

Supplementary materials

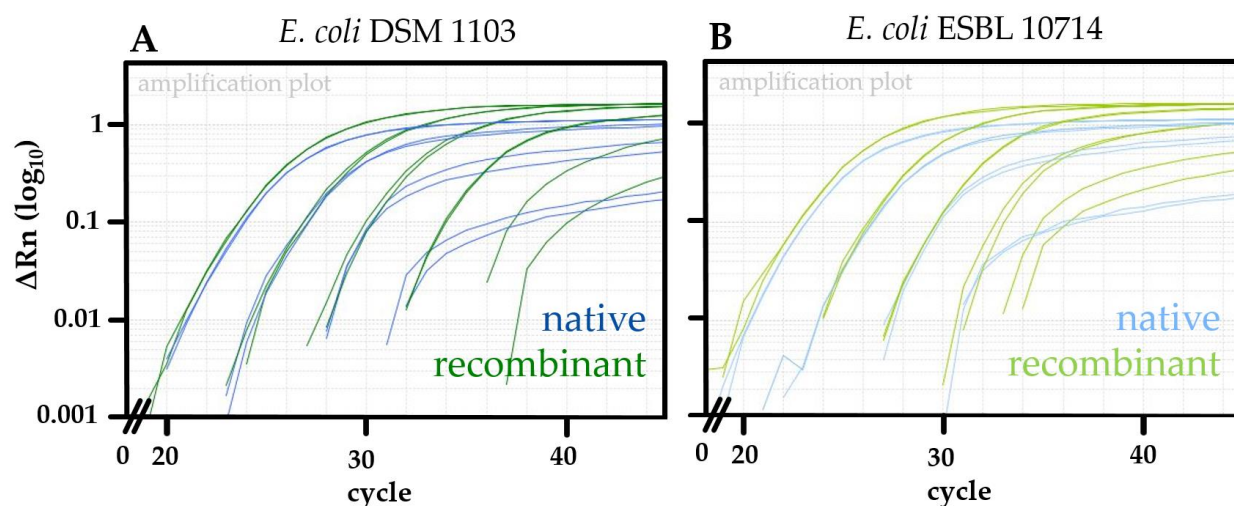


Figure S1. Standard amplification curves obtained with the recombinant versus native Taq polymerases. The different amplification efficiency of the tested enzymes becomes apparent at lower copy numbers. Amplification of five decimal dilutions of 50.000 to 5 genomic copies/reaction are depicted. Green, recombinant Platinum Taq polymerase; blue, native *Thermophilus aquaticus* polymerase. (A) *E. coli* DSM1103 DNA standard (B) *E. coli* ESBL 10714 DNA standard.

Table S1. List of field isolates tested for sensitivity and specificity of the *uidA*-based qPCR.

Species	BfR strain No.	Serotype	Characteristics	Origin	Product	MUG
<i>Aeromonas jandaei</i>	BfR-EC-16179	O56		chicken	meat	-
<i>Citrobacter koseri</i>	BfR-EC-16493	ONT:[HNT]	nd	cattle	milk	-
<i>Enterobacter cloacae</i> complex	BfR-EC-15955	ONT:[HNT]	nd	cattle	milk	-
<i>Escherichia albertii</i>	BfR-EC-16090	O65:[HNT]	diarrhea	human	clinical	-
<i>Escherichia albertii</i>	BfR-EC-16091	ONT/O127	diarrhea	human	clinical	-
<i>Escherichia coli</i>	<i>E. coli</i> 10714 (BfR-CA-15244)	nd	TEM-52	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-11061	ONT:H7	commensal	chicken	faeces	+
<i>Escherichia coli</i>	BfR-EC-11062	ONT:H4	commensal	chicken	faeces	+
<i>Escherichia coli</i>	BfR-EC-11063	O78:NM	commensal	chicken	faeces	+
<i>Escherichia coli</i>	BfR-EC-11734	O157:NM	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-11735	O157:NM	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-11755	O68:NM	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-11756	O182:NM	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-11757	O120:H4	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-11758	O120:H4	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-11759	O9:NM	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-11760	O78:NM	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-11842	O78:NM	commensal	goose	inner organs	+
<i>Escherichia coli</i>	BfR-EC-11893	O22:H7	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-11894	O22:H2	commensal	chicken	meat	+

