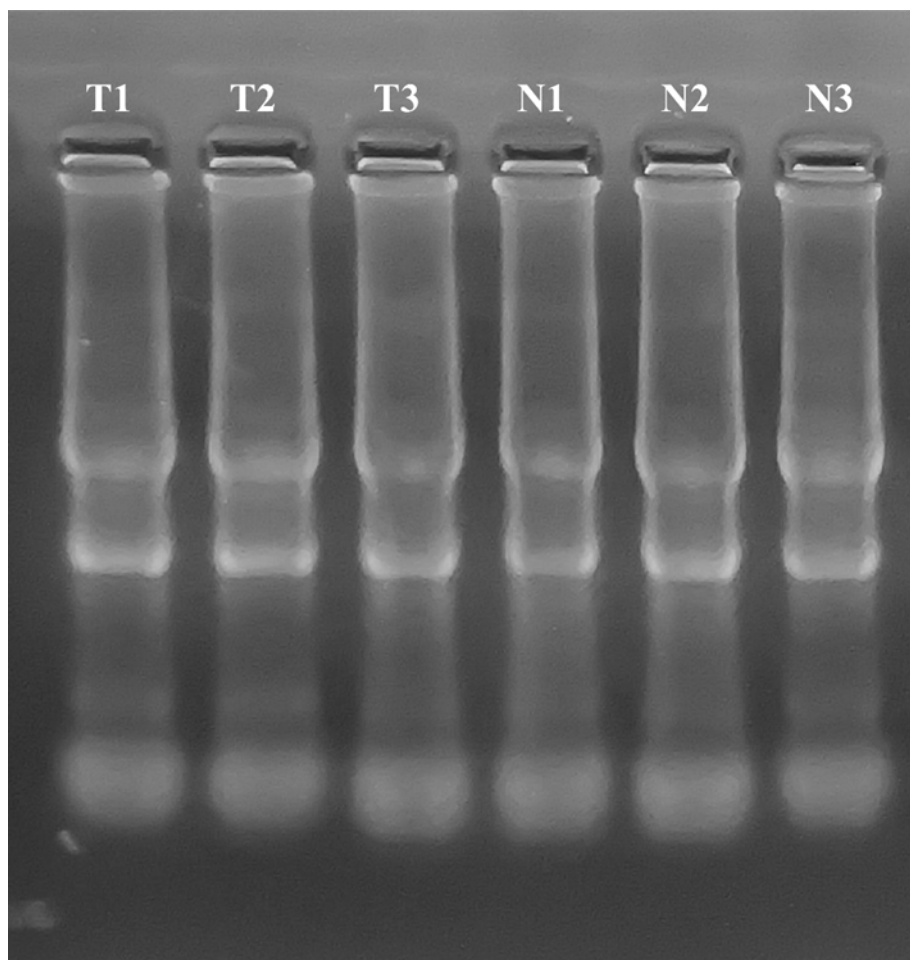


**Supplementary material of raw data including qRT-PCR and Western blot**

**qRT-PCR**

**1. RNA electropherogram in qRT-PCR (Figure 4. A1)**



**the control group (N1, N2, N3)**

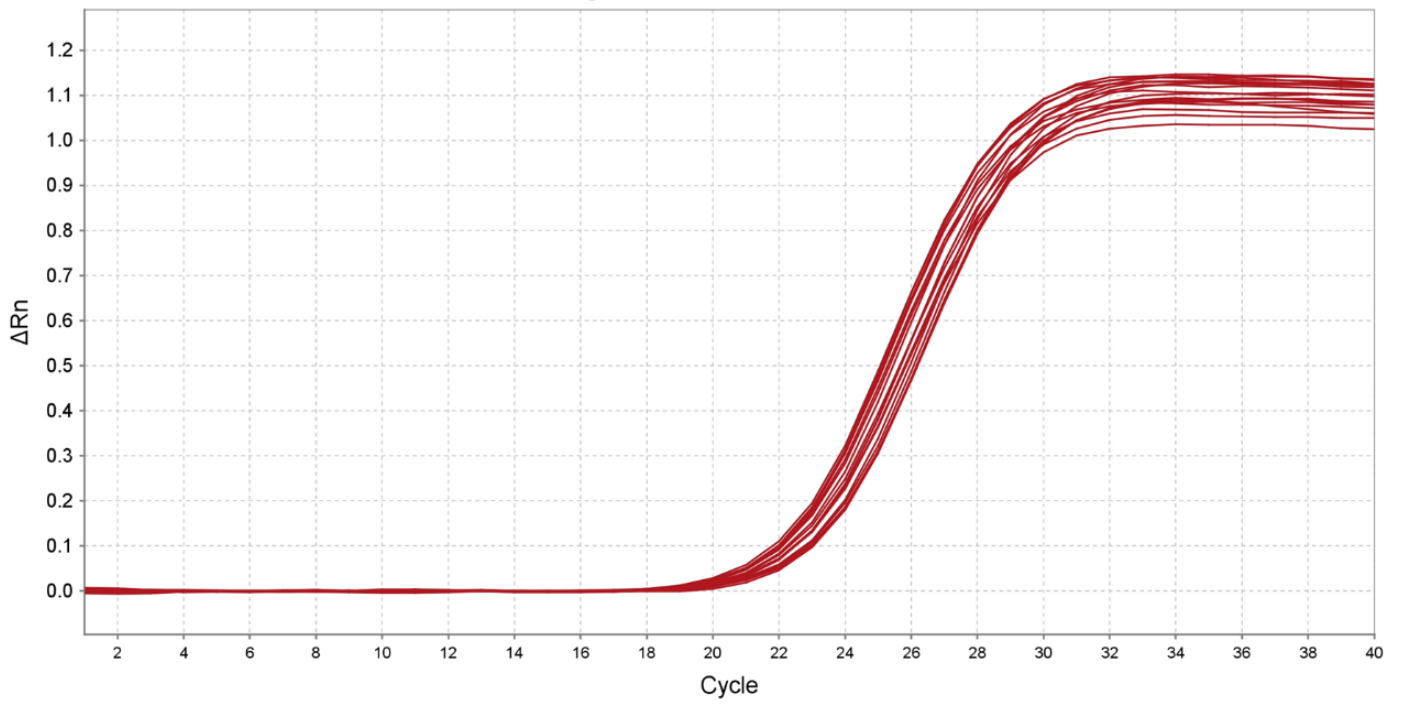
**the FLF group (T1, T2, T3)**

## 2. Primer information in qRT-PCR

Primer	Sequence (5'-3')	Product (bp)
Mitf-F2 Mitf-R2	ACAGCAACGAGCTAAGGACC CTCTAGCCTGCATCTCCAGC	101
Tyr-F1 Tyr-R1	TCCTTCTTCTCCTCCTGGCA TGGGGGTTTTGGCTTTGTCA	133
Trpc1-F1 Trpc1-R1	TTCATTGGCACCTGCTTTGC TCACAGCTCCAACGAAGGAC	115
Trpc2-F1 Trpc2-R1	TGGTGGACATGCCTCAGTTC CAGGTAGAGCTTGGAGCGAG	182
Mc1r-F1 Mc1r-R1	AATGCCACCTCTCACCTTGG ACCAGCACATTCTCCACCAG	122
Creb1-F1 Creb1-R1	TGCACAGACCACTGATGGAC GACCTCTCTCTTCCGTGCTG	193
Wnt4-F2 Wnt4-R2	CCACGCGCTAAAGGAGAAGT GTCCTGCTCACAGAAGTCCG	157
Mapk8-F1 Mapk8-R1	CAAGCACCTTCACTCTGCTG AGTCCTCGCCAGTCCAAAATC	109
Mapk1-F2 Mapk1-R2	ACCTCATGGAGACGGACCTT TGGTGTTTCAGCAGGAGGTTG	162
Ctnnb1-F1 Ctnnb1-R1	GAGCACATCAGGACACCCAA CCGAGCAAGGATGTGGAGAG	122
mGAPDH-F1 mGAPDH-R1	ATGTGTCCGTCGTGGATCTG AAGTCGCAGGAGACAACCTG	142

