

Supplementary data:

Preliminary genetic linkage map of Indian major carp, *Labeo rohita* (Hamilton 1822) based on microsatellite markers

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Table 1. Summary of characteristics of the microsatellite mapping panel in *Labeo rohita*.

	Microsatellite	GenBank accession	Primers (5'–3')	Repeat motif	T _a	Product size
1	Lro-12	AM184136	F: CAG CGC TGG ACC GAC ACC A R: TGC TGC GGG TCA TTA GTA TTC ATC	(CA) ₁₅	58	105
2	Lr-28	AM231177	F: TTCACGGACAGATTTGACCCAG R: AGTCTTTTCAGGAGATTAGCAG	(AC) ₁₈	56	175
3	Lr-37	AM269527	F: TGA GAT GTT CAG CAG GAG CTC R: GAG CGT CGA GTG GCG TTT C	(CA) ₂₃	57	158
4	Lr-43	AM269533	F: GAT CCC AGC AGA GGC TGT G R: AGT CTG TGC TCT CTG GAG TG	(GT) ₂₀	59	176
5	Lr-45	AM269535	F: TGC ACA CCT CGA GGT TAG CAA C R: TCA GCT CCA CAT TTC ACC ATG	(CA) ₁₅	57	256
6	Lro-2	AJ507519	F: TCG ACC ATG CTT GTC TTT TGT TTA R: CAT GGA AGC ATC ACT TTG TTA TCG	(TG) ₁₁	56	189
7	Lro-25	AM184143	F: CGG TGA ATT TGC AGT GAT GTG T R: C AAC TAC TGC AAC CTG AGA ACG	(TG) ₁₄	56	184
8	Lro-26	AM184144	F: AGA TCA TTG CTG GGG AGT GTT TAT R: GAC CTG CCT GTG CCA TCT GTA	(GT) ₁₇	58	217
9	Lro-31	AM184147	F: CAT AAT AGC AGT GGC GAG CAG R: TTA GAT CCC CAC CGC CTT AT	(GT) ₂₁	56	188
10	Lro-32	AM184148	F: ACC CTC TTT GTT TTG GCT CTC R: TCT CTT ACC CTG TTT CTC TGT	(GT) ₁₇	58	136
11	Lro-37	AM184153	F: ATG TTG TGG TCA TCA TGT AAA TC R: C AGT TTC CTC CCT TCA TAG TTT	(CA) ₉	56	182
12	Lro-39	AM184154	F: TCA CTG AGC ACA GGA AGG CAG GAA TG R: ATTGGTGCCGACGGAACAGGAAGTCT	(GT) ₁₄	57	237
13	Lro-43	AM184158	F: TCT CTG CGC CTG TCT ACC T R: TGT TTA TTA AAG CAC TTT CCT CAT	(AG) ₂₄	59	171
14	Lro-44	AM184162	F: TCA GTC TTT AAG CGT GTG GAG TGC R: A TGG GAA CGA GGA GAG GAC GAA	(GT) ₁₆	58	158
15	Lro-5	AM184132	F: TGA CGC CGA CGT GAA TGT CAC R: CT GCT GAT GAC CGT CAA CAT GAC	(TG) ₂₀	56	177
16	Lroest-12	GR958186	F: GATACCAGACTGCCTGCTATT R: GCAAACAACCTTCAGGCTCTTCT	(GAT) ₅	57	199
17	LROEST-14	GR958112	F: ATCATCTCAGGGTTTCTGTTGG R: ACTGTGTGGTAGCGGTACCTT	(ATT) ₄	57	192
18	LROEST1	GR426891	F: CACCACAGCACTTAACACTTAC R: CTAGAGTGATCCTCAGGGATT	(AAGA) ₈	57	152
19	Lr-47	JN581132	F: CCAACTCCTAAGAAGACCAGA R: GTGTAGGGTAGGTGTAGGGTGA	(AC) ₄₃	56	248
20	Lr-67	JN581335	F: CAGCAGGACTGAAGAAATGTATG R: CCAATAAATGTTGACCTTGTGG	(AC) ₁₉	56	289

Table 1 (contd)