<i>Escherichia coli</i>	BfR-EC-12047	O45:[H2]	STEC, stx1+	unknown	unknown	(+)
<i>Escherichia coli</i>	BfR-EC-12481	O153:H12	commensal	chicken	faeces	+
<i>Escherichia coli</i>	BfR-EC-12482	O153:H12	commensal	chicken	faeces	+
<i>Escherichia coli</i>	BfR-EC-12499	O103:[H11]	STEC, stx1+	cattle	faeces	+
<i>Escherichia coli</i>	BfR-EC-13091	O88:H8	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-13092	Or:H19	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-13093	Or:H4	commensal	chicken	meat	(+)
<i>Escherichia coli</i>	BfR-EC-13094	Or:H4	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-13095	O1:H7	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-13096	O2:H9	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-13097	O78/149:H4	commensal	chicken	meat	(+)
<i>Escherichia coli</i>	BfR-EC-13098	Or:H4	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-13099	O16:H11	commensal	chicken	unknown	-
<i>Escherichia coli</i>	BfR-EC-13216	O136:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-13217	O9:H10	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-13218	O103:H2	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-13573	O89:[H8]	commensal	turkey	meat	+
<i>Escherichia coli</i>	BfR-EC-13574	O103:[H16]	commensal	turkey	meat	+
<i>Escherichia coli</i>	BfR-EC-13575	O15:[H27]	STEC, stx1+	turkey	meat	+
<i>Escherichia coli</i>	BfR-EC-13581	O9:[H51]	commensal	turkey	meat	-
<i>Escherichia coli</i>	BfR-EC-13616	O8:[H25]	commensal	chicken	unknown	-
<i>Escherichia coli</i>	BfR-EC-13671	O82:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-13702	O82:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-13703	O82:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-13712	O157:[H7]	EPEC	cattle	meat	+
<i>Escherichia coli</i>	BfR-EC-13713	O157:[H7]	STEC, stx2+	cattle	meat	+
<i>Escherichia coli</i>	BfR-EC-13714	O157:[H7]	STEC, stx2+	cattle	meat	+
<i>Escherichia coli</i>	BfR-EC-13715	O157:[H7]	STEC, stx2+	cattle	meat	+
<i>Escherichia coli</i>	BfR-EC-13716	O157:[H7]	STEC, stx2+	cattle	meat	+
<i>Escherichia coli</i>	BfR-EC-13717	O157:[H7]	STEC, stx2+	cattle	meat	+
<i>Escherichia coli</i>	BfR-EC-13718	O157:[H7]	EPEC	cattle	meat	+
<i>Escherichia coli</i>	BfR-EC-13813	O113:H6	EPEC	turkey	meat	+
<i>Escherichia coli</i>	BfR-EC-13814	O113:H6	EPEC	turkey	meat	+
<i>Escherichia coli</i>	BfR-EC-13938	O80:NM	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-13946	O186:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-13947	O186:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-13948	O186:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-14612	O157:[H7]	STEC, stx1+stx2+	wild animals	meat	-
<i>Escherichia coli</i>	BfR-EC-14642	O45:[H2]	STEC, stx1+	unknown	unknown	-
<i>Escherichia coli</i>	BfR-EC-14794	O136:H40	EPEC	chicken	inner organs	+
<i>Escherichia coli</i>	BfR-EC-14795	O136:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-14815	O136:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-14816	O91:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-14817	Or:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-14883	O16:NM	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-14899	O157:[H7]	STEC, stx1+stx2+	cattle	faeces	-
<i>Escherichia coli</i>	BfR-EC-14910	ONT:[H26]	EPEC	chicken	meat	-
<i>Escherichia coli</i>	BfR-EC-14920	O157:[H7]	STEC, stx2+	unknown	red minced meat	-