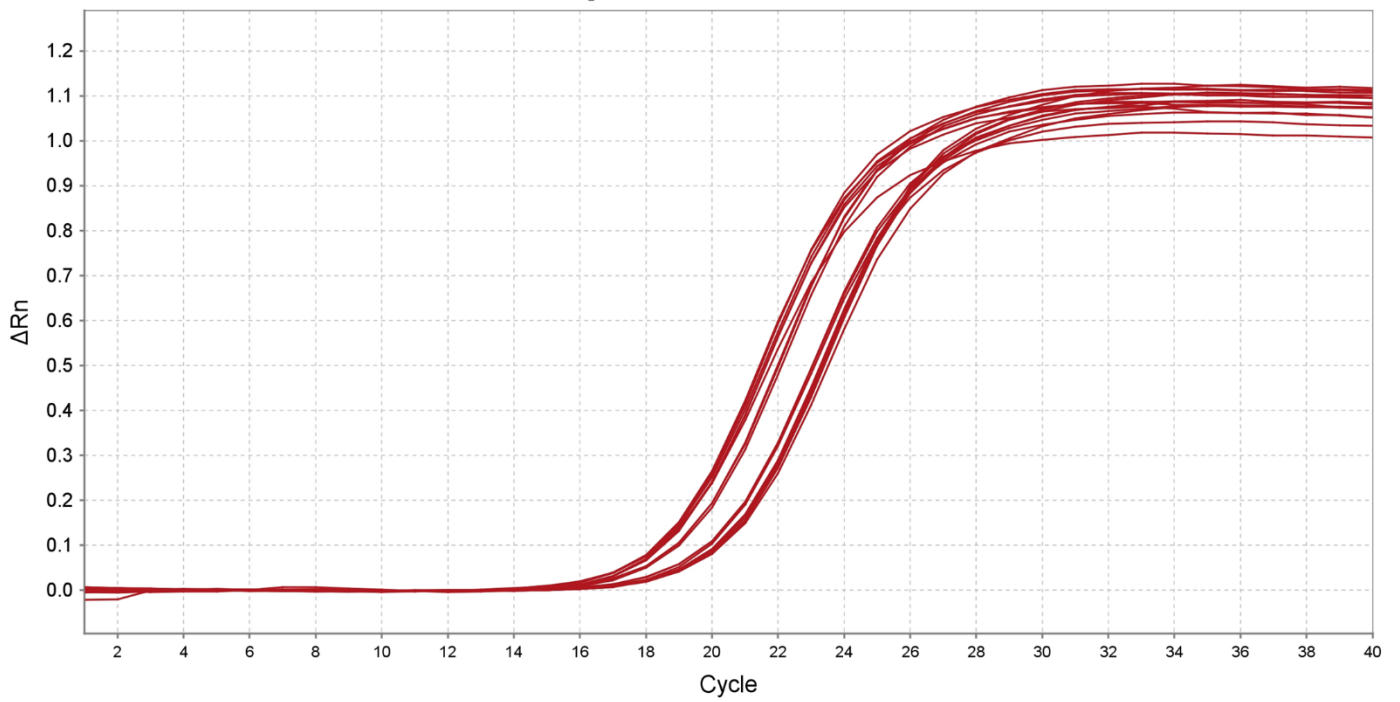
### 3. Amplification plot in qRT-PCR

#### Amplification Plot



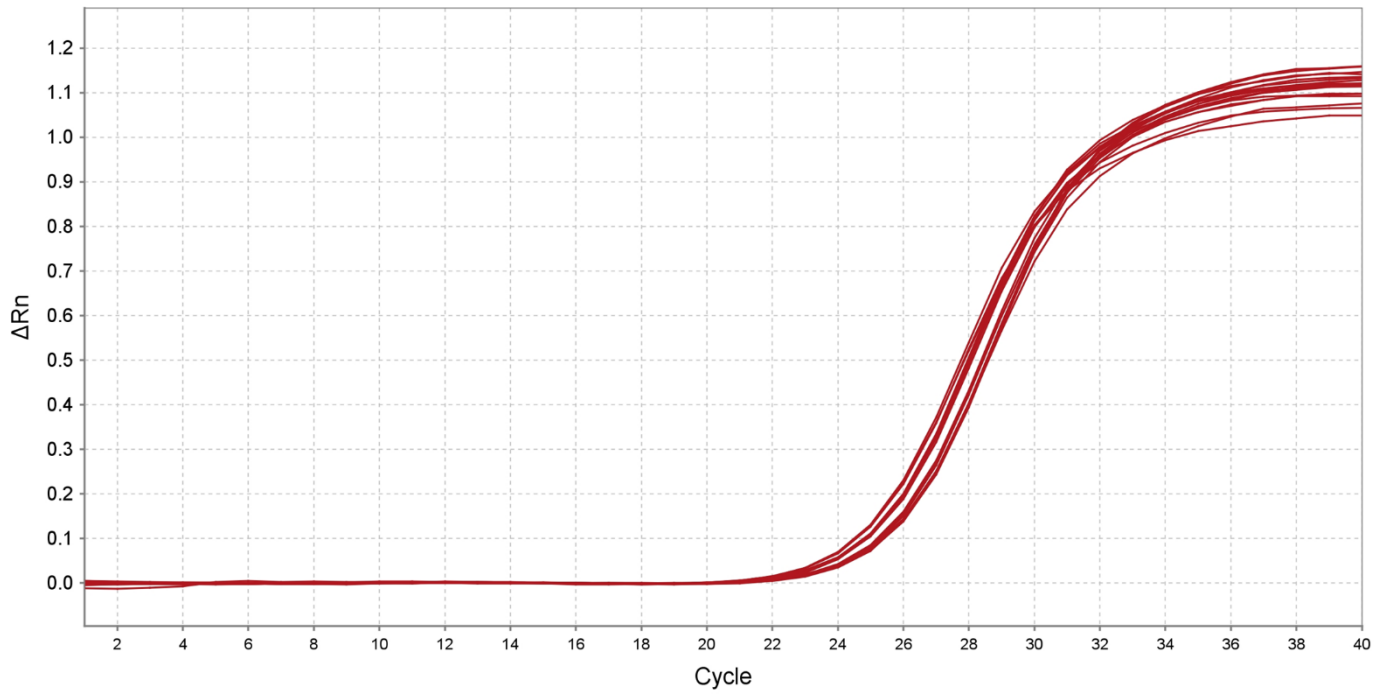
#### Amplification plot of MITF

#### Amplification Plot



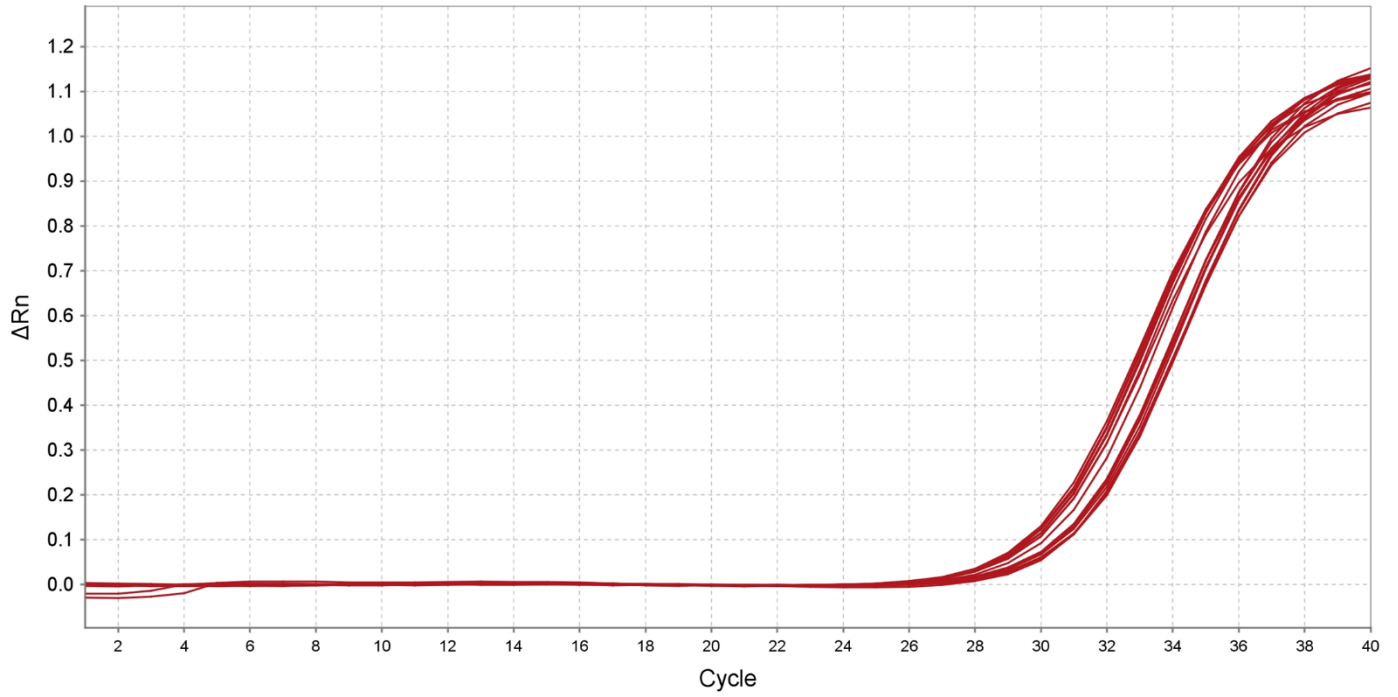