	Microsatellite	GenBank accession	Primers (5'–3')	Repeat motif	T_a	Product size
21	Lr-71	JN581156	F: CGAATCATTCACACGTGCTT R: TCTCCAGAGGAACCCATAGC	(CA) ₃₆	57	193
22	Lr-89	JN581172	F: CGTGAACACGCGAAACAG R: CGACTCATGACATGTGCTTGTT	(AC) ₃₄	58	141
23	Lr-99	JN581181	F: ACGTTCCTGACAAAACAGAGGT R: CGTACACATCCCTGACCAATC	(AC) ₄₄	58	193
24	Lr-106	JN581188	F: AGTCGGATTCAAAAACGAAACAG R: TGATAAAGTGTCTGTAGAGGAATGG	(GT) ₇	56	182
25	Lr-107	JN581189	F: CCAAATATGTTTTGAGGCCATT R: TGAAGGCCAAAGCTCTGTAA	(AC) ₁₀	57	191
26	Lr-120	JN581201	F: ACTCCTTCAGTGTGGCAGTGT R: GTGTTTTCTCCTCAGGTGTCAG	(CA) ₆	59	215
27	Lr-124	JN581204	F: CAGTCAATCCAGCGTCTCCT R: GCCACTTTACCACTTTTGCTGT	(TGTC) ₅	57	196
28	Lr-126b	JN581206	F: ACAAATGTCCCACAAGCTCAAC R: GACAGGCTTTATTCTTCCTCCA	(CA) ₂₁	58	203
29	Lr-128	JN581208	F: AGAGCCCATCTCTCTGTCTTT R: GAGGAGGGTCAATATGTGTGT	(CA) ₃₂	56	193
30	Lr-131	JN581361	F: TGGTCCCATAACGTGATGAAT R: ATTTGCTTAGAAGCGCCAAC	(CA) ₉	59	168
31	Lr-148	JN581227	F: AACACCCTCATTGTCTGATGAA R: TTTAGGTGTAGGGTAGGTGTAGGG	(CA) ₂₈	56	222
32	Lr-155	JN581232	F: AAGCCAAACGACTAAACTCACA R: GGAACAGTGTGTGCTGGACTAA	(AC) ₂₈	57	202
33	Lr-158	JN581271	F: CAGCAAACACACTCCTGTCAAA R: GACGCGCAAATCAAAGTGAG	(AC) ₁₅	58	274
34	Lr-162	JN581239	F: GCGAAACAGCAGCAACT R: AAGAGAAGGCTTCACCTGGA	(AC) ₃₄	58	209
35	Lr-169	JN581244	F: AAGCTCAGGCTGTCCATCTC R: GAGCAGACCACCTCCAATC	(CA) ₁₆	58	194
36	Lr-185	JN581353	F: GATCTCTGTGTGCAAGTAATG R: GGTCCCGAAATTCTCTCTGG	(TG) ₁₈	58	182
37	Lr-189	JN581257	F: GATCAGAGCAATATTGGGGTTT A: AGAGCTGCTGTGTGCAGAA	(CA) ₁₃	56	219
38	Lr-190a	JN581258	F: AGAGACTCGCTCCCTGGACT R: ATTCTGCATCCCAAACAGGA	(GT) ₁₁	55	168
39	Lr-191	JN581259	F: ATCTCATGCCATTGTGCAAGT R: CGCACGTGTCACCTTTCTAA	(CT) ₇	56	179
40	Lr-192	JN581260	F: CCAAATATTGAACGGCAGTG R: TATGGAGAGTCCCCACAAGG	(AC) ₁₉	58	104
41	Lr-206	JN581273	F: GAAGTGTGTTGTGTGGCTGGA R: CCGGTGGGATCTGTGTATG	(TG) ₂₅	59	182
42	Lr-209	JN581276	F: CAATGACCATGCTAAGCACTTC R: TGTTCAATGATATGCGTAACAGC	(AC) ₂₀	55	181
43	Lr-214	JN581279	F: ATGTGATTCATATAGGGCAGGTC R: GATCACACACGATTACCATCC	(GT) ₁₆	59	100
44	Lr-225	JN581289	F: CCCAGACTACATTTCCCATCA R: CAGGCAGGTAATCAGAACAAGA	(CA) ₆	56	190
45	Lr-226	JN581290	F: TGCTGTCTCGTAAACCAAAA R: GCTTGACGCAACACAGACAC	(GT) ₆	55	194
46	Lr-227	JN581291	F: GCTGAGATTTGCGTGTCT R: GGGCGATAGAAAATAGGGTTTG	(AC) ₁₂	55	214
47	Lr-228	JN581292	F: TCCTCTGAAGAAAGCAAGAGAGA R: AATGGCACTGAGGTAGGACACT	(CA) ₁₈	54	200
48	Lr-229	JN581293	F: TTATGTGGTCATTAACGGTGGA R: ACTGGACCAACCAGGGATTAC	(GT) ₁₁	59	147
49	Lr-239	JN581303	F: ATATCGAGGTGTCCGATGATG R: GGGTTAGGGTAAGGGGATAGAA	(AC) ₁₉	59	225
50	Lr-251a	JN581315	F: GAGGTCAGTTGGTCAGAGTTCA R: ACCCTTTCACACCCCTCTTATT	(CA) ₁₅	58	193
51	Lr-251b	JN581315	F: CACCTGCTCCCTACAATTTGAC R: ACAGTCCTTTCCATTGCCTTT	(AC) ₆	58	205

