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甘蔗品种 SNP 分子检测技术规程

Technical codes for SNP molecular detection of sugarcane varieties

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前 言

本文件参照GB/T 1.1—2020《标准化工作导则 第1部分：标准化文件的结构和起草规则》的规定起草。

请注意本文件的某些内容可能涉及专利。本文件的发布机构不承担识别专利的责任。

本文件由福建农林大学、广西大学提出。

本文件由广西标准化协会归口。

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甘蔗品种 SNP 分子检测技术规程

1 范围

本文件界定了构建甘蔗 (*Saccharum* spp. hybrid) 品种SNP分子标记指纹图谱涉及的相关术语和定义以及缩略语, 规定了关键要素、检测程序、基因型判断和真实性判定。

本文件适用于鉴定甘蔗品种的真实性判定。

2 规范性引用文件

下列文件中的内容通过文中的规范性引用而构成本文件必不可少的条款。其中, 注日期的引用文件, 仅该日期对应的版本适用于本文件; 不注日期的引用文件, 其最新版本(包括所有的修改单)适用于本文件。

GB/T 3543.2 农作物种子检验规程 第2部分: 扦样

GB/T 3543.11 农作物种子检验规程 第11部分: 品种质量 品种真实性鉴定

GB/T 6682 分析实验室用水规格和试验方法

GB/T 19495.3 转基因产品检测 核酸提取纯化方法

3 术语和定义

GB/T 3543.11界定的以及下列术语和定义适用于本文件。

3.1

多重 PCR multiplex Polymerase Chain Reaction, mPCR

在同一PCR反应体系里加上两对以上引物, 同时扩增出多个核酸片段的PCR反应。

3.2

连接酶检测反应 ligase Detection Reaction, LDR

在Taq DNA连接酶的作用下, 当左右两条寡核苷酸探针与目的DNA序列完全互补, 并且两条探针之间没有空隙时才能发生连接反应, 最后通过荧光扫描片段长度, 实现对SNP位点检测的反应。

4 缩略语

下列缩略语适用于本文件。

bp: 碱基对 (base pair)

CTAB: 十六烷基三甲基溴化铵 (cetyltrimethylammonium bromide)

DNA: 脱氧核糖核酸 (deoxyribonucleic acid)

PCR: 聚合酶链式反应 (polymerase chain reaction)

LDR: 连接酶检测反应 (ligase detection reaction)

SNP: 单核苷酸多态性 (single nucleotide polymorphism)

5 仪器设备

5.1 电泳槽及配套的胶配件。

5.2 PCR 仪。

5.3 全自动遗传分析仪。

5.4 微量移液枪 (2.5 μ L、10 μ L、100 μ L、1000 μ L)。

5.5 恒压电泳仪。

- 5.6 凝胶成像系统。
- 5.7 恒温水浴锅。
- 5.8 制冰机。
- 5.9 电子天平（精度 0.1 mg）。
- 5.10 酸度计。
- 5.11 高压灭菌锅。
- 5.12 高速台式离心机。
- 5.13 冰箱。
- 5.14 超净工作台。
- 5.15 紫外分光光度计。
- 5.16 酸浓度测定仪。

6 试剂与材料及溶液配制

除非另有说明，仅使用分析纯试剂。

- 6.1 水，GB/T 6682，一级。
- 6.2 乙二胺四乙酸二钠二水合物（ $\text{Na}_2\text{EDTA} \cdot 2\text{H}_2\text{O}$ ）。
- 6.3 氢氧化钠（ NaOH ）。
- 6.4 三羟甲基氨基甲烷（ $\text{C}_4\text{H}_{11}\text{NO}_3$ ，Tris 碱）。
- 6.5 盐酸（ HCl ），12.063 mol/L。
- 6.6 氯化钠（ NaCl ）。
- 6.7 β -巯基乙醇（ β -Mercaptoethanol）。
- 6.8 十六烷基三乙基溴化铵（CTAB）。
- 6.9 十二烷基磺酸钠（SDS）。
- 6.10 乙酸钾（KAC）。
- 6.11 冰乙酸。
- 6.12 无水乙醇。
- 6.13 三氯甲烷。
- 6.14 异丙醇。
- 6.15 异戊醇。
- 6.16 dNTP 混合液。
- 6.17 Ex-Taq DNA 聚合酶。
- 6.18 10×Ex-Taq Buffer，含 Mg^{2+} 25 mmol/L。
- 6.19 琼脂糖。
- 6.20 DNA 分子量标准。
- 6.21 DNA 分析仪专用分子量内标 Liz 标记（Liz500 Size Standard）。
- 6.22 DNA 分析仪专用甲酰胺（Hi-Di）。
- 6.23 DNA 分析仪专用电泳缓冲液。
- 6.24 0.5 mol/L EDTA 溶液：取 186.1 g $\text{Na}_2\text{EDTA} \cdot 2\text{H}_2\text{O}$ （6.2）溶于 800 mL 水中，加 NaOH （6.3）调 pH 至 8.0，加水定容至 1 000 mL，121 °C 高压灭菌 20 min。
- 6.25 1 mol/L Tris-HCl 溶液：取 60.55 g Tris 碱（6.4）溶于适量水中，加 HCl （6.5）调 pH 至 8.0，加水定容至 500 mL，121 °C 高压灭菌 20 min。
- 6.26 5 mol/L NaCl 溶液：取 146.1 g NaCl （6.6），加水定容至 500 mL，121 °C 高压灭菌 20 min。
- 6.27 CTAB 提取液：取 280 mL 的 5 mol/L NaCl （6.26）、20 mL β -巯基乙醇（6.7）、20 g CTAB（6.8）、100 mL 1 mol/L Tris-HCl（6.25）和 40 mL 0.5 mol/L EDTA（6.24），混合加水定容至 1 000 mL，4 °C 贮存。
- 6.28 SDS 提取液：取 100 mL 1 mol/L Tris-HCl（6.25）、25 mL 0.5 mol/L EDTA（6.24）、25 mL 5 mol/L NaCl （6.26）和 2.5 g SDS（6.9），混合加水定容至 500 mL。

6.29 5 mol/L KAC: 取 49.67 g KAC (6.10), 加水溶解, 加冰乙酸 (6.11) 调 pH 至 5.2, 定容至 100 mL, 121 °C 高压灭菌 20 min。

6.30 1×TAE 溶液: 取 5 mL 1 mol/L Tris-HCl (6.25) 和 1 mL 0.5 mol/L EDTA (6.24), 加 HCl (6.5) 调 pH 至 8.0, 加水定容至 500 mL, 121 °C 高压灭菌 20 min。

6.31 75%乙醇: 取 75 mL 无水乙醇 (6.12) 和 25 mL 水混匀。

7 引物信息及使用

甘蔗品种真实性检测SNP标记包括177个核心SNP标记, 见附录A。所用引物分为多重PCR引物、连接引物, 见附录B。

8 对照样品及使用

对照样品用于辅助确定送检样品在某个位点的等位变异, 宜与送检样品同时检测。

9 检测程序

9.1 样品准备

9.1.1 原则

送验样品的最小量应符合GB/T 3543.2的规定, 4 °C下保存2周, -20 °C下保存6个月, -80 °C下长期保存。

9.1.2 叶片

采集甘蔗叶片样品量应不低于3 g, 并用自封袋包装, 冰盒携带, 4 °C条件下保存。

9.1.3 蔗茎

采集蔗茎, 常温运送, 温室种植, 待长出真叶后采集叶片取样, 方法同9.1.2。

9.1.4 脱毒种苗

采样脱毒组培瓶苗, 在提取DNA前不开瓶。

9.2 DNA 样品准备

核酸提取按GB/T 19495.3的方法进行或使用试剂盒进行。提取DNA数量和质量符合PCR扩增要求, DNA无降解, 溶液紫外光吸光度 OD_{260}/OD_{280} 的比值介于1.8~2.0, 经过琼脂糖电泳检测具有清晰明亮的单一主带。调整DNA浓度为10 ng/ μ L备用。

9.3 多重 PCR 反应

9.3.1 177 个甘蔗核心 SNP 标记分为 4 个多重 LDR 体系进行检测, 见附录 C。

9.3.2 将配制好的 PCR 预混液 (见表 1) 混匀后, 分装至 96 孔板, 每孔 19 μ L。随后加入 1 μ L 样本 DNA 模板, 封膜并轻微振荡混匀。以 3 000 rpm 离心 30 s 后, 去除封膜, 换上 96 孔橡胶盖垫, 置于 PCR 仪 (5.2) 上。盖好热盖, 按表 2 程序运行。

表1 多重 PCR 反应预混合液配制试剂表

试剂	1 ×	100 ×
10×PerfectStart® Taq buffer	2.0 μ L	200 μ L
dNTP (2.5 mM)	2.4 μ L	240 μ L
MgCl ₂ (25 mM)	0.8 μ L	80 μ L
Probe Mix	2.0 μ L	200 μ L
HotStarTaq (2.5 U/ μ L)	0.4 μ L	40 μ L

表1 多重PCR反应预混合液配制试剂表（续）

试剂	1 ×	100 ×
水	11.4 μL	1140 μL
总体积	19.0 μL	1900 μL

表2 多重 PCR 反应程序

	变性	退火	延伸	保持	循环数
1 step	95 °C 2 min	—	—	—	1
2 step	94 °C 20 s	65 °C 40 s (−0.5 °C/cycle)	72 °C 1.5 min	—	11
3 step	94 °C 20 s	59 °C 30 s	72 °C 1.5 min	—	24
4 step	—	—	72 °C 2.0 min	4 °C	1

9.4 连接反应

将配制好的预混液（见表3）混匀后，分装至96孔板，每孔6 μL。随后每孔加入4 μL反应产物（9.3），封膜并轻微振荡混匀。以3 000 rpm离心30 s后，去除封膜，换上96孔橡胶盖垫，置于PCR仪（5.2）上。盖好热盖，按表4程序运行。

表3 连接反应预混合液配制试剂表

试剂	1 ×	100 ×
10×ligase buffer	1.0 μL	100 μL
Ligase Primer Mix (1 μM)	0.4 μL	40 μL
DNA ligase (50 U/μL)	1.0 μL	100 μL
水	3.6 μL	360 μL
总体积	6.0 μL	600 μL

表4 连接反应程序

	变性	连接	保持	循环数
1 step	94 °C 1.0 min	56 °C 4.0 min	—	38
2 step	—	—	4 °C	—

9.5 上机检测

将连接产物（9.4）加入到70 μL水（6.1），充分振荡离心后，取3 μL与0.5 μL Liz500 Size Standard（6.21），8.5 μL Hi-Di（6.22）混匀，95 °C变性5 min后用全自动遗传分析仪（5.3）检测。

9.6 数据分析

使用基因图谱分析软件，如GeneMapper 4.1进行数据分析。

9.7 数据记录

9.7.1 根据峰型图判断出该位点的基因型。数据记录方式为具体基因型，数据记录为 X/Y ，其中 X 、 Y 为同一位点上两个不同的等位变异，即纯合基因型记录为 XX 或 YY ，杂合基因型记录为 XY ，缺失位点记录为 NV 。

9.7.2 单位点基因型判断的峰图见附录 D，位点峰图荧光及位置对应关系信息见附录 E。

10 结果判定与表述

10.1 判定规则

当差异位点数 ≥ 5 时，认定为不同品种；当 $1 < \text{差异位点数} \leq 4$ 时，认定为相似品种；当差异位点数 ≤ 1 时，认定为同一品种。

10.2 结果表述

送检样品_____与对照样品_____采用全自动遗传分析仪检测，检测点数为____，差异点数为____，判定为_____。



附 录 A
(资料性)
核心 SNP 标记信息

表A. 1明确了核心SNP标记的位点及物理位置。

表A. 1 核心 SNP 标记位点及物理位置

标记物序号	SNP序号	染色体	等位基因	物理位置
1	SNP001	Chr01Ad	G/T	98927487
2	SNP002	Chr01Bd	G/A	15427795
3	SNP004	Chr01Bd	C/G	83284628
4	SNP006	Chr01Cd	T/C	29026303
5	SNP008	Chr01Cd	T/G	60532461
6	SNP010	Chr01Dd	C/T	14036732
7	SNP011	Chr01Dd	G/A	27181568
8	SNP014	Chr01Ed	G/T	49906396
9	SNP015	Chr01Ed	A/G	92906808
10	SNP019	Chr01Fd	T/A	52970577
11	SNP023	Chr01Gd	C/T	65229803
12	SNP025	Chr01Gd	G/A	103631468
13	SNP028	Chr01Hd	C/T	53629854
14	SNP031	Chr02Ad	T/A	67604996
15	SNP032	Chr02Ad	G/T	109402275
16	SNP034	Chr02Bd	G/A	27051038
17	SNP036	Chr02Bd	G/A	109107159
18	SNP037	Chr02Cd	G/A	13040684
19	SNP039	Chr02Cd	G/A	40363035
20	SNP040	Chr02Cd	G/T	56021099
21	SNP042	Chr02Cd	G/A	93215895
22	SNP043	Chr02Dd	T/G	14002919
23	SNP045	Chr02Dd	T/C	64726849
24	SNP046	Chr02Dd	C/T	89683812
25	SNP048	Chr02Ed	C/G	25656406
26	SNP049	Chr02Ed	T/C	50967467
27	SNP050	Chr02Ed	A/T	61625751
28	SNP052	Chr02Fd	G/A	47996197
29	SNP053	Chr02Fd	T/A	72527414
30	SNP055	Chr02Fd	G/A	93612349
31	SNP059	Chr02Gd	C/T	49357429
32	SNP060	Chr02Hd	C/T	19770932
33	SNP062	Chr03Ad	C/T	46899012
34	SNP063	Chr03Ad	A/T	70246368
35	SNP065	Chr03Ad	A/T	92399480
36	SNP066	Chr03Bd	C/A	9497243
37	SNP070	Chr03Bd	C/T	68119550
38	SNP071	Chr03Bd	C/A	88723159
39	SNP076	Chr03Dd	G/A	7650255
40	SNP077	Chr03Dd	C/T	32103524
41	SNP079	Chr03Dd	T/C	72270975
42	SNP082	Chr03Ed	G/A	60316564
43	SNP084	Chr03Fd	C/T	26668241
44	SNP085	Chr03Fd	C/T	38225777
45	SNP086	Chr03Fd	G/A	46866510
46	SNP087	Chr03Fd	C/T	81032285

