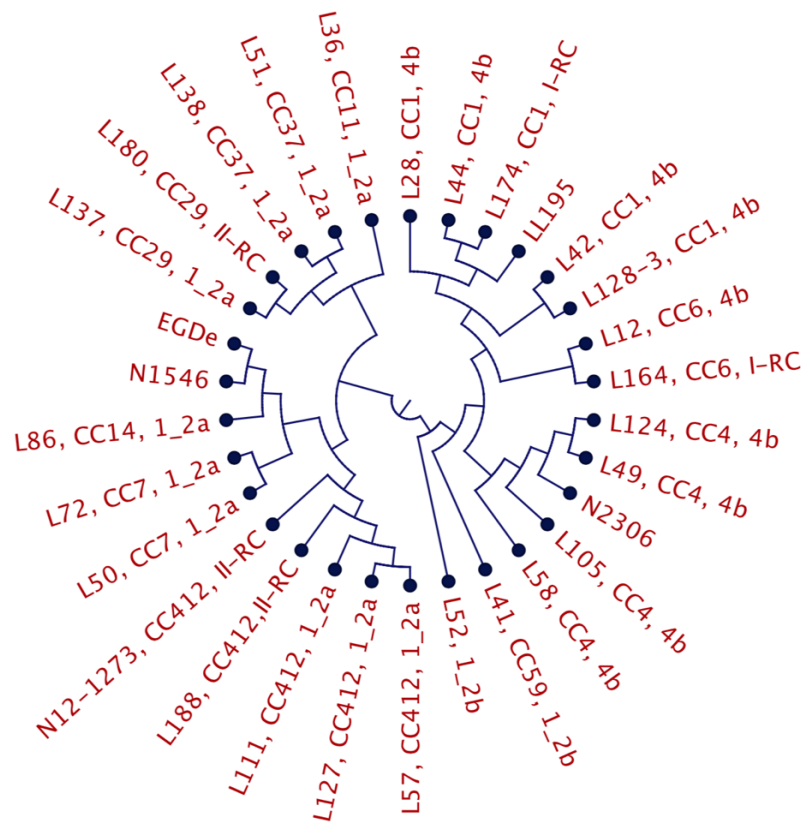


Figure S1: Phylogeny circular cladogram of the isolates based on average nucleotide identity (ANI) comparison showing the relationship of 25 *Listeria monocytogenes* isolated from surface water and five reference strains.

[illegible]

Figure S2: Virulence and resistance profiles of 25 *Listeria monocytogenes* isolated from surface water. Presence (color box) or absence (white box) of genes.