#### Amplification plot of TYR

**Amplification Plot**



**Amplification plot of TRP1**

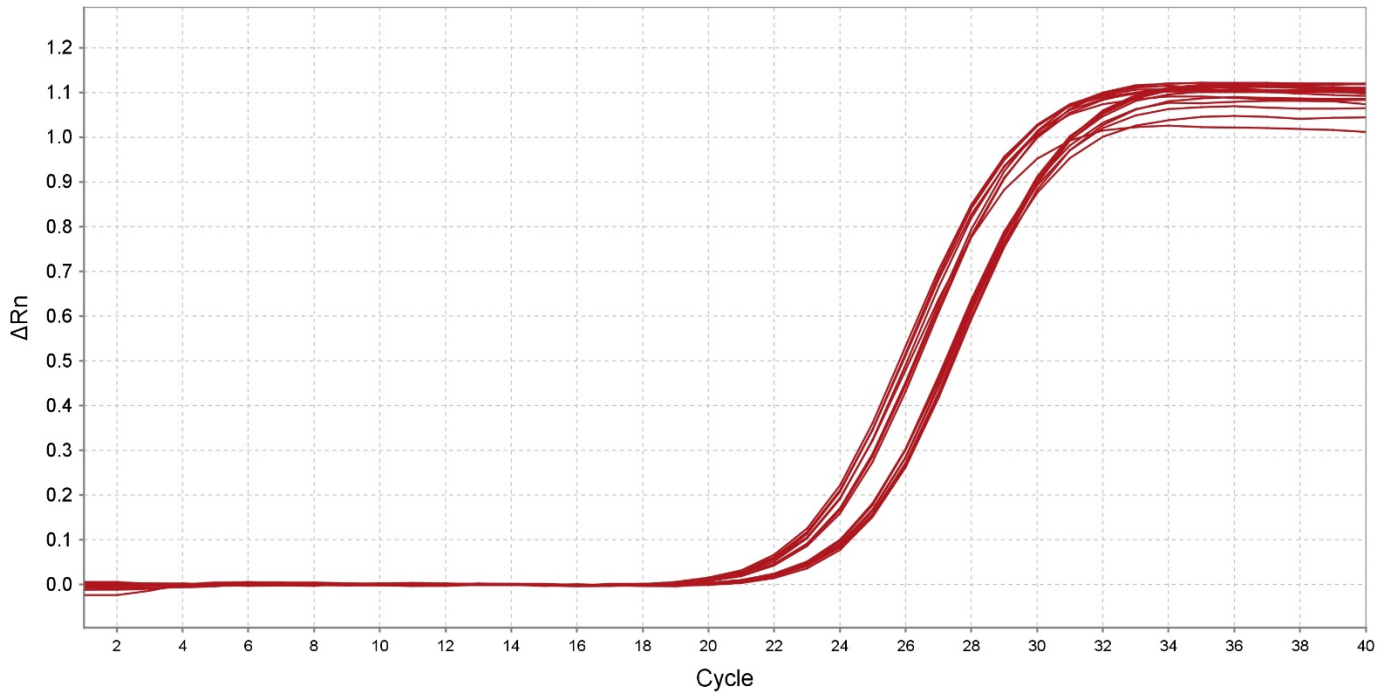
**Amplification Plot**



**Amplification plot of TRP2**

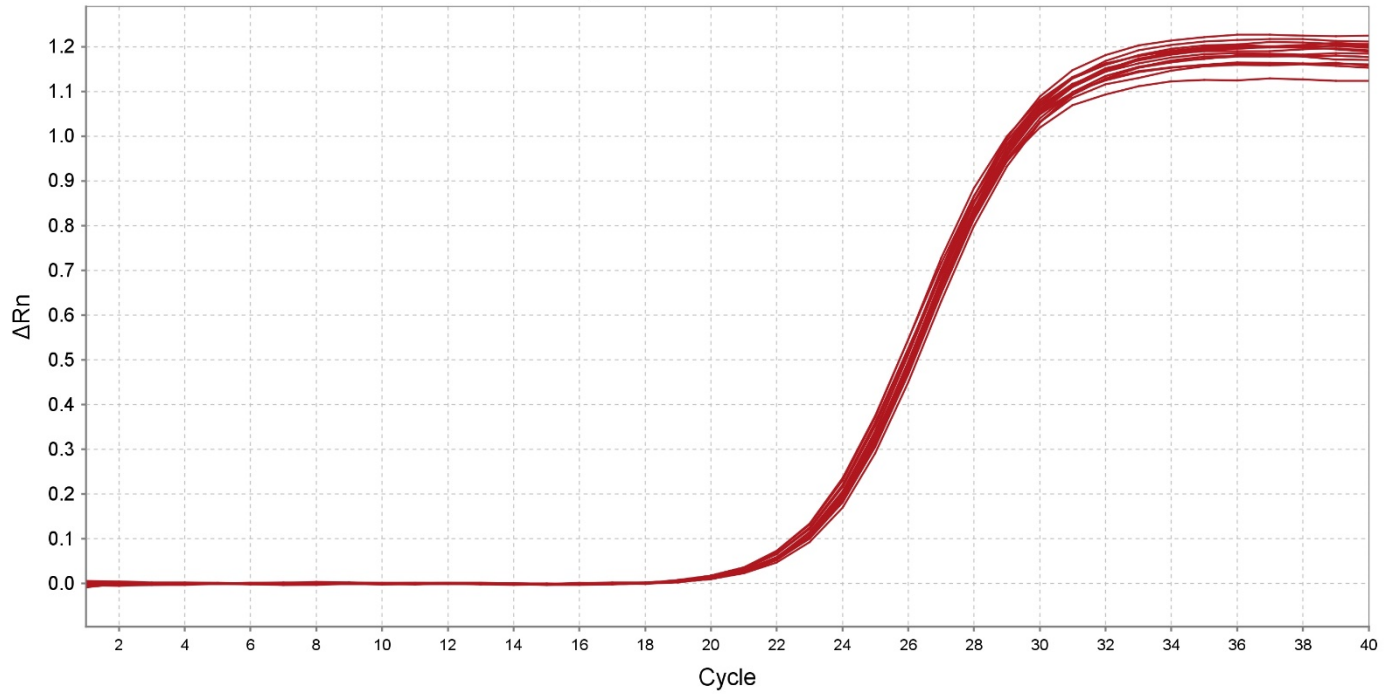


### Amplification Plot



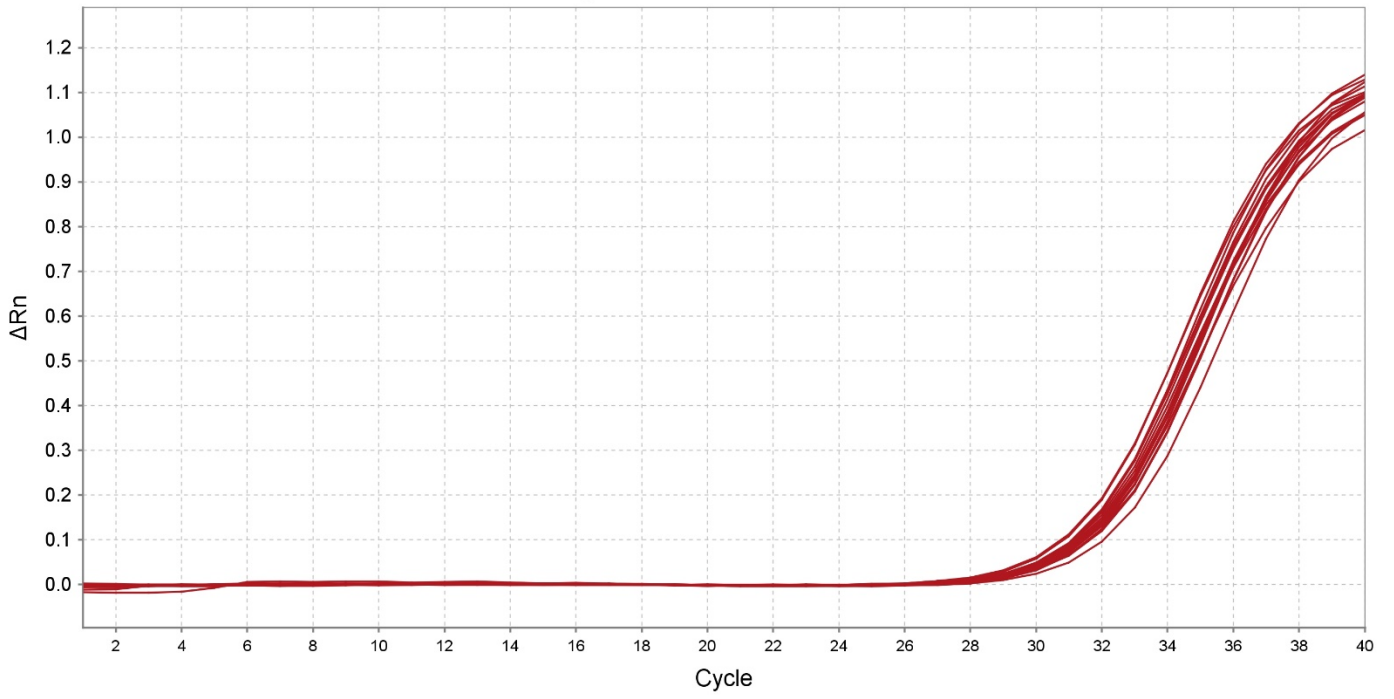