表A.1 核心SNP标记位点及物理位置（续）

标记物序号	SNP序号	染色体	等位基因	物理位置
47	SNP088	Chr03Gd	C/T	10080606
48	SNP089	Chr03Gd	C/T	48090291
49	SNP090	Chr03Gd	T/A	55799250
50	SNP091	Chr03Gd	A/G	76354318
51	SNP092	Chr03Hd	C/A	15548463
52	SNP095	Chr03Hd	C/A	30818770
53	SNP096	Chr03Hd	G/A	51410067
54	SNP100	Chr04Bd	G/C	10534710
55	SNP101	Chr04Bd	C/T	21999437
56	SNP102	Chr04Bd	C/T	45094854
57	SNP103	Chr04Bd	C/A	53585843
58	SNP104	Chr04Cd	A/T	11023076
59	SNP107	Chr04Cd	C/G	63263314
60	SNP110	Chr04Dd	G/A	22140206
61	SNP117	Chr04Ed	C/T	48999321
62	SNP118	Chr04Ed	C/T	57875105
63	SNP119	Chr04Fd	C/T	10841387
64	SNP120	Chr04Fd	A/G	18719574
65	SNP121	Chr04Fd	G/T	27513900
66	SNP122	Chr04Fd	A/G	48145889
67	SNP123	Chr04Fd	A/G	65294690
68	SNP124	Chr04Gd	T/A	11166601
69	SNP125	Chr04Gd	G/A	17446948
70	SNP127	Chr04Gd	C/A	50454464
71	SNP128	Chr04Gd	C/G	60030520
72	SNP129	Chr04Gd	C/G	68004221
73	SNP131	Chr04Hd	G/A	30931620
74	SNP132	Chr04Hd	A/G	60062410
75	SNP136	Chr05Ad	A/T	90037140
76	SNP138	Chr05Bd	G/T	21194374
77	SNP140	Chr05Bd	C/T	83579887
78	SNP141	Chr05Cd	T/C	17695208
79	SNP143	Chr05Cd	T/C	79763218
80	SNP144	Chr05Dd	C/G	10620329
81	SNP145	Chr05Dd	T/C	18709310
82	SNP146	Chr05Dd	A/C	27929217
83	SNP149	Chr05Dd	G/T	73828003
84	SNP150	Chr05Ed	T/C	17053685
85	SNP151	Chr05Ed	T/C	25284327
86	SNP153	Chr05Ed	T/A	51975298
87	SNP159	Chr05Fd	A/G	57819136
88	SNP160	Chr05Gd	A/G	12636858
89	SNP163	Chr05Hd	G/A	11262724
90	SNP165	Chr05Hd	C/T	35117770
91	SNP167	Chr06Ad	T/C	11543900
92	SNP170	Chr06Ad	C/T	79400288
93	SNP172	Chr06Bd	A/G	26967160
94	SNP173	Chr06Bd	A/G	45019909
95	SNP177	Chr06Cd	G/A	16509926
96	SNP182	Chr06Dd	C/T	47676585
97	SNP183	Chr06Dd	A/G	57325828

表A.1 核心SNP标记位点及物理位置（续）

标记物序号	SNP序号	染色体	等位基因	物理位置
98	SNP189	Chr06Fd	G/A	12006000
99	SNP190	Chr06Fd	G/T	19208691
100	SNP191	Chr06Fd	A/C	33541175
101	SNP192	Chr06Gd	G/A	8789425
102	SNP193	Chr06Gd	A/C	15425203
103	SNP194	Chr06Gd	A/G	24291447
104	SNP195	Chr06Gd	C/T	31454956
105	SNP196	Chr06Gd	A/C	37677815
106	SNP198	Chr06Hd	A/G	11755209
107	SNP201	Chr07Ad	A/C	30646071
108	SNP202	Chr07Ad	G/A	50071154
109	SNP208	Chr07Cd	G/C	17715388
110	SNP211	Chr07Cd	G/A	38476083
111	SNP214	Chr07Dd	G/A	5344724
112	SNP216	Chr07Dd	A/G	39399976
113	SNP223	Chr07Ed	T/C	51616280
114	SNP224	Chr07Ed	C/T	58995011
115	SNP226	Chr07Fd	A/G	40421759
116	SNP229	Chr07Gd	C/T	30367130
117	SNP230	Chr07Gd	C/T	47823294
118	SNP231	Chr07Hd	C/A	5974408
119	SNP234	Chr07Hd	C/T	42390113
120	SNP235	Chr07Hd	A/T	46002261
121	SNP237	Chr08Ad	T/C	22503753
122	SNP238	Chr08Ad	C/T	30303448
123	SNP243	Chr08Bd	T/A	49018456
124	SNP244	Chr08Cd	C/G	14461145
125	SNP246	Chr08Cd	A/G	57528551
126	SNP247	Chr08Dd	G/A	5783072
127	SNP248	Chr08Dd	C/A	21327050
128	SNP250	Chr08Dd	T/G	40230743
129	SNP260	Chr08Fd	A/T	47714583
130	SNP262	Chr08Gd	G/A	5521298
131	SNP263	Chr08Gd	T/C	17378795
132	SNP264	Chr08Gd	C/T	29360670
133	SNP265	Chr08Gd	G/A	38549239
134	SNP267	Chr08Hd	T/C	29788553
135	SNP268	Chr08Hd	G/A	43204111
136	SNP269	Chr08Hd	C/T	46984854
137	SNP271	Chr09Ad	C/G	52687978
138	SNP272	Chr09Ad	C/T	58344340
139	SNP274	Chr09Bd	G/A	10726372
140	SNP275	Chr09Bd	T/C	15592767
141	SNP276	Chr09Bd	A/G	28210556
142	SNP278	Chr09Bd	T/A	73786852
143	SNP280	Chr09Cd	G/A	35653357
144	SNP281	Chr09Cd	T/C	42194421
145	SNP282	Chr09Cd	T/C	63569281
146	SNP283	Chr09Cd	C/T	70557641
147	SNP284	Chr09Dd	C/G	8593220
148	SNP285	Chr09Dd	C/T	22979077

表A.1 核心SNP标记位点及物理位置（续）

标记物序号	SNP序号	染色体	等位基因	物理位置
149	SNP288	Chr09Ed	T/C	16668695
150	SNP289	Chr09Ed	G/A	31441159
151	SNP292	Chr09Fd	G/C	8305974
152	SNP293	Chr09Fd	C/T	21419258
153	SNP295	Chr09Fd	T/C	35203776
154	SNP296	Chr09Fd	G/A	62895631
155	SNP297	Chr09Gd	A/G	29917254
156	SNP299	Chr09Gd	C/T	58110898
157	SNP300	Chr09Hd	C/A	6518299
158	SNP301	Chr09Hd	C/T	12810399
159	SNP304	Chr10Bd	A/G	6500443
160	SNP307	Chr10Bd	G/A	52600442
161	SNP308	Chr10Cd	T/C	13547422
162	SNP309	Chr10Cd	A/G	25935024
163	SNP310	Chr10Cd	C/T	40676298
164	SNP311	Chr10Cd	C/A	52537986
165	SNP312	Chr10Cd	G/A	62369477
166	SNP313	Chr10Dd	C/T	7759159
167	SNP314	Chr10Dd	C/T	18045417
168	SNP315	Chr10Dd	G/A	37706115
169	SNP318	Chr10Ed	C/T	26137885
170	SNP320	Chr10Ed	G/T	50872486
171	SNP321	Chr10Ed	A/T	55099959
172	SNP322	Chr10Fd	T/C	8402636
173	SNP323	Chr10Fd	C/T	41296315
174	SNP325	Chr10Gd	C/A	28266076
175	SNP326	Chr10Hd	A/C	12314516
176	SNP327	Chr10Hd	C/T	13745144
177	SNP328	Chr10Hd	G/A	20326048

附 录 B
(规范性)
多重 PCR 引物、连接引物

B.1 多重 PCR 引物信息

表B.1规定了多重PCR引物信息。

表B.1 多重 PCR 引物信息

序号	引物名称	序列	长度 (bp)	PCR长度 (bp)
1	100F	GCAGGACGCAATTCTGTTATCAT	23	100
	100R	TAGTGACTTGTGGCATGTTGTC	24	
2	101F	GCCACAACATTCAAATACCCACA	23	91
	101R	AGAGCCGCTTGAGCTAGCAAT	21	
3	102F	GAACATGGAATTTAGGTTTGGTGCT	29	108
	102R	GAGTATTGATCAATAAAAGACGGTGTGT	28	
4	103F	CCTGGCCATATGTTCTAAGGATAGC	25	98
	103R	ATTGACAGAGCAGTAGTGCCACCAG	25	
5	104F	GTCTGTCCTTAACACTCCTGCTCCTT	26	181
	104R	AAGTGCACATGTAGTGAACAACC	24	
6	107F	TTCCATGCGTAACTGTCATAGCTG	24	107
	107R	TCGTCCATGTGGTGTGACCAGTA	23	
7	10F	GTTTGTTCACACCAAAATTGAAGGA	25	124
	10R	CAAATGAATGATCAAAGTGTAATGTAGG	28	
8	110F	GGATGATTTCAAACCTTTGGACGTGTAG	27	90
	110R	AGATTTTACTGTTTGGTTGGATGCTTG	27	
9	117F	GATGCCAAAATGATAAAGCACTGCTAC	27	115
	117R	AGGAACTTTGGGCTTCTTATTCCAG	25	
10	118F	GAAGATAAGTTTCAAGGCACTGGTTTAG	28	123
	118R	CGAGTACCCTGTGGCAAGAGCTA	23	
11	119F	GAACCAGCAGATCGATATATGTTGAAG	27	108
	119R	ATGCACTTGGACATGCATGGAGTA	24	
12	11F	TAGTCGAAATGGATGGTACAAAATGC	26	121
	11R	TGATGAGTTGATGGGCAATACA	23	
13	120F	CTCTAGTGCTTAATTGCTTATTTTGTACC	30	130
	120R	GGAATGTTTCGATGATCCTTACCAAT	25	
14	121F	TGAAATGGTTGTTAGTTATCTGGTAAG	28	112
	121R	AACTACACATTTGGAAGACAGATAAATG	28	
15	122F	CCCATTCTACTTTCTATTTGCAATGTC	28	91
	122R	TGTCAACAAAACCATAGGAATGCA	24	
16	123F	TTTCGGTTAGCCAGCGTGATTA	22	97
	123R	CCCACCTGGCTTGGAGACAC	20	
17	124F	AGGTACTTAAATTGGCCCTGGATAG	26	102
	124R	AAGCAGGGATGTGACAATTAATCAAG	26	
18	125F	GTAGCTTGTTGTACCTTACCGCATCTA	27	130
	125R	AGCTGAAAGATTAACCTGAGGAGCCA	26	
19	127F	CACTTCGTTCAATTCCGAGGCT	22	108
	127R	ATGGCGATGCAGACATTTTCAG	21	
20	128F	CAAAACATGTGCCACCGTACACTA	24	116
	128R	ATCACGTAGCTCGTCTCCCCATT	23	
21	129F	ATGAGGCGCACATCATATAAAGATT	25	188
	129R	CGTTAATTAGCATCTTGCCAAAAAAGA	27	
22	131F	TTGTAAGTGGTAAACTTTCCAGGTAG	27	113
	131R	GCAGAACCAGCTAGAATGAGAATCA	25	

表B.1 多重PCR引物信息 (续)

序号	引物名称	序列	长度 (bp)	PCR长度 (bp)
23	132F	ATGACAAAGGAGCCAAAGCTTCA	23	93
	132R	GCAGTACACGTTTAGCAAATCAAGAC	26	
24	136F	CATGTGTCATATAAACAGGGGAGCA	25	96
	136R	ACTATATATAGCTAGCCCGGCACA	25	
25	138F	GCACAAGTAATCCAAAGTTTGAGGTC	26	101
	138R	AACCGGCCACTTGATATCCATC	22	
26	140F	ATTTTCTATCCACCACATGGAATCTG	26	149
	140R	AAAGGAGTTGGAGGTTGGGACT	22	
27	141F	GTAAGTTTCTTATGCTGGATTGTC	25	78
	141R	GCGTCTGATGTTCTAGTCAGTGTGA	25	
28	143F	TCGACCTGTGCCAATGCT	19	136
	143R	GCAAATTATGTACTCAGTTATCCACCA	27	
29	144F	ATCATTTGAAATTTACGAGCGATA	25	137
	144R	GACTGATTTAATATATTGAGGCATTGTA	28	
30	145F	CGGTGCATAGCACTCATTCAAC	23	104
	145R	GGAGGTTGGCAGAAAATAGAATGC	24	
31	146F	GATTCAAACATTCAAGCCAATACCTTAC	28	147
	146R	TTCAATGTAGCAAAGCCTCTAAATTCAC	28	
32	149F	AAGAACGGGTAGGCGATTCC	21	100
	149R	TGAGATATGAGGGGATTAAGCATC	24	
33	14F	AGTTTGGCAGAAAGTTAGCGAAAG	24	136
	14R	GACGACACTAGTTTACTGCCCAAG	24	
34	150F	TCCAAAACATGCTAATGGAGATCG	24	127
	150R	CTCCTATCAGCATCAGCAAGGAAA	24	
35	151F	GCTTGGGAAATAGTGAGCTTG	22	122
	151R	GTCTGATTCTGGTACAGCTCTTAGGT	26	
36	153F	GCTATGTTCTTGGCGATCAACTC	23	118
	153R	GCATCGACCATTACCTACTACGCT	24	
37	159F	CCCAACCTAATGGAGAACAAAGGTT	24	154
	159R	GCCAAATGGCTCAGTAGGGT	21	
38	15F	AGGGGGGAAAAGGAGGTAAAGTTG	24	136
	15R	TCTTCAGAAAAGAAGAGACCCCAAT	25	
39	160F	TAAACATGGCTAGCAGGTTGTGTT	24	83
	160R	GGGGTAAAATTACCACTTGAGGA	24	
40	163F	GGTTTGTGAAGGTTGATTTGAG	23	94
	163R	TTAAATGTGTGACAACCTGCCACTTGA	27	
41	165F	TTCTTCACACGAAC TAGCAAGCATT	25	145
	165R	CGATACACAAC TGGTAGATGGAGAGTC	27	
42	167F	ATGGATCCCAATAGATTAGTGACAG	26	111
	167R	CTGCCATGAGAGTTCCCAAATTC	23	
43	170F	CTGTCACCTATGTATTTACATAAAACAA	28	151
	170R	GCTCCAAAGTACATTGATTCCCTTAG	26	
44	172F	CAGGTATCAACACTAAGCTATGGACCT	27	165
	172R	ATATCCTGGCTGAATGCTAGAATGG	25	
45	173F	CACACCTGCAATCAAAATAAAGTGTTAG	28	137
	173R	CCTACTTAGCTTCTTCTTGACCGATG	26	
46	177F	AGCTCTCGGTGCATTCAATTCA	22	124
	177R	GCTGTCCATTGAGCAGGATTGTA	23	
47	182F	GGTAGCGACGAGGAACGTGA	20	74
	182R	CAGCTGTTGACAAGTGCAAGCTC	23	
48	183F	AGGCCCACGGCTTACCATTAAAC	22	80