<i>Escherichia coli</i>	BfR-EC-14955	O157:[H7]	STEC, stx2+	cattle	milk	-
<i>Escherichia coli</i>	BfR-EC-15046	O80:r	EPEC	chicken	meat	-
<i>Escherichia coli</i>	BfR-EC-15050	O145:[H40]	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15051	O68:H28	EPEC	chicken	meat	-
<i>Escherichia coli</i>	BfR-EC-15052	O26:H31	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15054	O82:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15058	Or:H10	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15059	ONT:NT	EPEC	chicken	meat	-
<i>Escherichia coli</i>	BfR-EC-15061	O111:[H25]	STEC, stx2+	cattle	milk	-
<i>Escherichia coli</i>	BfR-EC-15083	O157:[H7]	STEC, stx2+	cattle	faeces	-
<i>Escherichia coli</i>	BfR-EC-15108	O111:[H29]	STEC, stx2+	cattle	meat	+
<i>Escherichia coli</i>	BfR-EC-15112	O51:[H40]	EPEC	turkey	meat	+
<i>Escherichia coli</i>	BfR-EC-15113	ONT:H10	EPEC	chicken	inner organs	(+)
<i>Escherichia coli</i>	BfR-EC-15118	O111:[H8]	EPEC	plant	plant	+
<i>Escherichia coli</i>	BfR-EC-15120	O40:H45	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15123	O2:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15127	O45:NM	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15128	O2:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15172	O145:H31	commensal	cattle	faeces	+
<i>Escherichia coli</i>	BfR-EC-15190	O123:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15238	O157:[H7]	STEC, stx1+stx2+	cattle	faeces	-
<i>Escherichia coli</i>	BfR-EC-15265	ONT:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15268	O123/186:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15272	O61:NM	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15273	O145:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15374	ONT:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15375	O6:H49	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15378	O145:[H40]	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15384	O121:[H19]	STEC, stx1+	sheep	milk	+
<i>Escherichia coli</i>	BfR-EC-15386	ONT:H10	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15387	O80:H26	EPEC	chicken	meat	-
<i>Escherichia coli</i>	BfR-EC-15389	O108/130:H9	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15393	O71:H40	EPEC	chicken	meat	-
<i>Escherichia coli</i>	BfR-EC-15394	O123/186:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15417	O19:H28	commensal	goose	inner organs	+
<i>Escherichia coli</i>	BfR-EC-15421	O154:H16	commensal	goose	unknown	+
<i>Escherichia coli</i>	BfR-EC-15502	O123/ 186:H40	EPEC	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-15564	O145:[H28]	EPEC	domestic pig	faeces	+
<i>Escherichia coli</i>	BfR-EC-15566	O145:[H28]	EPEC	domestic pig	faeces	+
<i>Escherichia coli</i>	BfR-EC-15652	O157:[H7]	STEC, stx1+stx2+	cattle	faeces	-
<i>Escherichia coli</i>	BfR-EC-15812	O157:[H7]	STEC, stx2+	cattle	cheese	-
<i>Escherichia coli</i>	BfR-EC-15938	O157:[H7]	STEC, stx2+	cattle	milk	-
<i>Escherichia coli</i>	BfR-EC-15942	O103:[H2]	STEC, stx1+	cattle	meat	+
<i>Escherichia coli</i>	BfR-EC-15972	O157:[H7]	STEC, stx1+stx2+	cattle	faeces	-
<i>Escherichia coli</i>	BfR-EC-16053	O103:[H2]	STEC, stx1+	cattle	faeces	(+)
<i>Escherichia coli</i>	BfR-EC-16463	O2:H5	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-16464	O33:H10	commensal	chicken	meat	+

<i>Escherichia coli</i>	BfR-EC-16465	ONT:NM	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-16466	O33:H10	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-16467	O33:H10	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-16468	O33:H10	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-16469	O33:H10	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-16470	O33:H10	commensal	chicken	meat	+
<i>Escherichia coli</i>	BfR-EC-16627	O26:[H11]	STEC, stx1+	cattle	cheese	(+)
<i>Escherichia coli</i>	BfR-EC-16636	O121:[H19]	EPEC	wild animals	meat	+
<i>Escherichia coli</i>	BfR-EC-16666	O103:[H2]	STEC, stx1+	cattle	meat	+
<i>Escherichia coli</i>	BfR-EC-16692	O45:[H2]	STEC, stx2+	wild animals	faeces	+
<i>Escherichia coli</i>	BfR-EC-16734	O121:[H10]	STEC, stx2+	domestic pig	meat	+
<i>Escherichia coli</i>	BfR-EC-16972	O103:[H2]	STEC, stx1+	cattle	meat	(+)
<i>Escherichia coli</i>	BfR-EC-16975	O87:[H16]	STEC, stx2+	chicken	egg	+
<i>Escherichia coli</i>	BfR-EC-17175	O145:[H28]	STEC, stx2+	plant	plant	+
<i>Escherichia coli</i>	BfR-EC-17218	O145:[H28]	STEC, stx2+	cattle	cheese	+
<i>Escherichia coli</i>	BfR-EC-17223	O121:[H14]	STEC, stx1+	cattle	meat	+
<i>Escherichia coli</i>	BfR-EC-17240	O26:[H11]	STEC, stx1+	wild animals	faeces	+
<i>Escherichia coli</i>	BfR-EC-17596	O54:[H21]	STEC, stx2e+	turkey	raw sausage	+
<i>Escherichia coli</i>	BfR-EC-17618	O26:[H11]	STEC, stx1+	cattle	milk	+
<i>Escherichia coli</i>	BfR-EC-17761	O121:[H19]	EPEC	plant	plant	+
<i>Escherichia coli</i>	BfR-EC-17783	O98:[H21]	STEC, stx1+	cattle	milk	(+)
<i>Escherichia coli</i>	BfR-EC-17804	O26:[H11]	EPEC	cattle	cheese	+
<i>Escherichia coli</i>	BfR-EC-17836	O26:[H11]	STEC, stx2+	cattle	cheese	+
<i>Escherichia coli</i>	BfR-EC-17944	O113:[H21]	STEC, stx2+	cattle	meat	(+)
<i>Escherichia coli</i>	BfR-EC-17949	O109:[H16]	STEC, stx1+	cattle	milk	(+)
<i>Escherichia coli</i>	BfR-EC-17971	O103:[H2]	STEC, stx1+	cattle	faeces	+
<i>Escherichia coli</i>	BfR-EC-17972	O111:[H29]	STEC, stx1+	cattle	faeces	+
<i>Escherichia coli</i>	BfR-EC-17986	O8:[H9]	STEC, stx2+	domestic pig	meat	(+)
<i>Escherichia coli</i>	BfR-EC-18006	O184:[H2]	STEC, stx1+	cattle	faeces	(+)
<i>Escherichia coli</i>	BfR-EC-18009	O26:[H11]	STEC, stx1+	cattle	faeces	+
<i>Escherichia coli</i>	BfR-EC-18019	O157:[H7]	STEC, stx1+stx2+	plant	plant	-
<i>Escherichia coli</i>	BfR-EC-18033	nd	EPEC	cattle	appendix content	+
<i>Hafnia alvei</i>	BfR-EC-15818	ONT:HNM	nd	cattle	cheese (from raw milk)	-
<i>Hafnia alvei</i>	BfR-EC-15819	Or:HNM	nd	cattle	cheese (from raw milk)	-
<i>Hafnia alvei</i>	BfR-EC-15932	O91:HNM	nd	wild animals	meat	-