Table 1 (contd)

	Microsatellite	GenBank accession	Primers (5'–3')	Repeat motif	T_a	Product size
52	Lr-267a	JN581331	F: CAGTCTGACCATCCTGCCTTT R: GGACTAGGTTTAGGTGTAGGGTGA	(AC) ₂₉	58	203
53	Lr-270	JN581334	F: ATCAAAGTGTGGTGCAAGGTTT R: TCAGGTGAAAAATAAGTGTGGA	(AC) ₂₀	57	185
54	Lr-271	JN581335	F: TCACAGCAGGACTGAAGAAATG R: TGTAGGGCGATAGAAAAGTACGG	(CA) ₈	57	206
55	Lr-271d	JN581335	F: TCACAGCAGGACTGAAGAAATG R: TGTAGGGCGATAGAAAAGTACGG	(CA) ₈	57	206
56	Lr-278	JN581342	F: TAACGCTTATCCAGTCCCAGT R: CGCAGCCAATAGTACACCTCTC	(AC) ₁₉	57	207
57	Lr-278d	JN581342	F: TAACGCTTATCCAGTCCCAGT R: CGCAGCCAATAGTACACCTCTC	(AC) ₁₉	57	207
58	Lr-279b	JN581343	F: GGTCCCGTTTCAAGCTCTTAC R: CGCCACCAAATGACTACAAA	(CA) ₉	57	201
59	Lr-297	JN581360	F: ACCACAGCCGATGCCTAAC R: GACTCCATGCGTCACACAAC	(GT) ₁₉	57	201
60	Lr-298	JN581361	F: TGGTCCCATACGTGATGAAT R: GAAAACAGGCATCTGAACACAA	(AC) ₁₇	58	246
61	Lr-300	JQ862039	F: TTAGTGGCATCCTGCTCTCG R: GGAGTGAGTTTGAGCGATGG	(GAG) ₉	58	98
62	Lr-302	JQ862289	F: GTCAATCAGGAATGAGGGCTG R: GTGACCAGTAAAGAACTGACCTG	(CAT) ₁₂	58	98
63	Lr-303	JQ862042	F: CTTCCCTGCGAGACAGACG R: ACAGATACGTTCCCTGTG	(GA) ₁₅	56	98
64	Lr-306	JQ862045	F: CCAAGACCGCGCATTACTTC R: TTGAGATTTGTCTGACCCCG	(GAT) ₉	56	99
65	Lr-313	JQ862052	F: TTCCGCACTTTCCGAATCC R: ACGACCTGGAGGATGTTGAC	(ATC) ₁₁	59	102
66	Lr-336	JQ862075	F: TATCCACCTGTCATCCGTCC R: GGGTCGAAAATGAGTGGGTG	(CCAT) ₇	59	109
67	Lr-347	JQ862086	F: CAGGCCAAAGTGACAGGC R: TGGCTCACACATGCATTAGG	(AGG) ₉	59	112
68	Lr-351	JQ862090	F: GCACCTGAAGGTTGCTATGG R: GGTTTGAGCGGCATTGTGTG	(AC) ₁₁	59	114
69	Lr-352	JQ862091	F: ATCCGCTGGTTTATGTGTCG R: ATAGACTGCAGCACCTCGTC	(TGA) ₁₃	59	114
70	Lr-358	JQ862097	F: TTCTTGCTCTTTCCATAGTCAG R: AGACCACAAATGCCTGCAAC	(GGA) ₇	56	117
71	Lr-361	JQ862100	F: AGCTGCTTGTAAGACAATTTTGC R: GCTGTTTTCTGACCTCTCAC	(AC) ₁₅	56	118
72	Lr-362	JQ862101	F: CAGCCAGAGCCTGAAAGATG R: AGCAGTTCTTTGTCCTCTTCG	(GAT) ₁₀	56	118
73	Lr-363	JQ862154	F: CAGGACTCGACCCTCATCTC R: GAGGGACATGGTGGGAAGC	(CAT) ₁₅	56	118
74	Lr-381	JQ862238	F: TTTCTCCGTCAGTACAGC R: ATCAAATGCCCAAGCAACCC	(GAT) ₉	57	122
75	Lr-382	JQ862121	F: GCAGCCATCTGATCTGGAG R: TTTTGGTAGTGCCTCAACGG	(AG) ₁₅	58	122
76	Lr-383	JQ862132	F: TCATTTAACACAGAGAGAGAATGAG R: GATGTGTTCTGGCGTACAG	(AG) ₂₁	58	122
77	Lr-384	JQ862123	F: ACACCTTTGAGCTCTTCTTGC R: TCAGGGGCAGAGTGATGATG	(ATC) ₁₅	58	122
78	Lr-388	JQ862127	F: AAAGGTGAGACACTCGTTTTTC R: TAGATATGGCCAACCCACGG	(TG) ₁₆	58	125
79	Lr-393	JQ862132	F: ACAAGCTCATTTAACACAGAGAGAG R: GATGTGTTCTGGCTCACAGG	(AG) ₂₁	58	126
80	Lr-394	JQ862133	F: AAATGCATCAGTTCCGCTGG R: GAGCGGACAGGAGGTAACG	(GAG) ₈	58	126
81	Lr-401	JQ862140	F: ACGATTTACGGATGATGCGAG R: TTCCCTGCTTCCCTATGAGC	(AG) ₂₀	58	128
82	Lr-402	JQ862141	F: CCTAATTGTTAATCAGAACTCTCTTCC R: TCTGTTCACATCAATCACGTATGC	(GA) ₁₄	57	129