表B.1 多重PCR引物信息（续）

序号	引物名称	序列	长度（bp）	PCR长度（bp）
49	183R	CCCAGTGCTCAGGGGACTAAA	21	155
	189F	AGTGTAGGTTGCAGAGGAGCCAAT	24	
	189R	AATCGCAAGGTGCGGTAGGTG	20	
50	190F	CTTCTATCCATTCCGTTAGAGTTTGC	26	101
	190R	ATATTAGACGCGCACTTGTTGA	23	
51	191F	GCTTCTTTTGCACCTGGTTACAGAC	25	107
	191R	AACTACAAGAACAAATTGAGGCAAGAT	27	
52	192F	ACTGTATGACCCACATGGAATAACATT	27	142
	192R	GAATAGGGATGCTCTATGCTGCTGTA	26	
53	193F	CACATTGTTCTGCTGTGGATAAC	24	130
	193R	GACCATCCAAGAATGTCATGAAAAG	25	
54	194F	AACCACATATCACATCGGCATTC	23	103
	194R	GTGAATGACTCTGTAGGAGCTGCAT	25	
55	195F	ACCAGAGCCTGTGACGAATCA	21	81
	195R	ATGTCCGCTACTGGCGTTTC	20	
56	196F	CGGAAAGGTGTGGCGAGATAA	21	143
	196R	CGGCCAGGAGATGTCAAGGA	20	
57	198F	GTGCTTGCTTATGTGGCAAGGATAG	26	94
	198R	CTAAACTCACTATTTTGCGGGACA	25	
58	19F	GGTGAATCGCCACAACCTG	19	129
	19R	GTTTGTGCTTGTTACTCTTGGTGATCAT	28	
59	1F	TCTAGATGCCTAGGTTAGAGGCCAAT	26	114
	1R	GCATGTTCTTGGGAGCGTCTA	21	
60	201F	CACTCGATTGTATCACC GTCTG	23	102
	201R	ACGCACTGAGGGATAAGTAACCGTA	25	
61	202F	CCGGGAGAGATGTGAGAGAGAAC	23	81
	202R	CAGATGTTTCGTCGAGGTACAGATTC	25	
62	208F	ATTTGCAACCTAAATGCAAGGAGT	25	113
	208R	TTTCAATAAGTCAGGTAGCATTGTG	25	
63	211F	CTCTTGTTGAGCTTGAAGTGGCAAT	25	137
	211R	CAGGTGAGCAAGGTCAGGACGTA	23	
64	214F	ATGCAGTGCTTGAAGAGAAATGTAGTG	27	128
	214R	CCCTCCTTTCTCAGATCTTTTGAACA	26	
65	216F	CTTGGCGAACACCATCTCAATTA	23	132
	216R	CTGGGTTTTAGGGTGCCTTC	21	
66	223F	GTGTCATCCCCTCTCGAGTCAC	22	160
	223R	TCCTTTGGACAACAAAAAGAACGA	24	
67	224F	GAGGTTTCTGCTTGGGCTCAG	21	120
	224R	CTTGCACTCAACCTGCTAGGAAAT	24	
68	226F	GTAACATAAGCCTATCACATCTGGCTA	27	131
	226R	ATTATAGCCCAACCTACCACATTCT	26	
69	229F	ATACCGCTGCAGCTCCAGAAAC	22	87
	229R	TCCAGTTTTCCAACAAGTACTGTCATC	27	
70	230F	CTCATAGAGATTGGAGGGGAATGAGAG	27	73
	230R	AATCCCTCCTAACCTTCTCAAATG	25	
71	231F	AGCAACAACACTGGATTGCTTCAC	24	134
	231R	ACTCGCTGAACAAGATTGTCGAAAC	25	
72	234F	CCACTCCCTAACCTGACGCTGT	22	154
	234R	GTGACGCAAGCAACTGAGAGAAC	23	
73	235F	CCGAGGTTGGTAGCTAGCGTTT	22	87
	235R	TGCCTCTATATAAGTGCAACCAC	23	

表B.1 多重PCR引物信息 (续)

序号	引物名称	序列	长度 (bp)	PCR长度 (bp)
74	237F	AATCAAGAGTGTGGGCAATCCTA	24	108
	237R	CCTCGGGGAGATGGCTGAAT	20	
75	238F	GGCGTATACTCTGATGCATTTTCAAC	26	140
	238R	TGCAAGAAGCTAACTGTCAGTCAAAG	26	
76	23F	CTTTATGGTGGGGAAGAGGATCAAG	25	138
	23R	GTGACTGATATCCCATCCACATTCTC	26	
77	243F	CATCAAGTATTCTTGGGCGGAGATA	25	141
	243R	CCATTTCTAGACATAAATGTTGACGCTATT	30	
78	244F	TTCACCTTAGAGTGACGCACTTG	24	153
	244R	TACTACTGGCCAACGACGTTTCG	23	
79	246F	CAACTACAAAATGGTCTTAGAACTACAC	28	107
	246R	CATCTGCAAAACATGCACCTGATATAC	27	
80	247F	GGCATGAATGTATTAAGGTCTACAATC	27	149
	247R	GACATGGTTCGTAACACGGAAAT	23	
81	248F	GTAATCGGATTGGCCCATTG	20	86
	248R	GGCACTGAACAGAAGATTGCAG	22	
82	250F	CCTATCAAAATAAATACTTGGCCACACA	26	84
	250R	GAGCCAGATAGGCAAAGATCA	22	
83	25F	AGACAGAGGAAGACCGATGCA	21	189
	25R	GACGGCAGGAGGTTGAT	18	
84	260F	AAAAAACTTACCTCTGTGCGCATTTA	26	91
	260R	CTGCTCTAGCCAATCTCGTACCAC	24	
85	262F	CTACTTCATGATGCTTTGCACGA	23	89
	262R	ACGACGAACAGAACGCTGATGAT	23	
86	263F	TCTGATACGAATCAAATGCACGAT	24	116
	263R	GATTAGAATTGTGGTCTGCCTCAG	25	
87	264F	TCATTGACCAGCAATCTTGC	21	105
	264R	TGTGCAAGTAAATTACAAGAGCGAAC	26	
88	265F	AAATTAAGCCGAGTATGAAGTATTG	26	103
	265R	CTAGGGGCAACCGTGTAAAGTG	22	
89	267F	GCCATAGTGATGGTGACATAG	23	122
	267R	CGTCTGAAATCGGATGTCTAGGAAT	25	
90	268F	CCACATACTATTCACTAAAGCGTTG	28	101
	268R	GTTTCAAATTGGTGCGTGGAT	21	
91	269F	CTTAGATTGAAGATTGTACACATAGATT	29	120
	269R	GTATTCTTCATCCAAGAGTATATTGAGGT	29	
92	271F	TGTGTAACCGGTTGGGATCTTC	23	163
	271R	GGAACGTGGTACTCTACGTCTAGTTG	27	
93	272F	ATGTAGTGGAGGATCAACCCATGAT	25	157
	272R	TAAACTGCCCTCTGGCTTGCGACA	24	
94	274F	ATATCGTAGATATGCCTCTGCTCTGG	26	86
	274R	CTTTCCTATGCTTCAAATGATACGACT	27	
95	275F	ATAGTACTGAAATTCCTTGTCTGTGTAGC	29	110
	275R	TGTGTAGTGAACAAATTCGCGATAATC	28	
96	276F	AGGGGCACAAAGAGGTTGCTCTA	23	143
	276R	TTATGTCCGATTGAGAAATCCAACCTC	27	
97	278F	CGGCGACATCCACTCTTACA	21	145
	278R	CATCTGTATCGTCTCTGATGAATTGG	27	
98	280F	TGCAATGCACTCCTACGGTACTC	24	127
	280R	GGCTTGCTGGATGCAACTGT	20	
99	281F	TTCTGGACCATAACGACCACTG	23	151

表B.1 多重PCR引物信息（续）

序号	引物名称	序列	长度（bp）	PCR长度（bp）
100	281R	AAGCTTGATATCACATAGAGGCACAT	26	97
	282F	GATGATTATCCCAAGATTGCCTTG	24	
	282R	CACCTCGCGTCATACAACGTCT	22	
101	283F	TTGCTACAATATTTGCGGAGGAAG	24	124
	283R	GTAATGGACTAGTTTATCAATTCCTACTG	29	
102	284F	CCTGTCCATTGCAACCCAATATG	23	128
	284R	AGACGGGAAGTGGGCTGTAAATAG	24	
103	285F	AAGTGCCTGGTAATGAGATCCTG	23	194
	285R	GAAACTCAAGCTGCAACTCAGTCA	24	
104	288F	CTGAAATTCTCCAATAGGCTGTTGAT	26	167
	288R	ACGTTACCACATCAGCAAAATACCAT	26	
105	289F	GGCTCCTTACAATCATGGCAAC	23	162
	289R	ACCTCAGCACTCTTGACAGCATC	23	
106	28F	TAGTGCCATATGTGTATTGTACCGTTC	27	120
	28R	CAATCATAACTTACTATCAAGATGAACTG	29	
107	292F	CAACGTTGCACTTGACAGGAGT	21	149
	292R	ACGACGGACGGTGACTCAAG	20	
108	293F	GAGGACAAAGGAAACCCATACGTG	24	191
	293R	GTCTATCCAACCTCGATCTCGTGCA	25	
109	295F	TTGGTATTAGGAAAAGGCACATAGTTC	27	70
	295R	TGTGCCTGGGAATATGTTTATGTC	24	
110	296F	GAGGATCCACAAATTGCAGCTCT	23	115
	296R	ACTATCCAAGAGCATACGCACGAC	24	
111	297F	AAGGCATACTGTGTACAACTCCCAAT	26	160
	297R	GGCTAGAGGATGCTACATCTTTGGTG	26	
112	299F	GGCAATAAATTAGCTCTGGGTGT	24	205
	299R	GGTGAGAAGACAAACCTAATCATCA	25	
113	2F	GTAGGAGATCAATAACGACGAGACAAA	27	162
	2R	CCATGACGACGCAATAGTTGGTAC	24	
114	300F	CTCGTCCTGGACTTGGAGGTAG	22	121
	300R	ATGCTGATACCCAAATATGAACTCCA	26	
115	301F	ATGAACGTTGACGTCGGATGC	21	125
	301R	GAGAGGTTCTAGAGTTGCTTTTCATCA	27	
116	304F	CCTTCCAAACGTAGAGGCCATACT	24	128
	304R	AGTTAGGGATCGAAATAGGACATCTG	26	
117	307F	AGTGGTTTTCAAGTTGGACCTCA	24	117
	307R	AGGTACCCTGGGTCCATATCAC	22	
118	308F	TTACCCACAACCTAGTGCCACAACA	24	110
	308R	GATATCAATGAGTGTGCTGCCAAAC	25	
119	309F	GTTGCATGTGAAGTCATTGCTTATG	25	170
	309R	AGCTCTAATAAAAAATAGCGGCAAAAGC	26	
120	310F	GGCGTTGAATTAGTGATAGGGATTG	25	139
	310R	CCTCTATCTGATATTTGCCCAACAAC	26	
121	311F	ATACTTGATATACGTGGAACAGAG	26	167
	311R	CAAAGAGCCGATCAGCCAGT	20	
122	312F	GGACAGATGCCGGGCTAAGAT	21	113
	312R	GAACCTGATAACCTAATAACGGTGGA	26	
123	313F	TAGAGAAGGGTTTTTTCTTGTAAC	27	158
	313R	CACATTAGTGACGGTTCAAGATGTA	25	
124	314F	GACCGACGGTGATGAGAAACAG	22	117
	314R	CCAATCCTGGTGTCCAGTAGGAG	24	

表B.1 多重PCR引物信息 (续)