Amplification plot of MC1R

### Amplification Plot



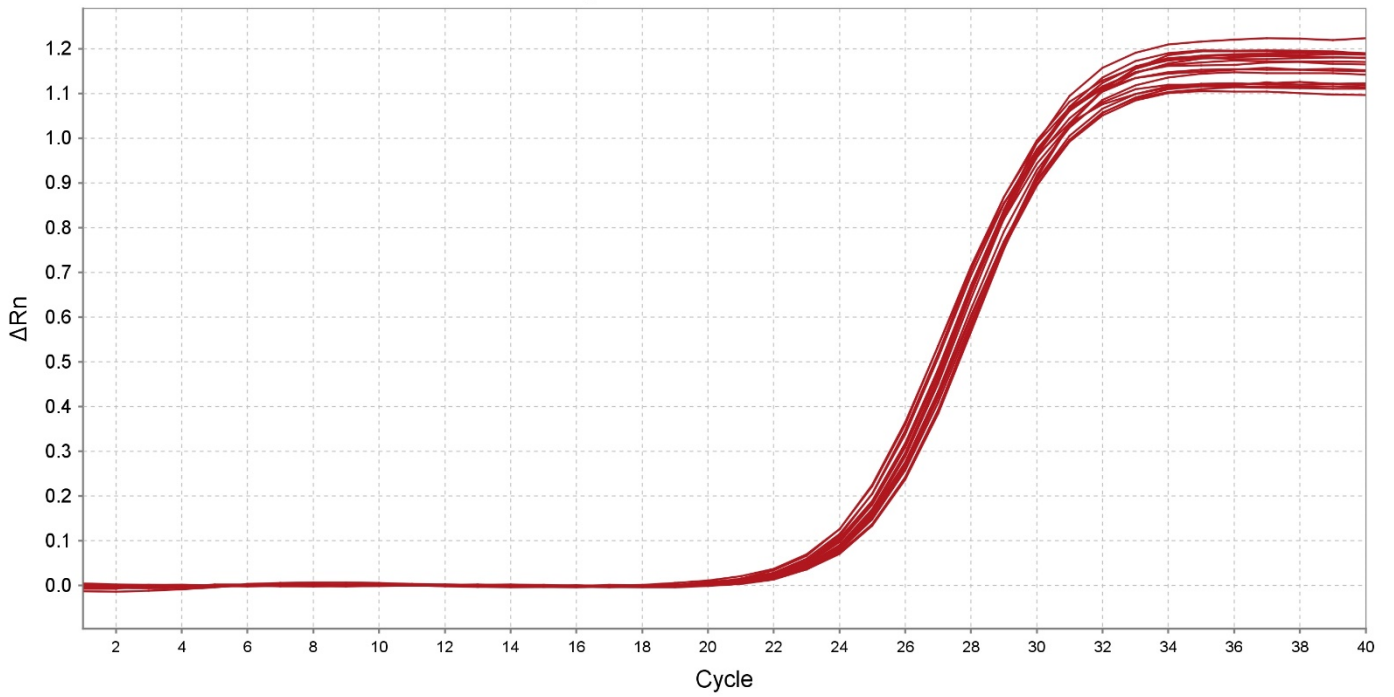
Amplification plot of CREB

### Amplification Plot



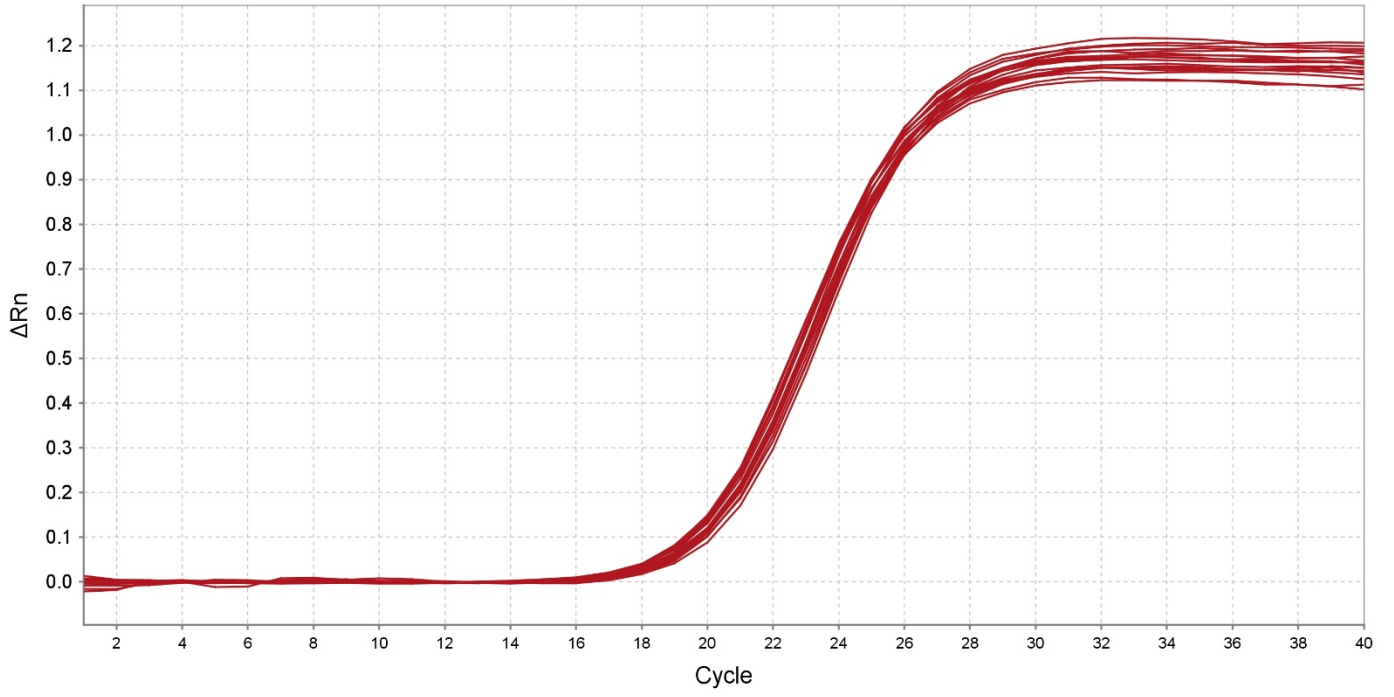
Amplification plot of WNT4

### Amplification Plot



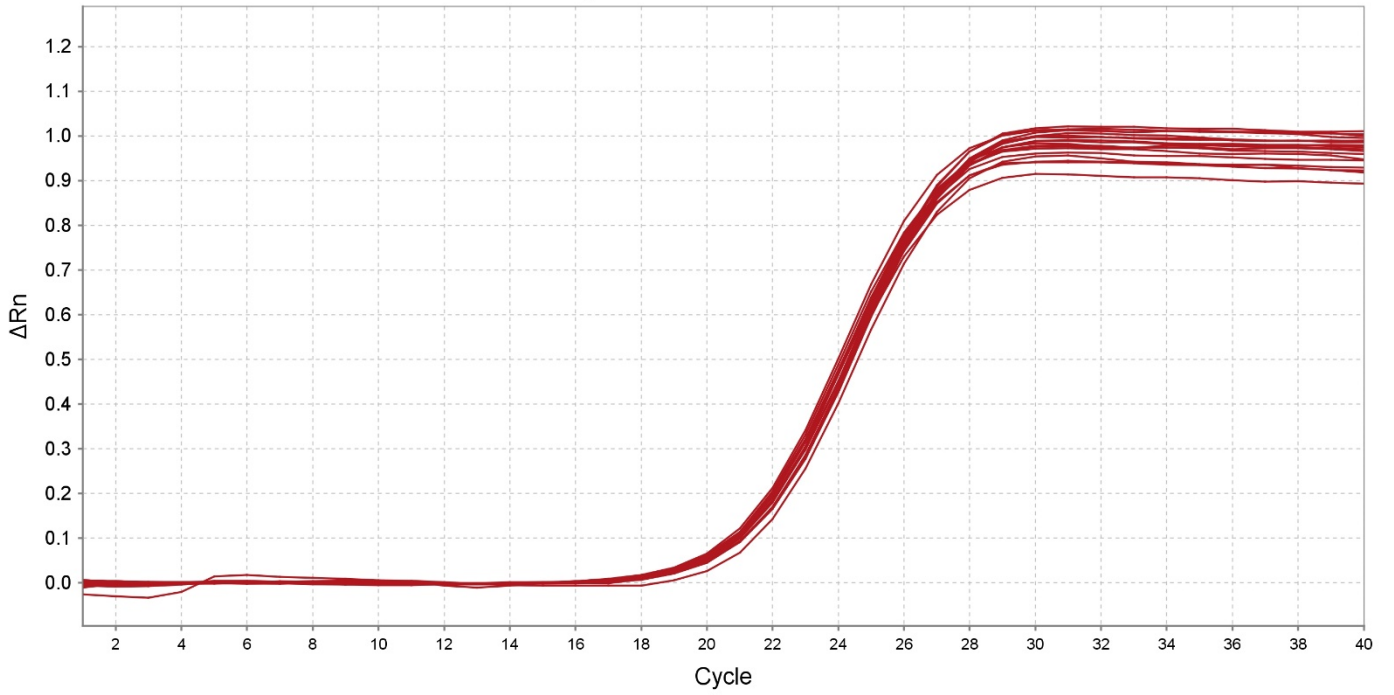