Table 1 (contd)

	Microsatellite	GenBank accession	Primers (5'–3')	Repeat motif	T_a	Product size
83	Lr-405	JQ862144	F: TACAGAGAGGAGCGCGTATG R: GCAGTTGTTAATCCCTCCCC	(GAG) ₇	57	129
84	Lr-406	JQ862145	F: GCCGTGAACCTCAAATGG R: TGAGTGAGTGATGTTAGTCCG	(TG) ₁₅	56	129
F	Lr-415	JQ862153	F: CTGCAAACAGGTGAGGTGAG R: ACCATTATAAAGACACGGAGCC	(AG) ₁₉	58	132
86	Lr-416	JQ862154	F: CAAACACAGCAGGACTCGAC R: TTGATGAGGGACATGGTGGG	(CAT) ₁₅	58	133
87	Lr-419	JQ862157	F: CAGACGAGTGTTCGGTCCG R: GGTGATTGGACATGGACACG	(ATC) ₈	57	133
88	Lr-420	JQ862158	F: TGTGAGCCAAGATCGGAGAG R: ACTGACGCTCATGCTAGAGG	(TCC) ₇	57	133
89	Lr-424	JQ862162	F: AATTTGAGGTCTGGTTCAGGC R: TGGCCTCATAAAGTCTTGCG	(CAT) ₇	57	135
90	Lr-425	JQ862163	F: GTGCGCAGATAGCTCCAAAG R: CAGTCTCTAGGGAACCCAGC	(TGA) ₉	56	136
91	Lr-427	JQ862165	F: AAGTCTCCATCCATGCTGCC R: AGCAATGTGAAGCCCAAGTC	(ATC) ₁₁	55	137
92	Lr-432	JQ862170	F: GGTTGGGATAGGGACAGAC R: GCTCCCCAGAATGCCTAAAC	(GT) ₁₃	55	138
93	Lr-437	JQ862175	F: TTTTGCTCAAGTGAAGCCCC R: ATCTCACGTGTCGCTCTCTG	(AG) ₁₂	58	142
94	Lr-442	JQ862179	F: ACTGTCTTCAGTTTGTGCTGG R: AGATGATGGACTCATGAAGCAG	(CAT) ₈	58	143
95	Lr-446	JQ862183	F: GGAGAACGCATGTTTGTGTG R: AGGTATAAAGGCACGCTCG	(TG) ₁₃	58	146
96	Lr-447	JQ862184	F: TGGCCAGAGAATGGGTATCAG R: CCCAAGCCAAATGTCTCCTC	(GAG) ₉	56	146
97	Lr-451	JQ862188	F: CCCCATGCATCTTTCTGTCTG R: AGTTTAAAGTTTGGATGGTTTTCAGTC	(TCTA) ₇	56	148