序号	引物名称	序列	长度 (bp)	PCR长度 (bp)
125	315F	TGGTACTCCAACACACCACTGATAAT	26	160
	315R	GTCGTTTTGATCAAGTTGGCTCAG	24	
126	318F	CATCGTAGGTAGATGATCTCAACTTTT	27	165
	318R	TTGGTGTGTTGCCCAATTCAG	21	
127	31F	ACGAGTTCAGGTGATGCAGA	21	159
	31R	GCAGCTGAACGAGCTGTTCCCTA	22	
128	320F	AACTCTGAAAATGACCAGGTGCTAAC	26	111
	320R	GCTTTGGTAGAGGAATCATTGGTG	24	
129	321F	TTCAGAACTTCAGCGTATATGCACCT	26	138
	321R	CACCTTTAGTCAAGCTGACCCTGTAAC	27	
130	322F	CTTTATTGGCAGCGACGACCTA	22	70
	322R	CCCGTGCTAGCTGTCGAGGT	20	
131	323F	GACACGCCGGTCACAGAGATA	21	105
	323R	CAGGTAAATGCCATCACCAGAGTC	24	
132	325F	TCCATCACTTGATCCCAACGAG	22	83
	325R	CCTTCTAAGCAGACACAGATTCTACTA	27	
133	326F	CAAGAGAGTTACAAAACCGACTTTACA	27	144
	326R	GTTGTTGTTGCTGTAGGGGCTAA	23	
134	327F	CTGTGTGCTGGTTTTATCCGTTTATAG	27	144
	327R	ACACGCTGTGCATCAATCAAGTG	23	
135	328F	ATCGCCATCCATCAGACACG	20	120
	328R	CGTGCGACAGACGTGTCCTA	20	
136	32F	CTTGTGCTGATTGCTGCTGCTA	22	147
	32R	CTTTGTTTAATTCACACGATATCATT	26	
137	34F	TGTGGCGGTGTGGGTAGCA	19	89
	34R	GCTGCTTGGTGGGAGCTT	19	
138	36F	CTTTGACTTGGGCATCGAACT	21	100
	36R	TCGCTCCCTCCACACTACG	19	
139	37F	GCCAAATCCCGTATACGCA	20	139
	37R	TTTTGTCCACGTTATATTTTCCTCG	25	
140	39F	CAAAAATTGACACACCTTATTACAGG	27	141
	39R	GAAAAATTATCAGTTCATGAGGGGAC	26	
141	40F	CCTCTGTGTGTTTCTTCCAAAATACC	26	166
	40R	CCATGTACCAAATTTACATCGTTTCA	26	
142	42F	TTGGGGCGGTGCGATTCTCG	19	111
	42R	AACGGAGCAAGCTATCACTCACC	23	
143	43F	GACAAGGGACATAGTTGAGCCAAA	24	143
	43R	GTGCTCTTATAATTTGGACAGTTCTGTGTAC	30	
144	45F	CAGAAACCACACTGTTCTAGACACGA	26	108
	45R	CGAGTTCTCTGGAGTTGCTGG	21	
145	46F	CACTACAAATATCATTCTGCTGAAGAC	27	130
	46R	GTCAGGAGATTGAAAGCAATATAGATG	28	
146	48F	CGAAACACTTGGCTCTATTATTGAAGTTAC	30	126
	48R	GAACAACATGCAGCATCCAAAGTA	24	
147	49F	AAAAACGACATTTAAAAAGGACCAG	25	127
	49R	TTATTAAGTTATTACTATTACCGTGCTA	29	
148	4F	GGAACCTTTTCGATTGTCAG	21	298
	4R	TGCAGGTAACGTGATGAGTAAACTG	26	
149	50F	TGGTTTATGCATTAGTTACATATTTGG	27	103
	50R	GAGTTCAACAGTTAATAACAACATACAGA	30	
150	52F	GGCACAAGGAAGGCAAGAGTG	21	91

表B.1 多重PCR引物信息（续）

序号	引物名称	序列	长度（bp）	PCR长度（bp）
151	52R	TTCACCTGTTGCGCTTCCTGTA	22	159
	53F	CATGCTGGAACACACAGGAAGATA	24	
	53R	TAGGACATCCCCTAACCAGTAGTCTAT	27	
152	55F	TTTTAGAAATCACATCTTATATTATGGAAC	30	131
	55R	TCTGGAGCAAGTTGTAGAATTGTACTT	28	
153	59F	CCCATCTCTGCTACACTCTTCTCCATAC	27	149
	59R	GATTCTCTAGTTGGCTATAGTTGGC	25	
154	60F	CTGTGAAGTCCCTGTGTTCCAAAC	24	158
	60R	ATGCCCAAAGCGGCTATTAC	20	
155	62F	CAACGCTTGTGTGGTGAACGA	21	179
	62R	CTCAAGATAAGGAATGAATGTCAAAGA	27	
156	63F	GGGAAAAAACTCAGATCTAGCTTACC	27	114
	63R	AACTTAGAGAAATTTGACTCTGGATGC	27	
157	65F	ACCCAGCGATTAAAGCAACAATTC	24	89
	65R	CAACTCACACTGAAGCAAGTGTTTT	25	
158	66F	TGGGGGAAAGAACAAGAAAGTTTG	24	113
	66R	TCCTAACAGTAAGTTGTTTCTCATCC	26	
159	6F	CTGGCGCAGGTAAACCCTA	20	88
	6R	GTAGCGCGTCGTCAAGA	19	
160	70F	ATGTCCATTGTAGAGCGCTGAT	23	173
	70R	AGCAAATGCAGATGATTGAAGAA	24	
161	71F	GATGACATGTAGATTAGTTGAAGAGATT	28	136
	71R	ATTCACATGGTTGCTATGCTACTC	24	
162	76F	GATGAAATTGCCTTAGCCTCATATTTT	27	129
	76R	GTCTTTGCTATTTGGTTAGTACTAGGTC	28	
163	77F	CTTAGCTTGCCTACCGTGT	20	124
	77R	CCATCTCTTAACCTTTTATTATTGATTTCC	29	
164	79F	GAACAAGTTATTTGATTCTGACCCAT	26	114
	79R	GATAAGGTGCTTACTCTTGCTGGT	24	
165	82F	TAATCCGACAATGGATGACACC	22	72
	82R	TGGCGCTGCTCCTTGTAAC	19	
166	84F	CGGTGTCTATCCTAGCGCTTCA	22	142
	84R	AGGCATTTGATGTACATGTGCTG	23	
167	85F	TGAGTCTCCCGTGAGCAGCAG	21	99
	85R	CGCCATCGGGACCATTTGA	19	
168	86F	GATGATTTGGTTGCACACTTGA	22	85
	86R	GTGAAAATAATTCGCTACAAACCTTC	26	
169	87F	CCAACCACGTCATCGACCTC	20	80
	87R	GTCCTGGCAGGGGATATTGC	20	
170	88F	CCCTAGCCGTTGATTTGGTG	20	129
	88R	CATGTGTCTTAAGATAGTTGGATGG	25	
171	89F	ATGAGCGAACCAAGTCGACAAT	22	100
	89R	GCAATAGAACCTGCGAGCTGTG	22	
172	8F	CTAACAAGGGTAGGAATCGAGAGAAA	26	148
	8R	AACAGAATTGAGAAAAAGGTTGTCAC	26	
173	90F	TGTACCAGGCATTTGCATCTCTG	23	90
	90R	TCGCAGATCCAAGCCTGAAAATAC	24	
174	91F	GGTTATGGTCTGAGCGGTCAAT	23	127
	91R	GTGTTCCATGATTATGAATTTTTCAGC	27	
175	92F	GATATTTTGGCTTTGTTAGATATACTG	27	151
	92R	CACAAATCCTTATATTGTACTCCCTCAAT	29	

表B.1 多重PCR引物信息 (续)

序号	引物名称	序列	长度 (bp)	PCR长度 (bp)
176	95F	GCACTCCTTTTCGCTGAGCATAC	22	178
	95R	GGGGACCCCTTCACTATTTCATTCA	23	
177	96F	TGCTGCACCATCAAAATCAGC	21	98
	96R	TGCATGCCTGCGGCTACTG	19	

B.2 连接引物信息

表B.2规定了连接引物信息。

表B.2 连接引物信息

序号	引物名称	序列(5' -- 3')
1	100F3	AAAGGCAAGAGTCGACAAACATGTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	100FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAAGCTTAAAAGTAATTTGGTGACATCTTTGAC
	100FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAAGCTTAAAAGTAATTTGGTGACATCTTTGAG
2	101F3	GCAGTTGCAGCTTAAGCATCTTCTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	101FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATCAAATACCCACACTAACCTCTAAATGAC
	101FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATTCAAATACCCACACTAACCTCTAAATGAT
3	102R3	AAGATCGAAAGCACCAAAATACCTAAATTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	102RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTACTAAATGAGCAACAATAAATGCTCAAATGACTGG
	102RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTACTAATATGAGCAACAATAAATGCTCAAATGACTGA
4	103F3	ATCCTGGTGGCACTACTGCTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	103FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGATAAATTAGCTGGATGCCTGGAGAA
	103FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGATAAATTAGCTGGATGCCTGGAGAC
5	104F3	ATGATTGGGCATTTTTAATACGTGTGTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	104FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTATCGTGTTTGGAAACTACCTTTAATATGCGTA
	104FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAATTATCGTGTTTGGAAACTACCTTTAATATGCGTT
6	107R3	AAATGCTGTAGTCCTGTAGCTATCAGTAACCTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	107RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGGGAACATGCACGATGCCATG
	107RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGGGAACATGCACGATGCCATC
7	10R3	ATAAAATGGACCGAAGGGAGTACTTTACTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	10RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCGTGTCATTCTAACTGCGCAAG
	10RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCGTGTCATTCTAACTGCGCGAA
8	110F3	ATAAACATTGCCAAGCATCCAACCTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	110FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGGTCTAGGATCAAGGTCTGCAGCGTA
	110FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGTCTAGGATCAAGGTCTGCAGCATG
9	117R3	TCTCCATGGCTTCTGTAGTAGTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	117RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGAGGAGTATCTGTATTGAAGGGTGTACG
	117RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGAGGAGTATCTGTATTGAAGGGTGTGCA
10	118R3	CAAACTGAACGCTAAACCAAGTGTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	118RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATCTCCTATCATCCTCAAACCGATTGG
	118RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTCCTATCATCCTCAAACCGATCGA
11	119F3	CATTCCATGGCTACTCCATGCTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	119FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACAGTGGATCGGATCATATTCCAGAAGTC
	119FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTACAGTGGATCGGATCATATTCCAGAAGTT
12	11R3	AGCTGAAAGGATGCATTTGTACCTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	11RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAATCAATTCAAGTGATAAAATAAATCTGTCT
	11RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATCAATTCAAGTGATAAAATAAATCTGTCTC
13	120R3	AAATAAAAGGTACAAAATAAGCAATTAAGCTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	120RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACTAAAAATTCGCTTAAACTATATTAATACTCTGT

表 B.2 连接引物信息 (续)

序号	引物名称	序列(5' — 3')
	120RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTACTAAAAATTCGCTTTAAACTATATTAATACTCTTGTC
14	121R3	AAAGTTATGTCCTTGTAATTGTGATATTAATGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	121RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAAATGGGATTTTCAACCTGAAAAGAC
	121RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTAAATGGGATTTTCAACCTGAAAAGAA
15	122F3	CTGTTGTTCAATACACTTTCGATTCCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	122FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAATGTCGTTCTCCACACAATGATGAA
	122FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAATGTCGTTCTCCACACAATGATGAG
16	123F3	TCTCGACCCTACACACGTGTCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	123FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATTCACCTTCCCTCTAGTCCGACA
	123FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTATTCACCTTCCCTCTAGTCCGACG
17	124R3	CAGTGGTCACTATCCAGGGCCAATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	124RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCGGTCTAGATCAAACCTACTGATCAGT
	124RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCCGTCTAGATCAAACCTACTGATCAGA
18	125R3	GCTTGAAGTGAGCACACATGCATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	125RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCATCAGGTGAGGTCTTTAGGGAAT
	125RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCATCAGGTGAGGTCTTTAGGGAAC
19	127F3	CAGCGATGAAGTGAATGCCTTTTTTTTT [NED]
	127FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGCGCAATCGGATCAGGAGCAA
	127FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAGCGCAATCGGATCAGGAGTAC
20	128F3	TAGCGCAATGGTAATGGGCTTTTTTTTT [VIC]
	128FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCATAATCCCCATGCTCCCTGC
	128FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCAATAATCCCCATGCTCCCTGG
21	129F3	TGCACGCACACTCCAATTAAGTTTTTTTT [NED]
	129FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACGGCCGTGCATTAGACCACC
	129FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTACGGCCGTGCATTAGACCACG
22	131F3	TTTCGTCGCCGTATCCCCCTGATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	131FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGTGTTTGCAGCTACTCCGACA
	131FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGTGTTTGCAGCTACTCCGACG
23	132F3	GTTTTTGTGTTTTTCTTTTGGTCTTGATTGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	132FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCCTCAGGTAAAATTATGTCCAGTGCAA
	132FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTCAGGTAAAATTATGTCCAGTGAG
24	136F3	TCACATGTGCCCGCTAGCTATATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	136FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTGTAATTTCCACCAAGATTCTCTATCATGCA
	136FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATCTGTAATTTCCACCAAGATTCTCTATCATGCT
25	138R3	TTTTGATGGCAGGACCTCAATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	138RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCGCTAAGCTGAACTTCCCAAC
	138RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTGCCTAAGCTGAACTTCCCGAA
26	140F3	TGTGCATAACATATGTTTGCCCATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	140FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCGAAAAATGCCATGCCACTATGC
	140FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTGAAAAATGCCATGCCACTACGT
27	141R3	TATACTAGAATAAGTTGCAATCCAGCATAATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	141RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATGTACTAATTCTAGTCAGTGGAACCTTGCCAACG
	141RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATGTACTAATTTCTAGTCAGTGGAACCTTGCCGACA
28	143R3	TAGCATTTGGTTGGTGGCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	143RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGCTATCATCTAGAAGCCGGCTACG
	143RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGTCTATCATCTAGAAGCCGGCTGCA
29	144R3	CTATTGGATTATCGCTCGTAAATTTCAATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	144RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAATACGTTGAAGTTGTAGAGTCGAGCATCTAG
	144RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAATATCGTTGAAGTTGTAGAGTCGAGCATCTAC
30	145R3	TTCTAAATGCAATCATAATAACTATGGTTGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]

表 B.2 连接引物信息 (续)