nd, not determined

Table S2: Absence of false-positive *uidA* signals in negative controls using different Taq Polymerases and the amplification control IPC-ntb2.

Sample name	Experiment ID	Taq Polymerase	U or x-fold /reaction	Ct of <i>uidA</i>	Ct of IPC-ntb2
1000 copies IPC-ntb2	1	Platinum Taq	2	undetermined	28,94
1000 copies IPC-ntb2	1	Platinum Taq	2	undetermined	29,24
25 copies IPC-ntb2	2	Platinum Taq	2	undetermined	34,07
25 copies IPC-ntb2	2	Platinum Taq	2	undetermined	34,60
25 copies IPC-ntb2	3	Platinum Taq	2	undetermined	34,29
25 copies IPC-ntb2	3	Platinum Taq	2	undetermined	34,11
25 copies IPC-ntb2	4	Platinum Taq	2	undetermined	33,54
25 copies IPC-ntb2	4	Platinum Taq	2	undetermined	33,56
25 copies IPC-ntb2	5	Platinum Taq	2	undetermined	34,88
25 copies IPC-ntb2	5	Platinum Taq	2	undetermined	34,63
25 copies IPC-ntb2	6	Platinum Taq	2	undetermined	34,23
25 copies IPC-ntb2	6	Platinum Taq	2	undetermined	34,11
25 copies IPC-ntb2	7	Platinum Taq	2	undetermined	35,23
25 copies IPC-ntb2	7	Platinum Taq	2	undetermined	34,59
25 copies IPC-ntb2	8	Platinum Taq	2	undetermined	34,94
25 copies IPC-ntb2	8	Platinum Taq	2	undetermined	34,22
25 copies IPC-ntb2	9	Platinum Taq	2	undetermined	32,27
25 copies IPC-ntb2	9	Platinum Taq	2	undetermined	33,22
25 copies IPC-ntb2	10	Platinum Taq	2	undetermined	33,75
25 copies IPC-ntb2	10	Platinum Taq	2	undetermined	34,41
25 copies IPC-ntb2	11	Platinum Taq	2	undetermined	33,05
25 copies IPC-ntb2	11	Platinum Taq	2	undetermined	34,04
25 copies IPC-ntb2	12	TaqMan Gene Expression Master Mix	2x	undetermined	36,79
25 copies IPC-ntb2	12	Quanti Tect Multiplex PCR Master Mix	2x	undetermined	34,63
25 copies IPC-ntb2	13	Quanti Tect Multiplex PCR Master Mix	2x	undetermined	34,67
25 copies IPC-ntb2	13	TaqMan Gene Expression Master Mix	2x	undetermined	38,65
25 copies IPC-ntb2	14	TaqMan Gene Expression Master Mix	2x	undetermined	37,19
25 copies IPC-ntb2	15	TaqMan Gene Expression Master Mix	2x	undetermined	34,92
25 copies IPC-ntb2	16	Platinum Taq	2	Undetermined	34,49
25 copies IPC-ntb2	16	Platinum Taq	4	Undetermined	35,19
25 copies IPC-ntb2	16	Platinum Taq	10	Undetermined	34,93
25 copies IPC-ntb2	16	Platinum Taq	20	Undetermined	35,21

All qPCR runs contained positive control samples, which amplified the target *uidA*-P-JOE.