Amplification plot of JNK

### Amplification Plot



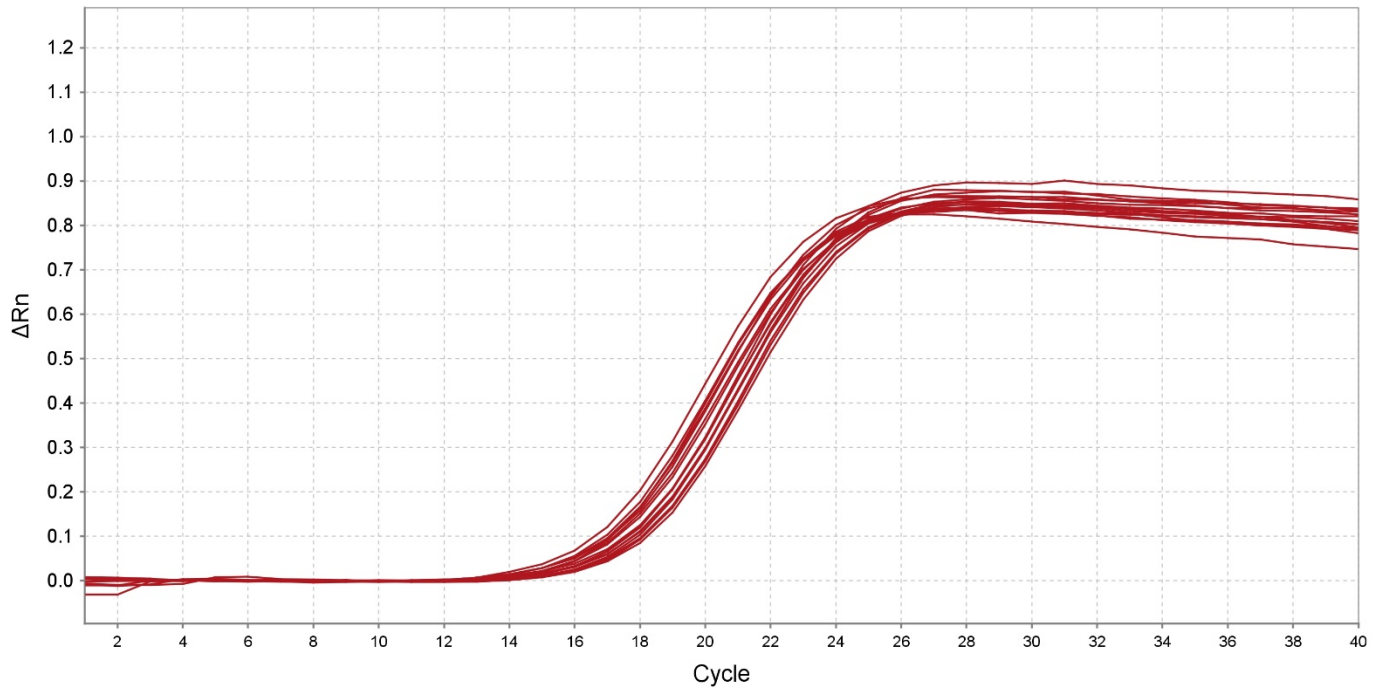
Amplification plot of ERK

### Amplification Plot



Amplification plot of  $\beta$ -catenin

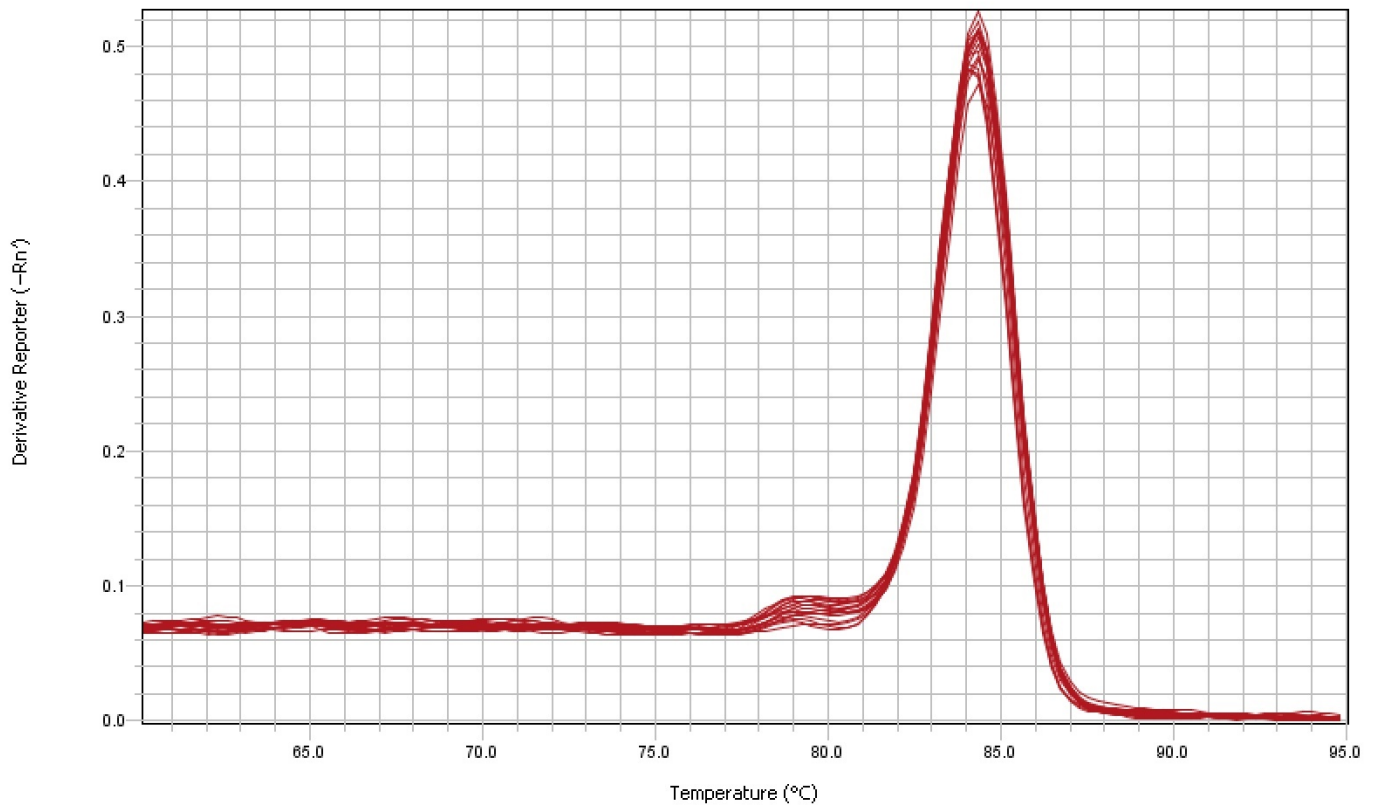
## Amplification Plot



Amplification plot of GAPDH