序号	引物名称	序列 (5' -- 3')
	145RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATAGAATGCTTGTAAGTACATGATATACATTAAAAGAG
	145RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTATAGAATGCTTGTAAGTACATGATATACATTAAAAGAA
31	146R3	TGTAATATGTTACAACAATAAATGCATAAATATAGTATGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	146RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATGTAGCAAAGCCTCTAAATTCACAAAAACCT
	146RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGTAGCAAAGCCTCTAAATTCACAAAAATCG
32	149F3	CTCCTGTATACCAGATATTCCTGTGCCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	149FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCCAATGGGAATCATGATCGTGT
	149FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCAATGGGAATCATGATCGTGG
33	14F3	TAGTTGAACCTTGCACCAGGTCCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	14FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGAAACTCCTCATTGGGTCGAAGAG
	14FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGAAACTCCTCATTGGGTCGAAGAT
34	150R3	CCTCTTCCTTTGCGATCTCCATTATTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	150RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACACCCGAGCAACATATTCG
	150RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTACACCCGAGCAACATATCCA
35	151R3	TCGATCGAGATCTCCAAGCTCATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	151RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGAGTCTTATGGGGTGCTGTTTCATCTTCG
	151RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGAGTCTTATGGGGTGCTGTTTCATCTCCA
36	153F3	TTGAGGCCACCCCTGGCGCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	153FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCAGTAAGCCACCAAAAGTAGACA
	153FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCCAGTAAGCCACCAAAAGTAGACT
37	159R3	GGTGGTTTGGCGCTGATTGGATTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	159RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGTTGGCTTCTTGAGTGGGCAAT
	159RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGTTGGCTTCTTGAGTGGGCAAC
38	15R3	TGACTGTCATTTTTTTTTTAACTTTTTCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	15RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATGTAACCTCTACAGTCCAGATCAGACAGT
	15RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATGTAACCTCTACAGTCCAGATCAGACAGC
39	160F3	TCACCTCTTCCTCAAGTGGGTAATTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	160FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGCCTGGTTTGGTGGTACAGAA
	160FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGCCTGGTTTGGTGGTACAGAG
40	163R3	TCCTTTGCTCGAAATCAACCTCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	163RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACAAGAACAAAAATTGATCTCTGTCAAAAGTT
	163RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTACAAGAACAAAAATTGATCTCTGTCAAAAGTC
41	165F3	CAACAAGCAGCACCTTGTGTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	165FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCCGATCAGGTAGACAGCACATGACTC
	165FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCCGATCAGGTAGACAGCACATGACTT
42	167R3	ATCACGTGCTTTCTCGCAGTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	167RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCCAAATCTGAAGATAGAGCTTGTCG
	167RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCCAAATCTGAAGATAGAGCTTGTC
43	170F3	AATTACCAAACTAAACAAGGACCTTTCATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	170FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATAAACAATATTAGTCCACCTAGGTTGTCAGTC
	170FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATAAACAATATTAGTCCACCTAGGTTGTCAGTT
44	172F3	ACAACAAGATATTTTGACAAAAATTTCTGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	172FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGGTCACAGGATAAGTATTGCTATTATTGTGCA
	172FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGGTCACAGGATAAGTATTGCTATTATTGTACG
45	173R3	TATCCATTACATTTTATTTTAGGTACAAAGTAGCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	173RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCGATGTTTCACATATGATAGTCATTGCATAAATAACAT
	173RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCGATGTTTCACATATGATAGTCATTGCATAAATAACAC
46	177R3	GTGGATAGGACTACGAATATCCATAATCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	177RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGAGCAGGATTGTAGTGCTTCAT
	177RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGAGCAGGATTGTAGTGCTTCAC

表 B.2 连接引物信息 (续)

序号	引物名称	序列(5' — 3')
47	182R3	TCTATTGTCTCATTGGAGTGATCACGTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	182RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACAAGTGCAAGCTCATGTACATCG
	182RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTACAAGTGCAAGCTCATGTACATCA
48	183R3	ATTGTCGAAAGGCGACGTTAATGTTTTTTTTTTTTTTTTTTTTTTT [PET]
	183RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGGGGACTAAACATATCATTATCAGGATGCTT
	183RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTAGGGGACTAAACATATCATTATCAGGATGTC
49	189F3	CTTGGAAGCCAAAAGTTGCAGTTTTTTTTT [NED]
	189FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGGTCGGCCAGGCTTGGACA
	189FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGGTCGGCCAGGCTTGGACG
50	190R3	AACCTAGCAAACCTAACGGAATGGTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	190RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATAAACCCGATGCAACTAAATGTATCC
	190RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATAAACCCGATGCAACTAAATGTACCA
51	191F3	ATGATAAATCTATCTTGCCTCAATTTGTTCTTTTTTTTTTTTTTTTTTTTTT [NED]
	191FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGAAGAGTGCAAAATCTCGTGTC
	191FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGAAGAGTGCAAAATCTCGTGTC
52	192F3	CTGCCACTTAATTATCTTTTAATAAACACATTTTTTTTTTTTTTTTTTTTTT [NED]
	192FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGTAATAACAGCTGATGATATGAGCCTAACTGCA
	192FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGTAATAACAGCTGATGATATGAGCCTAACTGCG
53	193F3	GGTCATGATAGCAGACTTCACAATCATATTTTTTTTTTTTTTTTTTTTTT [FAM]
	193FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATAACGCCATGGTGAACCGTGA
	193FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATAACGCCATGGTGAACCGTGC
54	194F3	CATCGGCAATCCATCGAACATTTTTTTTTTTTTTTTTTTTTT [PET]
	194FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATCGAGCACTGTTTACGCAACTCCTCTA
	194FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCGAGCACTGTTTACGCAACTCCTCTG
55	195R3	AGTCATAGTGATTTCGTACAGGCTTTTTTTTTTTTTT [FAM]
	195RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCGCACCTCTCGTGAGCTCG
	195RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCGCACCTCTCGTGAGCTCA
56	196F3	ACCTCACCTGCGACGACAGTTTTTTTT [NED]
	196FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCGGCTGTTTCTACAAGGGCTGCA
	196FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCGGCTGTTTCTACAAGGGCTACC
57	198F3	CCATTGTCCCGCAAAATAGTGATTTTTTTTTTTTTTTTTTTTTT [FAM]
	198FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGTTTCATGGTTGGGACTGCCCTACTA
	198FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCATGGTTGGGACTGCCCTACTG
58	19R3	TGTGGATGACCCAAGCCATGTTTTTTTTTTTTT [VIC]
	19RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTTGGTGATCTTCCGATGGACCT
	19RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGGTGATCTTCCGATGGACCA
59	1F3	TGACATCATACAATAGACGCTCCTTTTTTTTTTTTTTTTTT [FAM]
	1FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGGCTGCTCTGGGTCTGTTAAACCA
	1FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGGCTGCTCTGGGTCTGTTAAACCC
60	201R3	AAATTCACCTGGTAAAGCTGGTACATTGTTTTTTTTTTTTTTTTTTTTT [PET]
	201RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAATTAGTAACAACAGCAGCGATTTTGAACACTT
	201RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAATTAGTAACAACAGCAGCGATTTTGAACACTG
61	202F3	ACTTGTGCGGTGCCTCCCCGAATTTTTTTTTTTTTT [PET]
	202FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGAGAACACGGGGAATAGCAGA
	202FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAGAGAACACGGGGAATAGCAGG
62	208F3	AGCAGAGAACCTAAGGTAAGTCTTATAGATTTTTTTTTTTTTTTTTTTTTT [FAM]
	208FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATAATACTAAAATGCAAGGAGTACTAAGACCTGC
	208FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATAATACTAAAATGCAAGGAGTACTAAGACCTGG
63	211R3	AATTTGATGGCTAGAATGGTTGGCTTTTTTTTTTTTTTTTTTTTTT [FAM]
	211RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACCTGCTCTTAGGATCAAGACAGGT

表 B.2 连接引物信息 (续)

序号	引物名称	序列 (5' -- 3')
	211RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTACCTGCTCCTTAGGATCAAGACAAGC
64	214R3	AAAAATACTAATTTGGTAATTTATGCCTTCAGTT [FAM]
	214RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGTACTAATAAAATCCGACGACCACCTATTGCTCAT
	214RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAGTACTAATAAAATCCGACGACCACCTATTGCTCAC
65	216F3	AGCATGTGGAGGTTCCCTAATGTCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	216FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGGCCACTCATTGTACATCTCCAGA
	216FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGCCACTCATTGTACATCTCCAGG
66	223F3	GCTCCTTCTCTCATCATGACCAATAAGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	223FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGAGACGGGCCATCACTTCGATC
	223FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGAGACGGGCCATCACTTCGATT
67	224R3	CCTCCACCTGAGCCCAAGCATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	224RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAACTCAATATGCCACCCAAAAGACTAG
	224RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAACTCAATATGCCACCCAAAAGACTAA
68	226F3	TGAATTGGGTACAAATATATGTATTTTATTAGAATGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	226FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATTAACAGGAGGATTTTATAGAATATGAGGCAA
	226FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATTAACAGGAGGATTTTATAGAATATGAGGTAG
69	229R3	TAGTCGGTGTCTGTTCTGGAGCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	229RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCCGAAAATGGCTTTGGCTTGTG
	229RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACGAAAATGGCTTTGGCTTGTA
70	230R3	TGAATAATTTCCCTCTCATTCCCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	230RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCTAACCCTTCTCAAATGAACAGTGG
	230RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCTAACCCTTCTCAAATGAACAGTGA
71	231R3	TGCAAGGGCGACAGATTCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	231RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAAATGATCCACGGAATGCAGTGTT
	231RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAAATGATCCACGGAATGCAGTGTG
72	234F3	GCCAAAACCATGACCTGACGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	234FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAAGTACAGAGACCTCCCGGTGC
	234FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAAGTACAGAGACCTCCCGGTGT
73	235F3	GGGCGGTGCGGGCGTGGTGCACCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	235FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCGTTGCGGAGTCTGAAACAGAA
	235FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCGTTGCGGAGTCTGAAACAGAT
74	237F3	GACCTATCCTAATTCAGCCATCTCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	237FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATAAAGACCAATATCCCTTCTCTCTGTG
	237FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATGTAAGGACCAATATCCCTTCTCTCTGT
75	238R3	GATTTGTTAAGATTGGACTTAAAAATGGGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	238RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCAGTGTTTGTAAAGTTGAGTATCTCAAAGAAGTCG
	238RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCAAGTTGAGTATCTCAAAGAAGTCA
76	23F3	GGAAGGGACATGGCACTTGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	23FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGGATCAAGCCACAACACCATCC
	23FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAGGATCAAGCCACAACACCACCT
77	243R3	CAATTGCGCATGTTCCAAAACGTATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	243RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACGCTATTTTTTAAAAAAATTTGGTCAAACCTACAT
	243RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTACGCTATTTTTTAAAAAAATTTGGTCAAACCTACAA
78	244F3	CTCATCAACCGGAGGCTTGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	244FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCTGCACTCGTGGGGCACC
	244FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTGCACTCGTGGGGCAGC
79	246R3	TGAAGGATATGTGTAGTTCTAAGACCATTTGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	246RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGCTACAATGCAACCTAAGACACTAATTTGAT
	246RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGCTACAATGCAACCTAAGACACTAATTTGAC
80	247F3	AGTATATTTTGGGCCAAGCCGTAGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]

表 B.2 连接引物信息 (续)

序号	引物名称	序列(5' — 3')
	247FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGGTACAAAAGTTCCTAAAAATGGTTCTAA
	247FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAGGTACAAAAGTTCCTAAAAATGGTTCTAG
81	248R3	ATGACGCCACGACGGGCAATTTTTTTTTTTT [PET]
	248RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGAGTCCCCGTCCCGACGTCT
	248RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGAGTCCCCGTCCCGACGTGC
	250F3	TTGGCAATAAATGATCTTTGCCTATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
82	250FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATATTGGCCCAATAAATACTAATAAAATAAATTACAAG
	250FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATATTGGCCCAATAAATACTAATAAAATAAATTACGAT
	255F3	AACTTGATCATATCTTCAGTCATTTTTTAATAATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
83	25FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATGAGTATTCAACTCTAAAAAGTTAGGAAGAA
	25FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTATGAGTATTCAACTCTAAAAAGTTAGGAAGAG
	260R3	GCTTGATAAAAATGAATTATGAAAATAAATGCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
84	260RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAATCTCGTACCACGATTCTTAGATGCTGT
	260RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAATCTCGTACCACGATTCTTAGATGCTGA
	262R3	GTCATGGACGCTTGGGCTCAGATTTTTTTTTTTTTTTT [PET]
85	262RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTGATGATGGGGTGCCGACGT
	262RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGATGATGGGGTGCCGATGC
	263R3	TCGCATTATACACTACACCAGTAGCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
86	263RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCAAGTACTCTCCACGTGCAGTG
	263RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCAAGTACTCTCCACGTGCAGTA
	264R3	TTTTTCCCATCCACCCAATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
87	264RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACAGATATTTCTTGTCGGTTCAAAGACG
	264RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAACAGATATTTCTTGTCGGTTCAAAGACA
	265F3	GGTTGAAGTCCCCACTTAACACTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
88	265FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATGTTCTTACGTTGAGCTATGACCAGTA
	265FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGTTCTTACGTTGAGCTATGACCAGTG
	267R3	TCTTGCACTCTTGCTATGTGCTTTTTTTTTTTT [FAM]
89	267RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAACCAGCCTTCGACGACG
	267RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAACCAGCCTTCGACGACA
	268F3	ACAGATTCAATTATCCTTTATCCACGCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
90	268FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCATATGTTAGAGAAATGCTCCCTTCACCA
	268FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATATGTTAGAGAAATGCTCCCTTCATCG
	269F3	ACAATTCTGCATGGAGATGTCAAATACTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
91	269FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCCTACATTCATTAAGCAACTTCTAGC
	269FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGCCTACATTCATTAAGCAACTTCTAGT
	271R3	TTGCTAATTGTAGCTTCTTTGTGTACCATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [PET]
92	271RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATATCTCGTATGCTCGAGTTATAGTGG
	271RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATATCTCGTATGCTCGAGTTATAGTGC
	272R3	GGCTTAGAGCTGTTGAAGCACTGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
93	272RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTTGCTGCGTACTGTGCACTTG
	272RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTTGCTGCGTACTGTGCACTTA
	273FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCTGTTCTTATATCAAATTAACCAAAATGAG
94	274RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGACTGCTGAAGTAAACCAGATGATCCATT
	274RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGACTGCTGAAGTAAACCAGATGATCCATC
	275R3	TCITTCATGCGAGATAATTCTGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
95	275RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGCATAATCAAGTGTAATCTGATGATAGTCTCG
	275RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGCATAATCAAGTGTAATCTGATGATAGTCTCA
	276R3	AACTTTTCGTCATGTCTCTCGATGATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
96	276RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCAATAAAAAACACATCTAGTACTCCTTTTATGCT
	276RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCAATAAAAAACACATCTAGTACTCCTTTTATACC