98	Lr-452	JQ862189	F: ACAAAGAAAAGCTCAACAAAGTCAG R: ACCGGCTGGAGATAATGGTC	(GAG) ₁₃	56	148
99	Lr-456	JQ862193	F: AGTCATATAATCCTCACACAG R: GCCCATGTGACCAATGAAGG	(TGT) ₁₀	55	150
100	Lr-458	JQ862269	F: TCTGAGATGTGTCTGGCTGG R: CTCCTCTCCTCCTGTGAGC	(GAG) ₁₀	55	151
101	Lr-461	JQ862198	F: AGACGAGTTTCTGGGAGCTG R: GGCTGACCCATGAGCAATAG	(TCA) ₁₂	56	151
102	Lr-463	JQ862200	F: TGTGAATGAAGCAGGACAACAG R: AGATTTGTAGCCCTGTGGGG	(CA) ₁₇	56	151
103	Lr-464	JQ862201	F: GCTTTCCGATAACGTGGCAG R: ACTGGTTTAGTTCTTCATCTTCTCTC	(GA) ₁₆	56	151
104	Lr-467_F	JQ862204	F: GCACAAATCAGCAATGCGTC R: GATGCTCTGTGTGAACGCTG	(AC) ₁₁	58	154
105	Lr-470_F	JQ862207	F: GAGACAGATGGATCGAACGC R: TAATGTCCGTGGTCTGCTGG	(CA) ₁₂	59	157
106	Lr-475	JQ862212	F: AAGAAGACACAGGCTAGACG R: AGCGCTTGGGAACAATTAGC	(GAG) ₇	56	161
107	Lr-476	JQ862213	F: ATGGGGCGATAGAGACACAC R: GTTCCTGCACTCACATCCAC	(ATG) ₉	57	162
108	Lr-476d	JQ862213	F: ATGGGGCGATAGAGACACAC R: GTTCCTGCACTCACATCCAC	(ATG) ₉	57	162
109	Lr-477	JQ862214	F: CATGGGGCGATAGAGACAC R: GTTCCTGCACTCACATCCAC	(ATG) ₉	57	162
110	Lr-485	JQ862222	F: TCTACAGCACACTGACCCTG R: AGTAACCGACAATCTGTGGC	(TC) ₁₂	57	170
111	Lr-492	JQ862229	F: AGCTGCAGAATCCCTCTCTG R: TATCTGTCTGCCATCCGTG	(GATA) ₁₉	58	173
112	Lr-493	JQ862230	F: TGTTGGTTCTTTACGGTGTGG R: ATCAGACACGCCCACTGATG	(CAT) ₁₁	59	174
113	Lr-499	JQ862236	F: GCCATAGACTTCCAGAGCGG R: GCCCAACGTTTGTGTTTTTC	(GAA) ₈	57	178

Table 1 (contd)