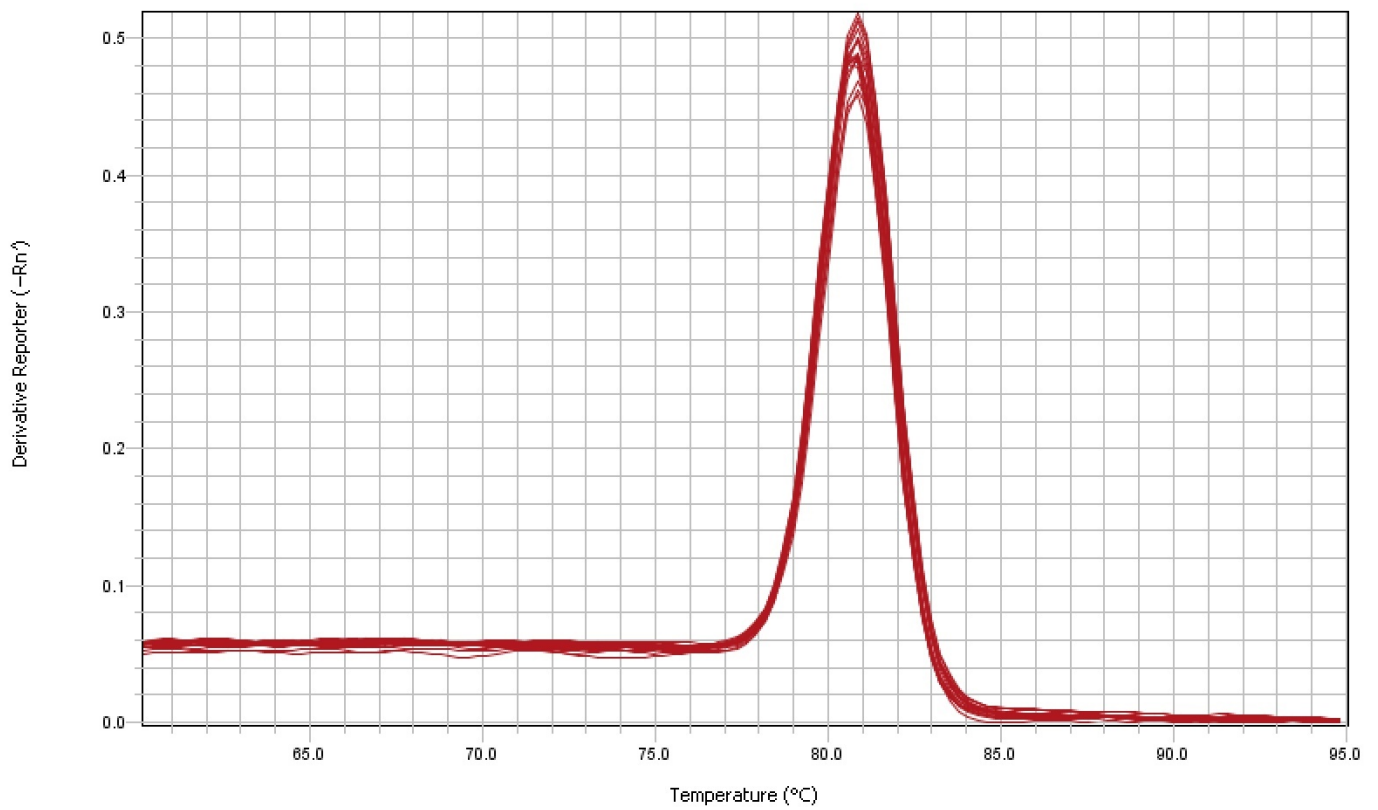
#### 4. Melt Curve Plot in qRT-PCR

##### Melt Curve Plot



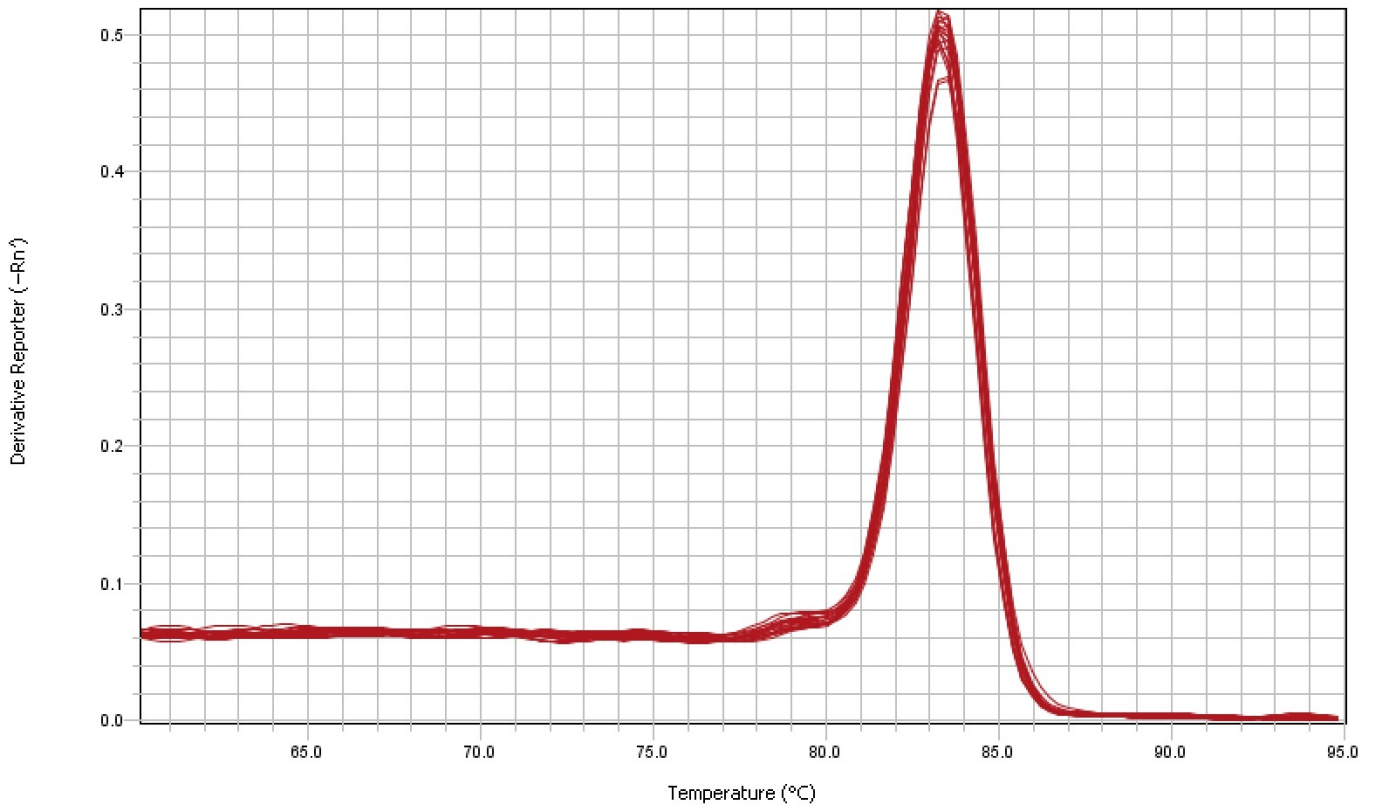
##### Melt Curve Plot of MITF

##### Melt Curve Plot



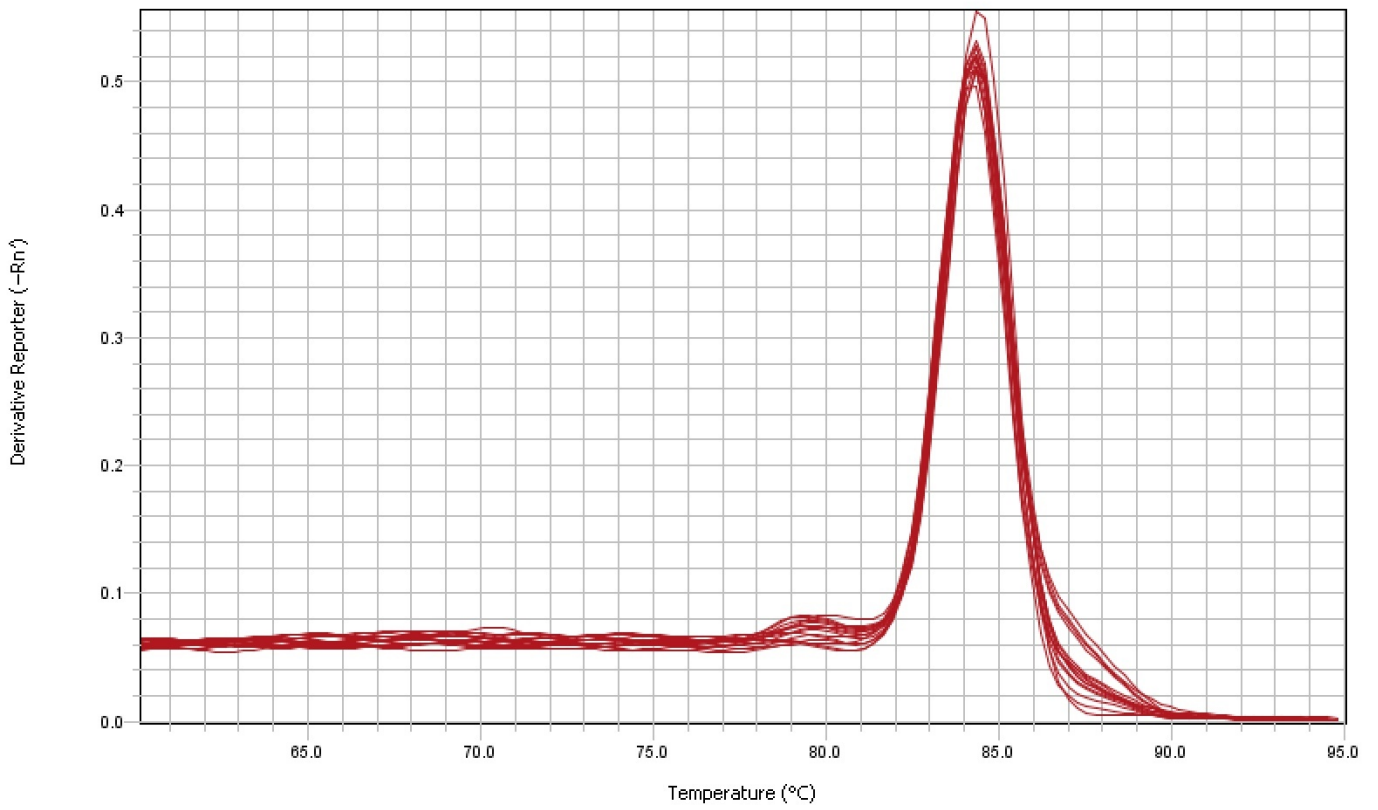