表 B.2 连接引物信息 (续)

序号	引物名称	序列 (5' -- 3')
97	278F3	GAGAGTTCAAATGAGCTCAGCTTTCTTTTTTTTTTTTTTTTTTTT [FAM]
	278FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCAGCACATTGCACATCCAGACTA
	278FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCAGCACATTGCACATCCAGACTT
98	280R3	CTAATGACACTATTAGTGAATATCAAGTGTATTAATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	280RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGCTGGATGCAACTGTTTCTGGT
	280RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGCTGGATGCAACTGTTTCTAGC
99	281F3	GTTTTCAAAGTTCGTGGGCCATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	281FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCACCTAACAAGTTTAGGGATCTAGAAAAGC
	281FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCCACCTAACAAGTTTAGGGATCTAGAAAAGT
100	282F3	CGATGGTAGTGGCTGATCAAGACTTTTTTTTTT [PET]
	282FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCAGCACAGCCAGGGTCTC
	282FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGCAGCACAGCCAGGGTCTT
101	283F3	GGACACTCACTGCCAGTAGGAATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	283FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGTCATCATATCATACCATACTTCAGTTCC
	283FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGTCATCATATCATACCATACTTCAGTCT
102	284R3	CTTCCTTAGTCTACTACCGTAAAAATATTTTATTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	284RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAATGTACTAATATGGAATGGGTGGGCTAGGTCAG
	284RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAATGTACTAATATGGAATGGGTGGGCTAGGTCAC
103	285R3	GTAATTGAATACATATAAAAACTTAGAGCCCTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	285RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATTTGTTACTGCTGGCACACTTGCTCATG
	285RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATTTGTTAAGCTGCTGGCACACTTGCTCGTA
104	288R3	AGAAAACAAAAGGTCGGATTGGGTTTTTTTTTTTTTTTTTTTTTTT [NED]
	288RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGAGTCTTGCAATTGTGAGTGCCATG
	288RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAAGAGTCTTGCAATTGTGAGTGCCGTA
105	289R3	GCAACACCAGGAAAACTTGATTTTTTTTTTTTTTTTTTTTT [FAM]
	289RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGCTGTACCTCACACTCCATCCAGGT
	289RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTGTACCTCACACTCCATCCAAGC
106	28F3	TATGTGCTGTGCACAGTTCACTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	28FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATGGCTACAAAAGAACCTAAGCTATGC
	28FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTATGGCTACAAAAGAACCTAAGCTACGT
107	292F3	TCACCGACGTGGCCGACTTTTTTTTTTTT [PET]
	292FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGCGGAGCCACAGCCGATC
	292FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGCGGAGCCACAGCCGATG
108	293R3	GATTTTGGCGGACAATTCACATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	293RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGTAACCAAACTAAAACTACAAAAGAGGACG
	293RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGTAACCAAACTAAAACTACAAAAGAGGACA
109	295R3	GCAAGAGGTAGAACTATGTCCTTTCTTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	295RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGGAATATGGTTATGTCAAAGCCAAG
	295RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGGAATATGGTTATGTCAAAGCCGAA
110	296F3	ACTAGTAAATCTGTAGTCGTGCGTATGCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	296FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAAAGCTCCTTGTCACAGTTCTCACCTGTA
	296FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATAATGCTCCTTGTCACAGTTCTCACCTGTG
111	297F3	TTACCATTAGAGGTCTAGGAAGTGCATTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	297FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACCATTATCGTTGATGGTCA
	297FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTACCATTATCGTTGATGGTCA
112	299F3	TAGATGATTTTATATTCATCAGCCTTTAATAAAAGTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	299FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCATATAGTTATAGTTATTACAACCTGTGCGCCCTCTCAC
	299FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTATATAGTTATAGTTATTACAACCTGTGCGCCCTCTCAT
113	2R3	CTGCAAGGAGTAGATGATGACGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	2RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGACGACGCAATAGTTGGTACAGATACGT

表 B.2 连接引物信息 (续)

序号	引物名称	序列(5' — 3')
	2RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGACGACGCAATAGTTGGTACAGATATGC
114	300R3	AGCTGGTAGATGAACACGGCAATTTTTTTTTTTT[FAM]
	300RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGCGCGCATGCATTCATGACT
	300RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGCGCGCATGCATTCATGACG
115	301R3	AACGTGCCACAGCGTCAGGTTTTTTTTTTT[VIC]
	301RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGCATTAGTTGCGCCATGAACG
	301RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCATTAGTTGCGCCATGAGCA
116	304F3	GTAATTATTCCAGTGGTAAACATCATACTACACTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[FAM]
	304FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATACTAATTTATCATCCTAGATACCTGCAACCAGAA
	304FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATACTAATTTATCATCCTAGATACCTGCAACCAGAG
117	307F3	AGATCTTGCATCGAGGCAAAGTATCTTTTTTTTTTTTTTTT[PET]
	307FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGGCAACACATGGTGTCAACGA
	307FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGGCAACACATGGTGTCAACGG
118	308R3	AGAACACACCTGGAGCTTACTCTGTGTTTTTTTTTTTTTTTTTTTTTTTTTTT[FAM]
	308RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAACACCTCCATGCGCTGGCTTCG
	308RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAAACACCTCCATGCGCTGGCTCCA
119	309R3	AGAATCAGCACACATTGTGCTCCTTTTTTTTTTTTTTTT[VIC]
	309RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGAGGTTGCTGCAGTAGTGCAGT
	309RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGAGGTTGCTGCAGTAGTGCAGC
120	310R3	ACATGGGCGCAAACCTGCATTTTTTTTTTTTTT[VIC]
	310RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAACACATCGTCTTCTCCTCTCG
	310RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAAACACATCGTCTTCTCCTCTCA
121	311R3	ATGGACCGACCGAATCAAAGTTATTTTTTTTTTTTTTTTTTTT[NED]
	311RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATGCTGTAACAGGCCATGAGATTGTT
	311RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATGCTGTAACAGGCCATGAGATTGTG
122	312F3	GAACACAACTAGTAACTAATGTTGAATAAATTTCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[VIC]
	312FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGGGCTAAGATCACGCTCATGCA
	312FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGGGCTAAGATCACGCTCATACG
123	313R3	TGTCCTATCTCTGATATATACATAATAATATAGTGACTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[PET]
	313RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCTAAAGTGGAACGTTAGTGACGTGATG
	313RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTAAAGTGGAACGTTAGTGACGTGATA
124	314R3	TTATGGAATGCCTGGGTGGTTTTTTTTTTTTTTTTT[FAM]
	314RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGGGGGGAACAAGGTTGGACG
	314RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAGGGGGGAACAAGGTTGGACA
125	315R3	GCACCTTTCACCGGAGCGTTTTTTTTTTTTTTTTTTTTTTT[VIC]
	315RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGAAGTTTCAAGTTGTAAGAGTCGAGTCGT
	315RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGTTTCAAGTTGTAAGAGTCGAGTTGC
126	318R3	AACAGGAGACCAGTTTCTTTTGTCTTTTTTTTTTTTTTTTTTTT[NED]
	318RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGGAGAGGTTTCGACGAAGAATCG
	318RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATGGAGAGGTTTCGACGAAGAACCA
127	31F3	CCTGAGCTTTGAGCAATGCCATTTTTTTTTTTTTTTT[VIC]
	31FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGACGACAAATACGGATGCTTGCA
	31FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGGACGACAAATACGGATGCTTGCT
128	320R3	CATTCACTGTTGGGATTTGATTGGTTTTTTTTTTTTTTTTTTTTTTT[VIC]
	320RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATTTATCTTGGAATGCCCTTAGC
	320RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATTTATCTTGGAATGCCCTTGGA
129	321R3	TGGGTGTGTAGGTGCATATACGCTTTTTTTTTTTTTTTTTTTTTTTT[NED]
	321RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCAGCTCGCCACACACAGTACTTACCT
	321RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGCTCGCCACACACAGTACTTACCA
130	322F3	TGCACCTCGACAGCTAGCATTTTTTTTTTTTTT[VIC]

表 B.2 连接引物信息 (续)

序号	引物名称	序列 (5' -- 3')
	322FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCACAAACCCAATGCTACATTGC
	322FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCCACAAACCCAATGCTACATCTGT
131	323F3	TACTGTCTTGCTAACCTGTTAGACTCTGTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	323FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAAATGCAGTTTTTCCTCAGGACC
	323FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCAAAATGCAGTTTTTCCTCAGGACT
132	325R3	GATGAGAAAACCTCGTTGGGATCAAGTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	325RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCACATGTCCAGGAGTGCCTAT
	325RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCAACATGTCCAGGAGTGCCTAG
133	326R3	CTCCTTTGATCCAGGCTGAGGTTTTTTTTTTTTTTTTTTTTTTTTTTT [NED]
	326RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGAGGTTTTCTTTCTTGTTTGGTGT
	326RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGGTTTTCTTTCTTGTTTGGTGG
134	327R3	TTTGCCCTTATCTGAATCTAGTTCCTTTTTTTTTTTTTTTTTTTTTTTT [PET]
	327RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGTTGACACGAAACATGGCTAGAGTAG
	327RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAGTTGACACGAAACATGGCTAGAGCAA
135	328F3	GATCACCAGACGCTGACCCTTTTTTTTTTTTTTTTTTTT [VIC]
	328FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCAGTTGAACCTACTAGCCGTTGGTGA
	328FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGTTGAACCTACTAGCCGTTGATGG
136	32R3	AAAAATGTAATCTGTCTTCATGAGGAAAAATTTTTTTTTTTTTTTTTTTTTTTT [NED]
	32RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGACTAAGAAATAAGAAGCATTGAACATAAAGAC
	32RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAGACTAAGAAATAAGAAGCATTGAACATAAAGAA
137	34F3	CGAGGCGCCGCCCAAGCTTTTTTTTTTTT [FAM]
	34FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGATGGCGGACTGGGGTGA
	34FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGATGGCGGACTGGGGTGAG
138	36F3	GACACGTGGCAGGCATCGTTTTTTTTTTTTTTT [VIC]
	36FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGAGATCGACGAACGAAATTTAACTCA
	36FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGAGATCGACGAACGAAATTTAACTCG
139	37F3	AGTGCAGTCGTTCTTAGACTGTACTTAAGTTTTTTTTTTTTTTTTTTTTTTT [NED]
	37FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTTCAGGGAGTTTACAGGGTGCA
	37FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATATGAGGAGTTTACAGGGTACG
140	39R3	GAGACCTGATTTATTTCTGTAAATAAGGTTTTTTTTTTTTTTTTTTTTTTT [NED]
	39RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGTTGGCGCTTACAATATCTTACTCAGAT
	39RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGTGGCGCTTACAATATCTTACTCAGAC
141	40R3	TGGTTTAGGCTGTGCAATGGTAGATTTTTTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	40RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAATATGACAAAAATACCATCGAACAAGACAC
	40RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAATATGACAAAAATACCATCGAACAAGACAA
142	42F3	GGTGAAGAGCGTGGGCTTTTTTTTTT [PET]
	42FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGCGATGAGCAGCTATGGCAA
	42FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGCGATGAGCAGCTATGGTAG
143	43F3	GGACAACTGAACGAAAAATCGAATTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	43FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACCAAAATGGCCATTCAATAATTGAG
	43FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTACCAAAATGGCCATTCAATAATTGAT
144	45R3	GTTCAATTTTTCGAATCGTGCTAGAATTTTTTTTTTTTTTTTTTTT [PET]
	45RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGGGGGGAGACAGTTCTCG
	45RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAGGGGGGAGACAGTTCTCA
145	46F3	AATTCATTGTGTTCTGATTATTTGTAGATACTTTTTTTTTTTTTTTTTTTTTTTT [FAM]
	46FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGCACATAACTTAACATGGATGAAATGC
	46FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGTGCACATAACTTAACATGGATGAAACGT
146	48F3	GACAAGATATAATAATGCATTTATTATTACTTTGGTTTTTTTTTTTTTTTTTTTTTTT [VIC]
	48FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGTGATTATCCAGCCCTAGACC
	48FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGTGATTATCCAGCCCTAGACG

表 B.2 连接引物信息 (续)