	Microsatellite	GenBank accession	Primers (5'–3')	Repeat motif	T_a	Product size
114	Lr-501	JQ862238	F: ATCAAATGCCCAAGCAACCC R: TCGGAACACACCGCATTAAC	(CAT) ₁₁	57	180
115	Lr-506	JQ862243	F: TGTTTCTGTGAGGGCTAGG R: GCAGTGCTGAGGTTAGTCTG	(GT) ₁₄	57	186
116	Lr-507	JQ862244	F: GGTTACAAAATGTGGCTGTG R: GGTTGATTCGCTCGTGTGTG	(AC) ₁₅	57	186
117	Lr-513	JQ862250	F: AGCTGCAGGAAACGAGTCTG R: GATGCTTCTCGTCTTGGC	(TGA) ₁₄	57	192
118	Lr-517	JQ862254	F: CTTGACAATTAATAAACATGTGAGC R: TCAGTTCATCATGGTGCTGG	(GAT) ₁₀	56	195
119	Lr-519	JQ862256	F: AGCTTGGTCAGGGCTAGAAC R: AGAGACTGCAGCTTCCCAG	(CTC) ₇	56	198
120	Lr-526	JQ862263	F: GAGAGAAGGTGGGCTCTCTG R: CGTTTGACCGTCTTATCGCC	(ATG) ₁₄	56	206
121	Lr-532	JQ862269	F: TTGGACCGATCGTGTACCTC R: CTCCTCTTCCTCCTGTGAGC	(GAG) ₁₀	55	213
122	Lr-539	JQ862276	F: AGTTGGCATTTCATCCAGAC R: TCATGTGCTCGGTGATTGTG	(ATC) ₁₁	56	230
123	Lr-540	JQ862277	F: TTTAGCCCTCACGCGGTATG R: GAAAGACAGGACGCTGAAC	(TGA) ₁₀	55	230
124	Lr-541	JQ862278	F: GACGCCATCGTTGTAGTTACC R: TCGAGCGGACATGAGAAGAG	(GA) ₁₂	57	231
125	Lr-545	JQ862282	F: ACTCCTCCTGACACCTTGAG R: ACGAACAGTGCAAAGACGTG	(TGA) ₉	57	236
126	Lr-547	JQ862284	F: CTGTAGATGCTGGTCTGGGG R: ACCTTACATTGGCTGTTGGTC	(CAT) ₁₀	57	238
127	Lr550	JQ862237	F: ACTGAGAAAATGCTGCAACAAC R: CTGGATGGGTGGACAGACAG	(ATCT) ₁₀	56	180
128	LF-1	JQ838157	F: GAAAGCTGCTCGTCCTTGAA R: CTCGGGATGAGAGCAGAAAC	(AG) ₁₉	58	192
129	LF-4	JQ838159	F: GGCCAGTGTGACACAAACA R: TCCCCGGAGTCTAAAGACGAAC	(CT) ₁₂	58	227
130	LF-7	JQ838162	F: TAGCAGACCTGCACTGAGAAAG R: TCTCCCTGGTCTTTTCCT	(AG) ₂₀	58	179
131	LF-8	JQ838163	F: GTGAAGCAACGACTTCAGAGAG R: CCAGAAGACCATAGCAACCAC	(GT) ₆	58	216
132	LF-9	JQ838164	F: GAAGTGACGGTTCGCTGTTTC R: GGGATTGTCTGTAGTCCGTAGG	(AG) ₂₇	58	223
133	LF-12b	JQ838167	F: AGGAAACACAGTGAGTGCAGAG R: GAGAGAGCGATGCACAATCA	(CA) ₁₀	58	206
134	LF-13	JQ838168	F: GCCTCATTCCCAGTTACATCAG R: TCCAGCAGAGAGAGAGAGAGA	(CTG) ₄	58	186
135	Lr-est-50	Unknown	F: TCGTATTAGTGGTCTGTCTCG R: TCCTCTCAAAGGAACAGAATGC	Unknown	57	156
136	Lr-est-51	Unknown	F: GCTTGGGCTAATAACCAAGTGTT R: GCTGTTATAGGGAATGACTTCTGG	Unknown	56	238
137	Lr-est-52	Unknown	F: ACGGACTCAGAATAACCGTGAC R: AACTTTTGGTTCGGTCTGACAC	Unknown	56	206
138	Lr-est-53	Unknown	F: GTCAGAGGGTGATGAAAAGAG R: ACGAGAGGGGTCTGATATCGT	Unknown	56	190
139	CC-46	Unknown	F: CTCTCCCTCTACCAGGCATTTT R: GTCAGGTGTTGAAGCTCTTTCC	(TC) ₆	60	125
140	CC-42	Unknown	F: CTGGCCTGTATCTCGCTCTG R: TACTTGGACTAACCCGGACCT	(GT) ₁₃	61	141

 T_a , annealing temperature