##### Melt Curve Plot of TYR

**Melt Curve Plot**



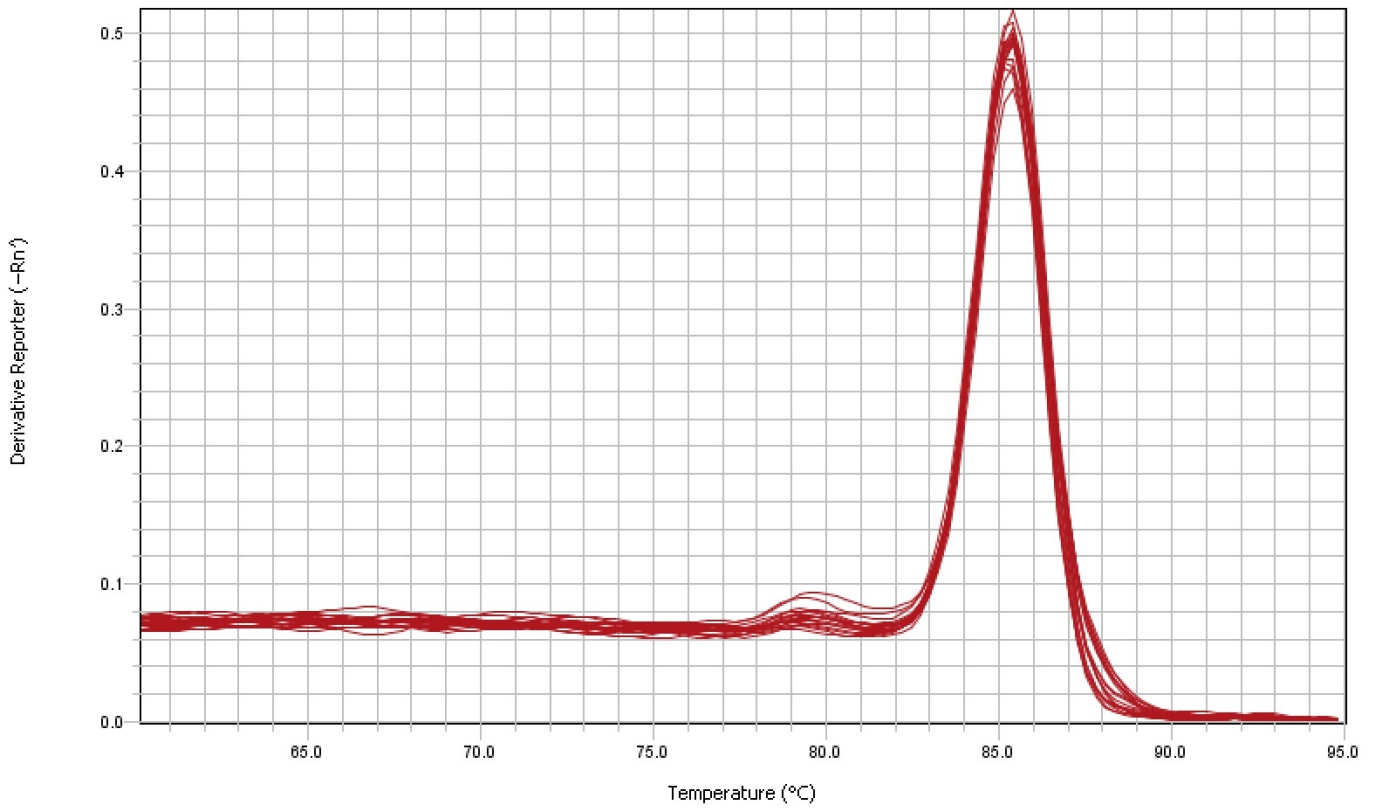
**Melt Curve Plot of TRP1**

**Melt Curve Plot**

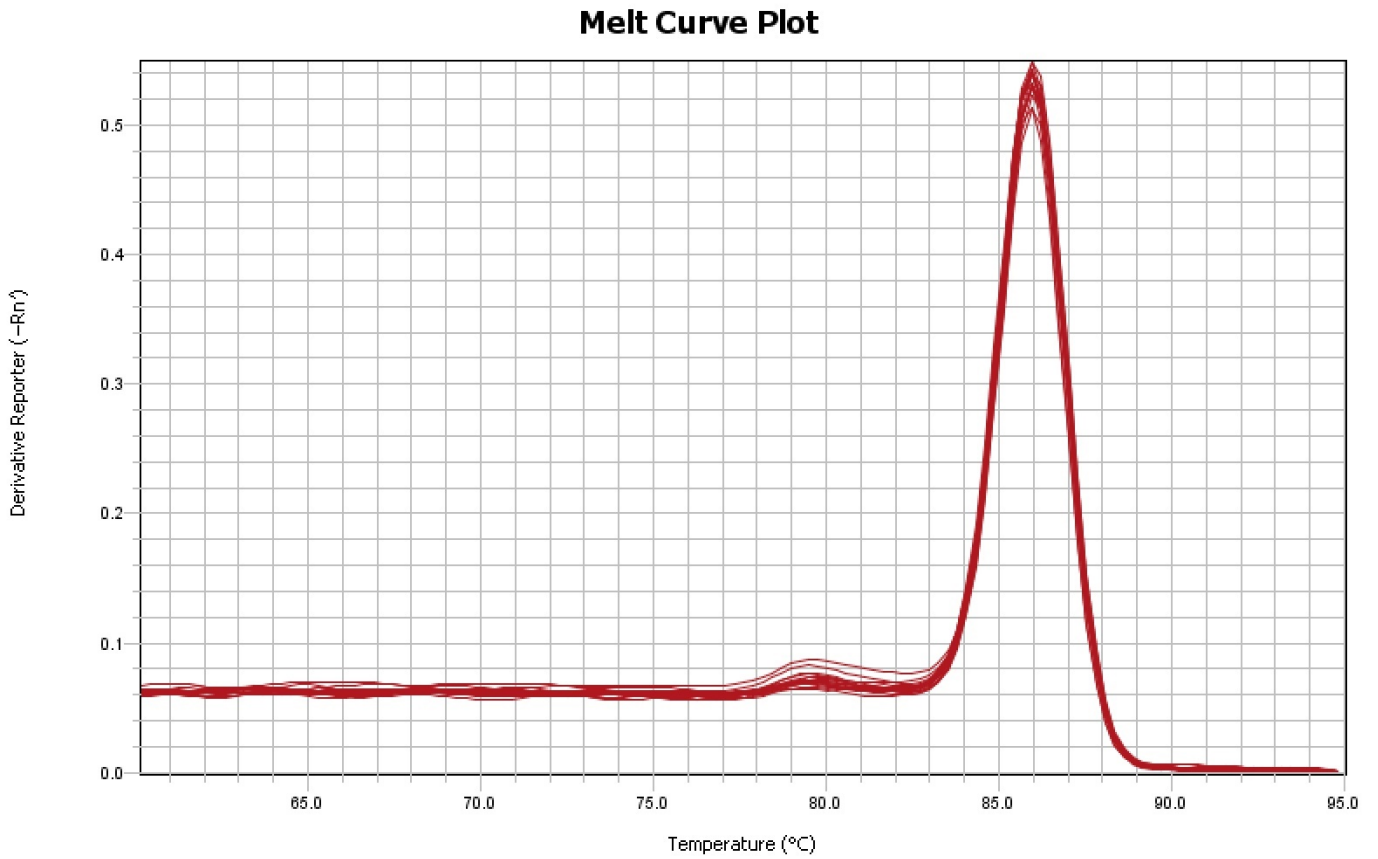


**Melt Curve Plot of TRP2**

**Melt Curve Plot**



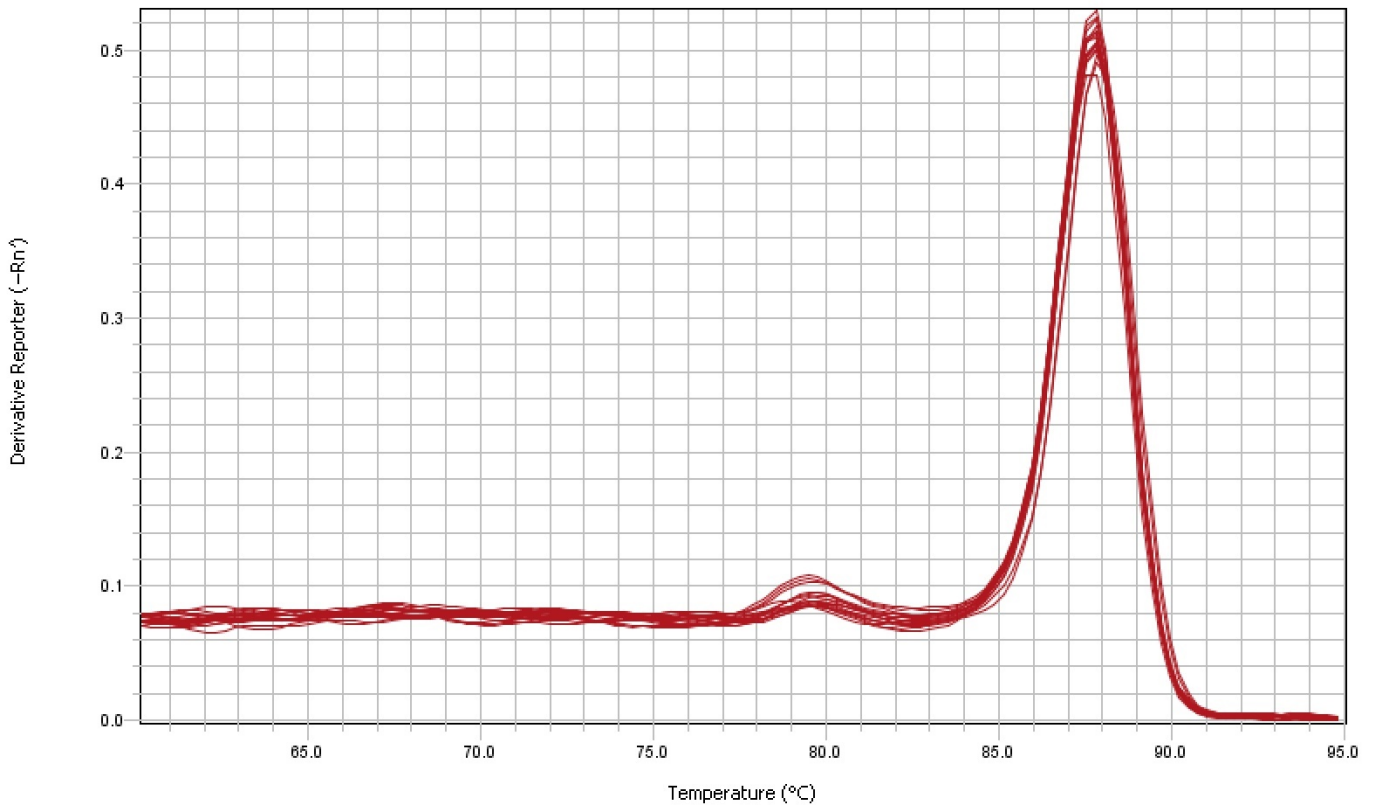