序号	引物名称	序列(5' — 3')
147	49R3	TATATTATCTGGTCCCTTTTAAATGTCGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[PET]
	49RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGTGGTTGGTATATCCTATGCAACTGATAGTG
	49RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGTGGTTGGTATATCCTATGCAACTGATAGTA
148	4F3	AAGACGTGACGCGATGGCAAATTTTTTTTTTTTTTT[NED]
	4FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGATCAGGAGCTCAAGGCAGGTAC
	4FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGTATCAGGAGCTCAAGGCAGGTAG
149	50R3	GCTCATGAGAAAAGAACCTACATATTTACATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[VIC]
	50RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCAACAGTTAATAAACACATACAGAGTGCTT
	50RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCAACAGTTAATAAACACATACAGAGTGCTA
150	52F3	CAGCTTATATAGCAAGTACAGGAAGTTTTTTTTTTTTTTTTT[VIC]
	52FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAAGGGGACGTAGCGCCCGTCA
	52FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTAAGGGGACGTAGCGCCCGTCG
151	53F3	TAAACTTATAGACTACTGGTAGGGGATGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[NED]
	53FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTAAATTTTATTGGATATTCGTTTCAGGA
	53FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTAAATTTTATTGGATATTCGTTTCAGGT
152	55R3	AGTTACAAACAACCCCTAAATCTATATGTTTTTTTTTTTTTTTTTTTTTTTTT[PET]
	55RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTGAAAAACATGGAGCGGTGT
	55RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTGAAAAACATGGAGCGGTGC
153	59R3	CCAAGCATAAGATGTATGGAGAAGATTTTTTTTTTTTTTTTTT[NED]
	59RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGCCGGTGGCTTCCAAGTG
	59RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGGCCGGTGGCTTCCAATA
154	60F3	ACTCTTAATATTGATCTCCGCTGTGTCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[NED]
	60FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTGTGTGCTTGCGGTTTCATTCC
	60FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATGTTGTTGCTTGCGGTTTCATTCCCT
155	62F3	TGCCTTGGAGAAAAAACTCAAATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[NED]
	62FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACCTAAAGTCCCAAGTCAAGAAGACAAACAC
	62FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTACCTAAAGTCCCAAGTCAAGAAGACAAACAT
156	63F3	AGATGTTTTGCATCCAGAGTCAATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[NED]
	63FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCATAAAGAAGTTACTCCTTCCATTACAAATCTA
	63FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCATAAAGAAGTTACTCCTTCCATTACAAATCTT
157	65R3	ATGGCAGACGGATCAAATGAATTTTTTTTTTTTTT[PET]
	65RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCAAGTGTGAGCATCCAGGTTTCGT
	65RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCAAGTGTGAGCATCCAGGTTTCGA
158	66F3	TAAATACGGATGAGAAACAACCTACTGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[FAM]
	66FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACTAATACAGATCTACTTATTTCTGTGCACTCCTA
	66FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTACTAATATCAGATCTACTTATTTCTGTGCACTCTTC
159	6F3	TGATGCGGGAGTCTTGAACGTTTTTTTTTTTTT[VIC]
	6FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCGACAAGCCCTACCAGAGC
	6FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGCGACAAGCCCTACCAGAGT
160	70F3	TTGGCTATTCAATTTATTGTGTCGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[NED]
	70FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAATATGCCTATTAGCCGTGTTGACC
	70FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAATATGCCTATTAGCCGTGTTGACT
161	71F3	TTGGTAGCATCAGTTTGGTAGTCTTGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[PET]
	71FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCGTGGCCAAGAATTTAGCTGGA
	71FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTCGTGGCCAAGAATTTAGCTAGC
162	76F3	TTGAAAGTCCATGTTTGGTGTGTTTTTTTTTTTTTTTTTTTTT[VIC]
	76FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGTGTCGAGTGTAGCAGTGGCGTA
	76FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGTGTCGAGTGTAGCAGTGGCATG
163	77R3	TTGGTAAAACATTCTTCTACGGGATTTTTTTTTTTTTTT[FAM]
	77RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTTTTCGAAATGGCCAGG

表 B.2 连接引物信息 (续)

序号	引物名称	序列(5' -- 3')
	77RT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTTTTTTCGAAATGGCCAGA
164	79F3	GAATCACCAGCAAGAGTAAGCACCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[FAM]
	79FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAACCATACCAACCTTTGGATATCGTCAC
	79FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAACCATACCAACCTTTGGATATCGTCAT
165	82R3	GGTAGGTGTCATCCATTGTCGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[FAM]
	82RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAAGTGAACATAAAGCAACGTACATTGGAT
	82RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAAGTGAACATAAAGCAACGTACATTGAAC
166	84F3	GATGGGGCTCCACGCTCTTTTTTTTTT[PET]
	84FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGCATTGCTGCATGTTTCAGC
	84FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTAGCATTGCTGCATGTTTCAGT
167	85F3	GCCTCAAATGGTCCCGATGTTTTTTTTTTTTT[VIC]
	85FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATGGAGTTGGACCCCTCCTCTAC
	85FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATGGAGTTGGACCCCTCCTCCAT
168	86R3	AGAATATTCAACAAATCAAGTGTGCATTTTTTTTTTTTTTTTTTTTTTTTTTTT[PET]
	86RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCTCGGCCTAAATGTAGTCACCTTT
	86RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTCGGCCTAAATGTAGTCACCTTC
169	87F3	ACCTGCGACCACATACCGTTTTTTTTTTTTT[FAM]
	87FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCGGACCGCTCCTCTGGACC
	87FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTGGACCGCTCCTCTGGACT
170	88F3	CATCAGCCACGCTGAAGGACTTTTTTTTTTTTTTT[FAM]
	88FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTCTGGATTGGAGGTTGGGTCAAC
	88FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTCTGGATTGGAGGTTGGGTGCAT
171	89F3	TGAAGGGGCACAGCTCGCATTTTTTTTTTTTTT[NED]
	89FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTAGCAGCAACAGCCTAGGCACTAC
	89FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTTAGCAGCAACAGCCTAGGCACCAT
172	8F3	TTTTAGTACAAATCGCTGGTCCAGTTTTTTTTTTTTTTTTTTT[NED]
	8FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGAGGACAAAACAAGGGCATCG
	8FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGGAGGACAAAACAAGGGCACCT
173	90F3	GCAGCCATCCAGGGTCCCTTTTTTTTTTT[PET]
	90FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGCGCGAGCGTAGGCACAA
	90FT	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGCGCGAGCGTAGGCACAT
174	91R3	GTAAAAATGATATCGTTAATGACCGCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[FAM]
	91RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACTAATAGAGCATTTCAATTACCAGGAAGTGTGCT
	91RG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTACTAATAGAGCATTTCAATTACCAGGAAGTGTACC
175	92R3	ATATACATTATGTCTAAATATATAGTTAAACAGTATTTTTTTTTTTTTTTTTTTTTTTTTTTT[VIC]
	92RA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATTTTAGATAAAATAGATTTGTTATGGACTGAT
	92RC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATTTTAGATAAAATAGATTTGTTATGGACTGAG
176	95F3	TACTATAGCTAGAAGCTAAAGATATGAGTGTAGCTCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT[VIC]
	95FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTGTACTTCTCTAACTTGCTTTCTCACTCCCTAGAA
	95FC	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTGTACTTCTCTAACTTGCTTTCTCACTCCCTAGAC
177	96F3	CAGCAGCAGCAGGCATGCATTTTTTTTTTTTTT[FAM]
	96FA	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTATGCAGCTAGCCAGCAGTAGACA
	96FG	TGTACGTGATACTGACAAGTTGTACATGATATACACATATTTATGCAGCTAGCCAGCAGTAGACG

附录 C
(资料性)
多重 LDR 体系

C.1 4 个多重 LDR 体系

C.1.1 体系1对应位点

SNP004, SNP008, SNP010, SNP019, SNP032, SNP049, SNP053, SNP055, SNP077, SNP087, SNP089, SNP104, SNP107, SNP125, SNP127, SNP136, SNP163, SNP167, SNP173, SNP182, SNP191, SNP198, SNP202, SNP208, SNP214, SNP223, SNP234, SNP244, SNP247, SNP263, SNP264, SNP265, SNP280, SNP284, SNP285, SNP292, SNP297, SNP300, SNP307, SNP309, SNP321, SNP323, SNP327。

C.1.2 体系2对应位点

SNP001, SNP006, SNP014, SNP023, SNP025, SNP031, SNP037, SNP045, SNP046, SNP050, SNP059, SNP062, SNP066, SNP071, SNP079, SNP086, SNP088, SNP090, SNP092, SNP103, SNP117, SNP119, SNP121, SNP129, SNP138, SNP144, SNP172, SNP183, SNP192, SNP193, SNP224, SNP226, SNP231, SNP269, SNP272, SNP275, SNP281, SNP288, SNP296, SNP308, SNP310, SNP312, SNP313, SNP314, SNP315, SNP325, SNP326。

C.1.3 体系3对应位点

SNP015, SNP028, SNP042, SNP043, SNP048, SNP052, SNP060, SNP063, SNP070, SNP091, SNP095, SNP096, SNP101, SNP110, SNP118, SNP122, SNP124, SNP128, SNP131, SNP132, SNP140, SNP145, SNP150, SNP153, SNP160, SNP170, SNP177, SNP189, SNP211, SNP216, SNP229, SNP243, SNP246, SNP248, SNP262, SNP267, SNP268, SNP274, SNP276, SNP283, SNP293, SNP299, SNP311, SNP322, SNP328。

C.1.4 体系4对应位点

SNP002, SNP011, SNP034, SNP036, SNP039, SNP040, SNP065, SNP076, SNP082, SNP084, SNP085, SNP100, SNP102, SNP120, SNP123, SNP141, SNP143, SNP146, SNP149, SNP151, SNP159, SNP165, SNP190, SNP194, SNP195, SNP196, SNP201, SNP230, SNP235, SNP237, SNP238, SNP250, SNP260, SNP271, SNP278, SNP282, SNP289, SNP295, SNP301, SNP304, SNP318, SNP320。

C.2 多重 PCR 引物浓度

C.2.1 体系1浓度

SNP077, SNP202, SNP208, SNP214, SNP292, SNP309, SNP323位点探针浓度为1.5 μM ; SNP019, SNP032, SNP053, SNP055位点探针浓度为2 μM ; 其他位点探针浓度为1 μM 。

C.2.2 体系2浓度

SNP045, SNP050, SNP066, SNP313位点探针浓度为1.5 μM ; SNP092, SNP129, SNP269, SNP314位点探针浓度为2 μM ; 其他位点探针浓度为1 μM 。

C.2.3 体系3浓度

SNP015, SNP052, SNP145, SNP177, SNP267位点探针浓度为1.5 μM ; SNP048, SNP132位点探针浓度为2 μM ; 其他位点探针浓度为1 μM 。

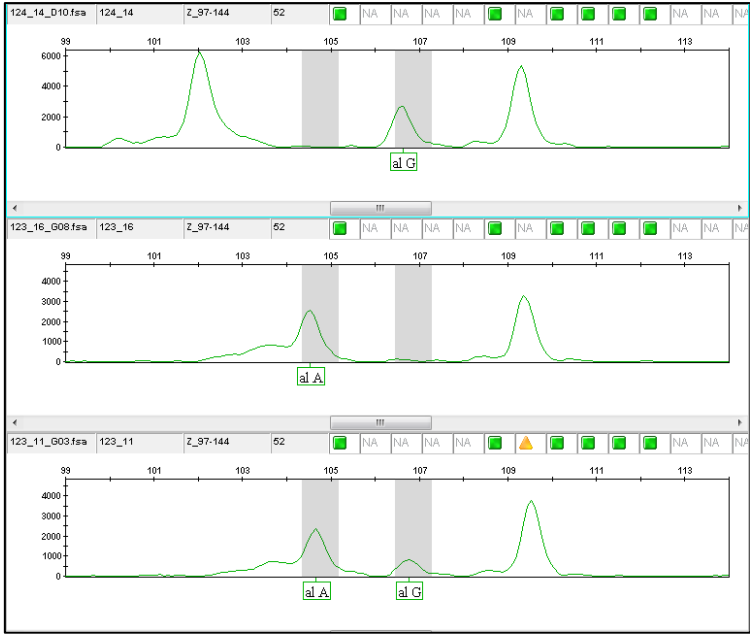
C.2.4 体系4浓度

SNP040, SNP146, SNP250, SNP278位点探针浓度为1.5 μM ; SNP120位点探针浓度为2 μM ; 其他位点探针浓度为1 μM 。

附 录 D
(资料性)
单位点图谱和基因型判断峰图

D.1 单位点 SNP052 图谱和基因型判断峰图

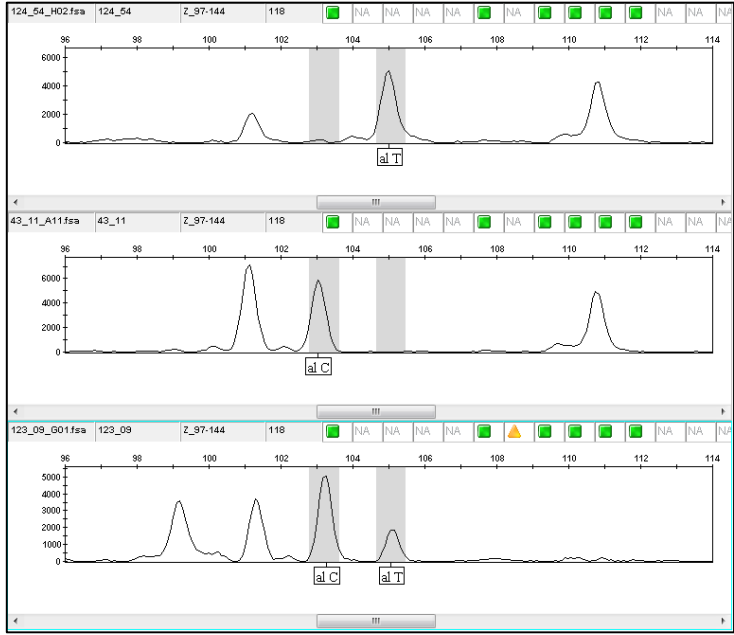
图D. 1给出了该位点的等位基因为A\G, 从左至右基因型依次为GG、AA、AG。



图D. 1 单位点 SNP052 基因型判断峰图

D.2 单位点 SNP118 图谱和基因型判断峰图

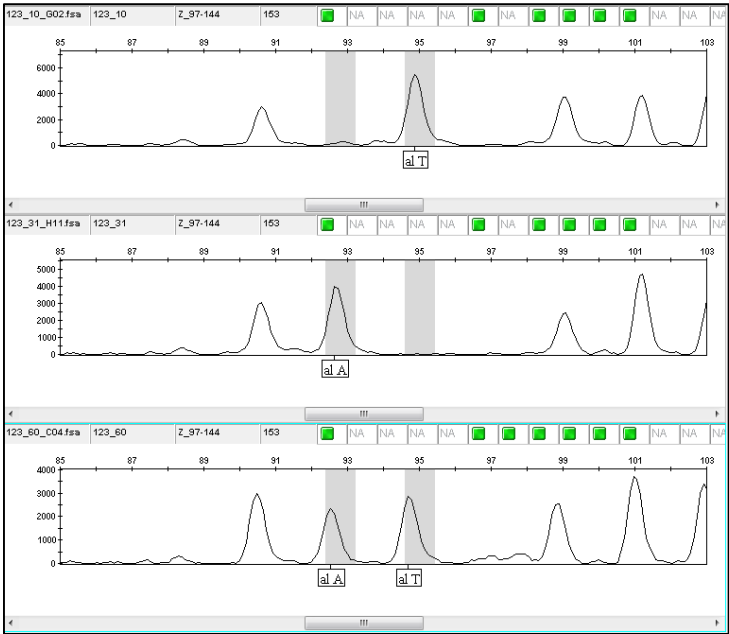
图D. 2给出了该位点的等位基因为C\T, 从左至右基因型依次为TT、CC、CT。



图D. 2 单位点 SNP118 基因型判断峰图

D.3 单位点 SNP153 图谱和基因型判断峰图

图D. 3给出了该位点的等位基因为A\T, 从左至右基因型依次为TT、AA、AT。



图D. 3 单位点 SNP153 基因型判断峰图

附 录 E

(资料性)

位点峰图荧光及位置对应关系信息表

表E.1明确了位点峰图荧光及位置对应关系信息。

表E.1 位点峰图荧光及位置对应关系信息表

标记物 序号	SNP 序号	panel	Dye	Allele 1	Allele 2	连接产物理 论 size_A1	连接产物理 论 size_A2	峰图 Size 1	峰图 Size 2
87	SNP087	1	B	C	T	91	93	88.92	91.25
300	SNP300	1	B	C	A	96	98	94.12	96.33
77	SNP077	1	B	C	T	101	103	99.73	101.56
167	SNP167	1	B	C	T	106	108	104.23	106.05
198	SNP198	1	B	G	A	111	113	109.57	111.5
182	SNP182	1	B	C	T	116	118	114.32	116.26
263	SNP263	1	B	C	T	121	123	119.22	121.17
265	SNP265	1	B	G	A	126	128	124.71	126.59
285	SNP285	1	B	C	T	131	133	129.28	131.17
208	SNP208	1	B	C	G	136	138	133.54	135.81
280	SNP280	1	B	G	A	141	143	140.52	143.04
214	SNP214	1	B	A	G	146	148	145.38	147.55
244	SNP244	1	G	C	G	91	93	89.76	92.18
19	SNP019	1	G	T	A	96	98	95.68	97.89
309	SNP309	1	G	A		101	103	100.26	/
297	SNP297	1	G	A	G	111	113	110.45	112.56
264	SNP264	1	G	C	T	116	118	114.52	116.33
10	SNP010	1	G	C	T	121	123	119.67	121.76
247	SNP247	1	G	C	G	126	128	124.89	127.18
284	SNP284	1	G	C	G	136	138	135.81	137.81
292	SNP292	1	R	C	G	88	90	89.88	91.99
234	SNP234	1	R	C	T	93	95	94.69	99.26
202	SNP202	1	R	A	G	98	100	100.26	102.4
307	SNP307	1	R	A	G	103	105	104.76	107.02
125	SNP125	1	R	A	G	108	110	110.14	112.01
55	SNP055	1	R	A	G	113	115	114.41	116.35
107	SNP107	1	R	C		118	120	120.25	/
327	SNP327	1	R	C	T	123	125	125.42	127.22
163	SNP163	1	R	A	G	128	130	129.06	131
136	SNP136	1	R	A	T	133	135	134.9	137.08
49	SNP049	1	R	T		143	145	149.51	/
127	SNP127	1	Y	A	C	91	93	88.09	90.6
89	SNP089	1	Y	C	T	96	98	93.09	95.19
4	SNP004	1	Y	C	G	101	103	98.53	100.69
8	SNP008	1	Y	G	T	106	108	103.54	105.44
223	SNP223	1	Y	C	T	111	113	108.44	110.63
321	SNP321	1	Y	T	A	116	118	113.88	115.82
191	SNP191	1	Y	A	C	121	123	118.7	120.94
323	SNP323	1	Y	C	T	126	128	124.15	126.21
53	SNP053	1	Y	A	T	131	133	129.73	131.9
104	SNP104	1	Y	A	T	136	138	135.09	137.08
32	SNP032	1	Y	G	T	141	143	137.99	140.22
173	SNP173	1	Y	G		146	148	144.68	/

表E.1 位点峰图荧光及位置对应关系信息表（续）

标记物 序号	SNP 序号	panel	Dye	Allele 1	Allele 2	连接产物理 论 size_A1	连接产物理 论 size_A2	峰图 Size 1	峰图 Size 2
314	SNP314	2	B	C		96	98	95.18	/
88	SNP088	2	B	C		101	103	99.54	/
1	SNP001	2	B	C		106	108	106.65	/
224	SNP224	2	B	C	T	111	113	107.82	109.77
193	SNP193	2	B	A	C	116	118	113.7	116.02
308	SNP308	2	B	C	T	121	123	119.07	120.78
79	SNP079	2	B	C	T	126	128	123.55	125.72
296	SNP296	2	B	A	G	131	133	129.35	131.73
66	SNP066	2	B	A	C	136	138	134.2	136.51
46	SNP046	2	B	C		141	143	140.32	/
25	SNP025	2	B	A	G	146	148	144.89	147.3
6	SNP006	2	G	C	T	91	93	89.67	92.01
310	SNP310	2	G	C	T	96	98	94.72	96.67
31	SNP031	2	G	A	T	101	103	100.09	102.17
325	SNP325	2	G	C		106	108	106.84	/
315	SNP315	2	G	A		111	113	110.13	/
272	SNP272	2	G	T		116	118	116.09	/
117	SNP117	2	G	C	T	121	123	120.93	123
269	SNP269	2	G	C	T	126	128	124.63	126.89
275	SNP275	2	G	C	T	131	133	130.63	132.64
312	SNP312	2	G	A	G	136	138	134.77	137.02
50	SNP050	2	G	A	T	141	143	139.61	141.83
92	SNP092	2	G	A	C	146	148	146.27	148.69
90	SNP090	2	R	A	T	88	90	89.49	91.73
23	SNP023	2	R	C	T	93	95	94.62	96.66
231	SNP231	2	R	A	C	98	100	100.26	102.19
45	SNP045	2	R	T		103	105	107.56	/
14	SNP014	2	R	G	T	108	110	110.12	112.15
71	SNP071	2	R	A	C	113	115	115.74	117.62
119	SNP119	2	R	C	T	118	120	119.76	121.84
86	SNP086	2	R	G		123	125	126.63	/
183	SNP183	2	R	A	G	128	130	130.11	132.21
144	SNP144	2	R	C	G	133	135	135.31	137.34
121	SNP121	2	R	G	T	138	140	140.42	142.53
313	SNP313	2	R	C	T	143	145	146.13	148.32
129	SNP129	2	Y	C	G	91	93	87.27	89.6
138	SNP138	2	Y	G	T	96	98	93.22	95.55
59	SNP059	2	Y	C	T	101	103	98.24	100.35
103	SNP103	2	Y	A	C	106	108	104.12	106.15
288	SNP288	2	Y	T		111	113	110.58	/
326	SNP326	2	Y	C	A	116	118	114.93	116.8
281	SNP281	2	Y	C	T	121	123	118.42	120.75
37	SNP037	2	Y	A	G	126	128	124.38	126.34
62	SNP062	2	Y	C	T	131	133	127.02	129.22
192	SNP192	2	Y	A	G	136	138	133.75	136.04
172	SNP172	2	Y	A	G	141	143	139	141.55
226	SNP226	2	Y	A	G	146	148	145	147.51
267	SNP267	3	B	C	T	91	93	89.01	90.97
96	SNP096	3	B	G		96	98	95.52	/
150	SNP150	3	B	T		101	103	100.44	/

表E.1 位点峰图荧光及位置对应关系信息表（续）

标记物 序号	SNP 序号	panel	Dye	Allele 1	Allele 2	连接产物理 论 size_A1	连接产物理 论 size_A2	峰图 Size 1	峰图 Size 2
216	SNP216	3	B	G	A	106	108	104.23	106.18
229	SNP229	3	B	C	T	111	113	110.33	112.11
211	SNP211	3	B	G		116	118	116.42	/
43	SNP043	3	B	G	T	121	123	118.31	120.39
122	SNP122	3	B	A	G	126	128	124.38	126.47
101	SNP101	3	B	C	T	131	133	128.49	130.76
91	SNP091	3	B	A	G	136	138	134.35	136.39
243	SNP243	3	B	A	T	141	143	139.4	141.6
145	SNP145	3	B	C	T	146	148	144.69	146.8
128	SNP128	3	G	C	G	91	93	89.69	92.05
322	SNP322	3	G	C	T	96	98	94.13	96.28
328	SNP328	3	G	A		101	103	102.38	/
52	SNP052	3	G	A	G	106	108	104.67	106.79
110	SNP110	3	G	G	A	111	113	109.54	111.59
274	SNP274	3	G	A	G	116	118	114.53	116.51
177	SNP177	3	G	A	G	121	123	120.57	122.47
28	SNP028	3	G	C	T	126	128	124.83	126.74
283	SNP283	3	G	C	T	131	133	130.02	132.23
48	SNP048	3	G	C		136	138	135.56	/
170	SNP170	3	G	C	T	141	143	139.63	142.02
95	SNP095	3	G	A	C	146	148	146.06	148.49
42	SNP042	3	R	A	G	88	90	90.64	93.08
248	SNP248	3	R	C		93	95	97.32	/
262	SNP262	3	R	G	A	98	100	101.06	103.26
160	SNP160	3	R	A	G	108	110	110.33	112.46
140	SNP140	3	R	C	T	113	115	114.61	116.4
124	SNP124	3	R	A	T	123	125	124.92	126.74
268	SNP268	3	R	G	A	128	130	129.64	131.39
15	SNP015	3	R	A	G	133	135	135.22	137.34
132	SNP132	3	R	G		138	140	141.55	/
189	SNP189	3	Y	A	G	91	93	88.34	90.52
153	SNP153	3	Y	A	T	96	98	92.62	94.87
131	SNP131	3	Y	A	G	101	103	98.89	101.06
118	SNP118	3	Y	C	T	106	108	103.08	104.93
311	SNP311	3	Y	A	C	111	113	108.63	110.78
70	SNP070	3	Y	C	T	116	118	114.3	116.56
293	SNP293	3	Y	C	T	121	123	117.9	119.88
60	SNP060	3	Y	C	T	126	128	124.79	126.89
63	SNP063	3	Y	A	T	131	133	128.11	130.4
276	SNP276	3	Y	A	G	136	138	133.8	135.65
246	SNP246	3	Y	A	G	141	143	139.41	141.76
299	SNP299	3	Y	C		146	148	144.64	/
34	SNP034	4	B	A	G	91	93	89.16	91.22
195	SNP195	4	B	C	T	96	98	94.3	96.18
289	SNP289	4	B	G	A	106	108	103.34	105.55
278	SNP278	4	B	A	T	111	113	108.63	110.67
235	SNP235	4	B	A	T	116	118	114.68	117.01
82	SNP082	4	B	A	G	121	123	119.3	120.95
237	SNP237	4	B	T		131	133	131.02	/
141	SNP141	4	B	T		136	138	136.14	/

表E.1 位点峰图荧光及位置对应关系信息表（续）

标记物 序号	SNP 序号	panel	Dye	Allele 1	Allele 2	连接产物理 论 size_A1	连接产物理 论 size_A2	峰图 Size 1	峰图 Size 2
260	SNP260	4	B	A	T	141	143	139.51	141.75
304	SNP304	4	B	A	G	146	148	144.59	146.9
301	SNP301	4	G	C	T	91	93	89.79	91.86
85	SNP085	4	G	C	T	96	98	95.15	97.3
36	SNP036	4	G	A	G	101	103	99.62	101.87
76	SNP076	4	G	A	G	106	108	106.26	108.21
149	SNP149	4	G	C	A	111	113	110.21	112.18
320	SNP320	4	G	G	T	116	118	115.91	118.17
190	SNP190	4	G	G	T	121	123	119.52	121.42
2	SNP002	4	G	G	A	126	128	125.38	127.47
40	SNP040	4	G	G	T	131	133	129.73	131.85
102	SNP102	4	G	C	T	136	138	133.98	136.02
238	SNP238	4	G	C	T	141	143	141.15	143.38
146	SNP146	4	G	C	A	146	148	145.09	147.3
84	SNP084	4	R	C	T	88	90	90.7	92.94
282	SNP282	4	R	C	T	93	95	95.46	97.69
65	SNP065	4	R	A	T	98	100	100.26	102.11
165	SNP165	4	R	C	T	103	105	104.76	106.79
194	SNP194	4	R	A		108	110	111.58	/
151	SNP151	4	R	C	T	113	115	115.55	117.35
230	SNP230	4	R	C	T	118	120	119.61	121.42
271	SNP271	4	R	C		128	130	130.99	/
201	SNP201	4	R	A	C	133	135	134.73	136.86
250	SNP250	4	R	G	T	138	140	139.82	142.36
120	SNP120	4	R	A	G	143	145	144.54	146.74
196	SNP196	4	Y	A	C	91	93	87.93	90
159	SNP159	4	Y	A	G	96	98	95.21	97.15
143	SNP143	4	Y	T		101	103	101.42	/
123	SNP123	4	Y	A		106	108	103.34	/
318	SNP318	4	Y	C	T	111	113	108.66	112.13
295	SNP295	4	Y	C	T	121	123	118.8	120.88
100	SNP100	4	Y	G		126	128	125.47	/
11	SNP011	4	Y	G	A	131	133	128.66	130.77
39	SNP039	4	Y	A	G	141	143	139.92	142.16
注：受样本量及多态性限制，部分位点因样本为纯合子或未涵盖特定等位基因，导致峰图仅显示单一等位基因位置。									

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