**Melt Curve Plot of MC1R**



**Melt Curve Plot of CREB**

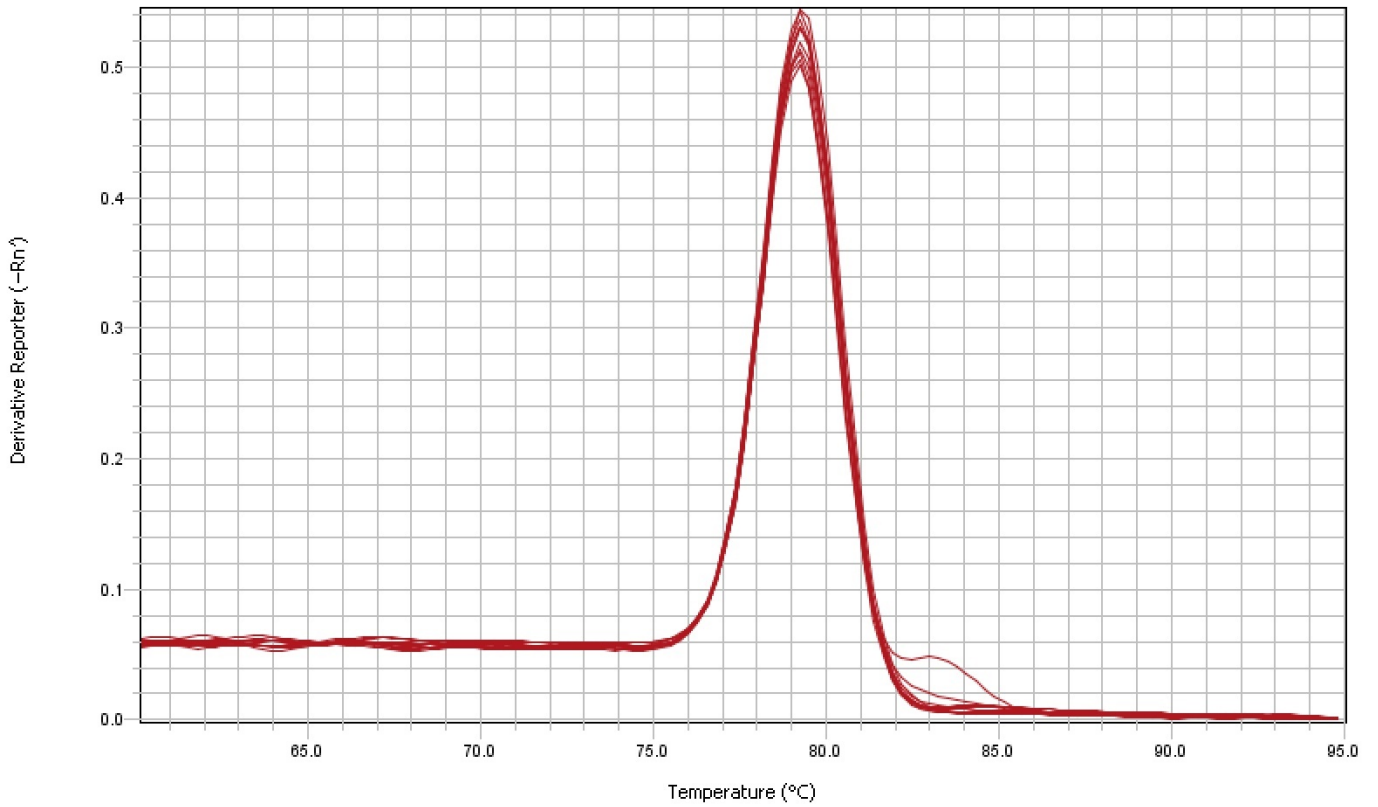


**Melt Curve Plot**



**Melt Curve Plot of WNT4**

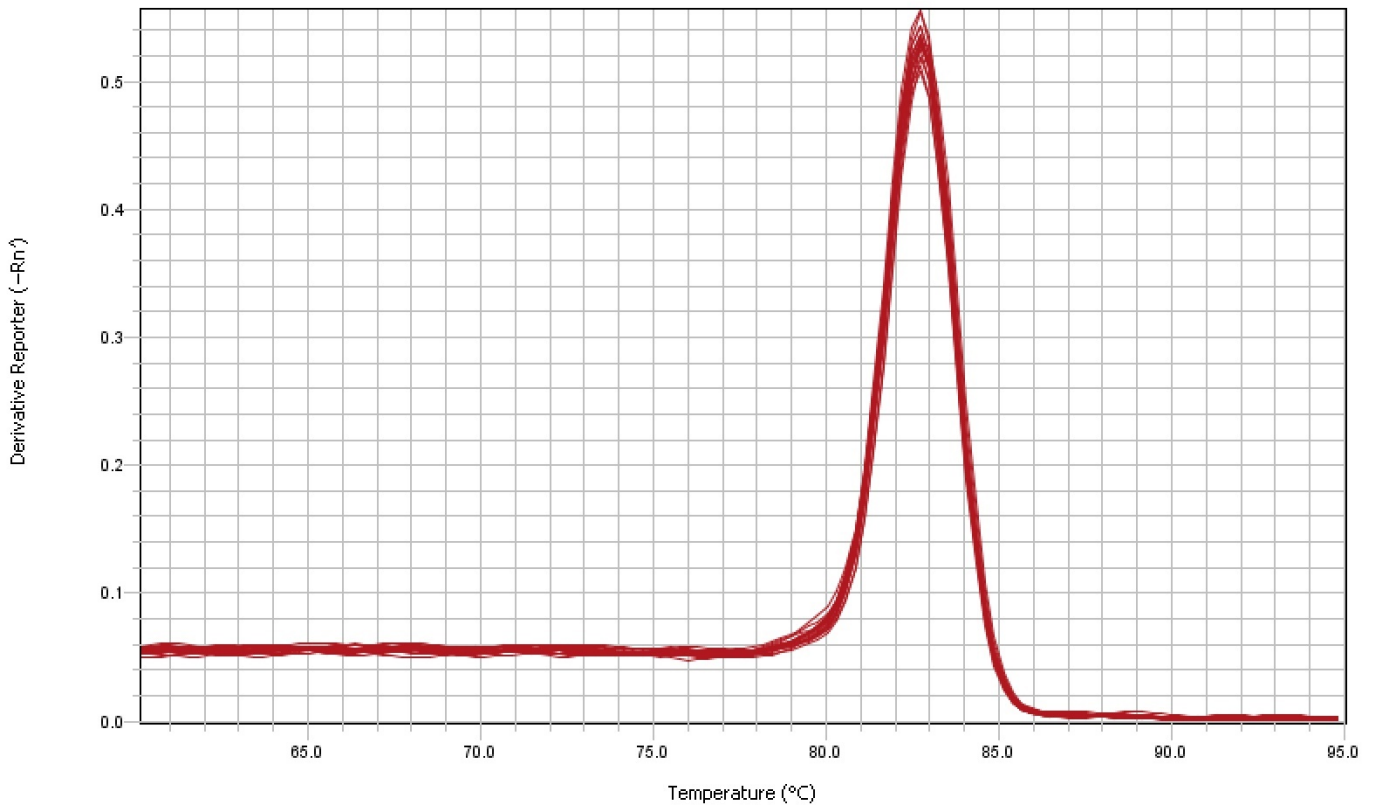
**Melt Curve Plot**



**Melt Curve Plot of JNK**

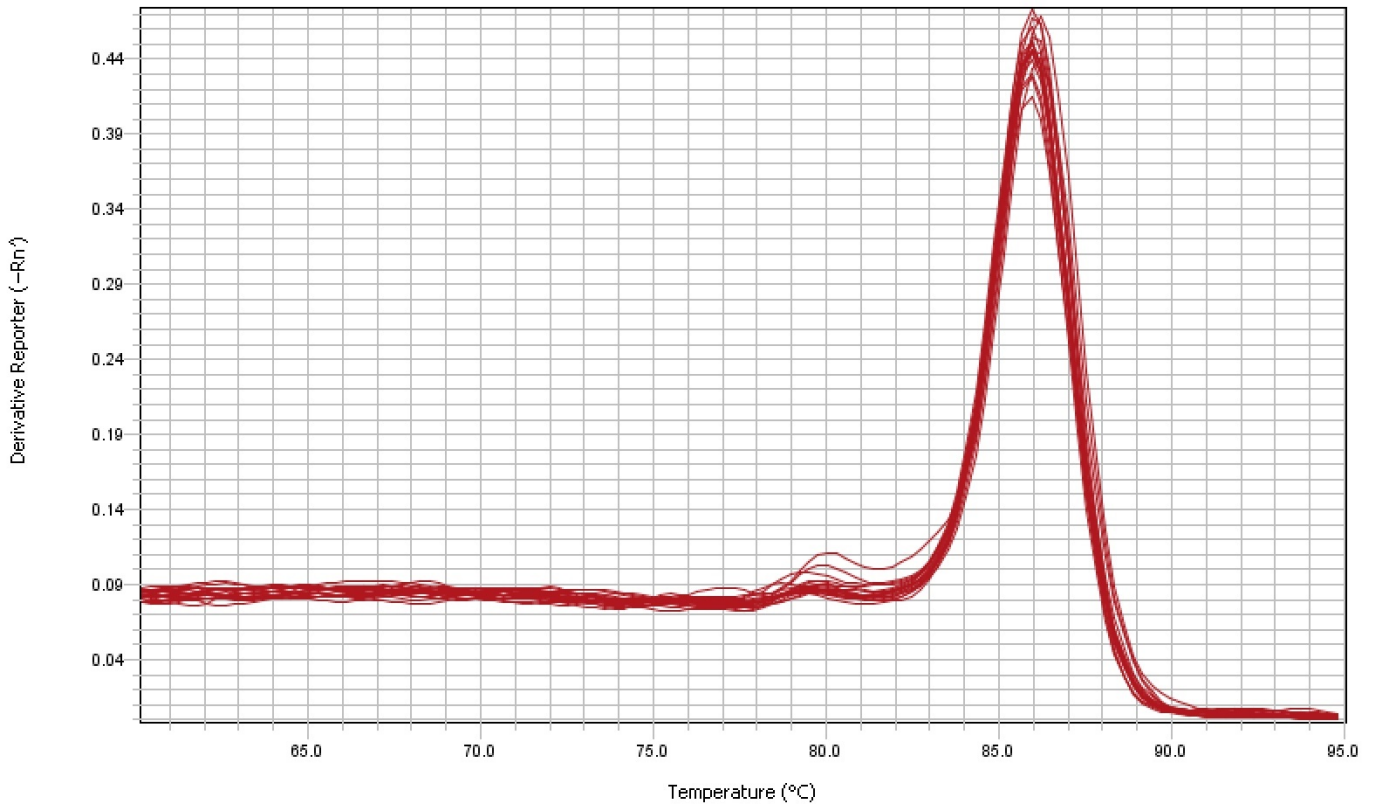


**Melt Curve Plot**



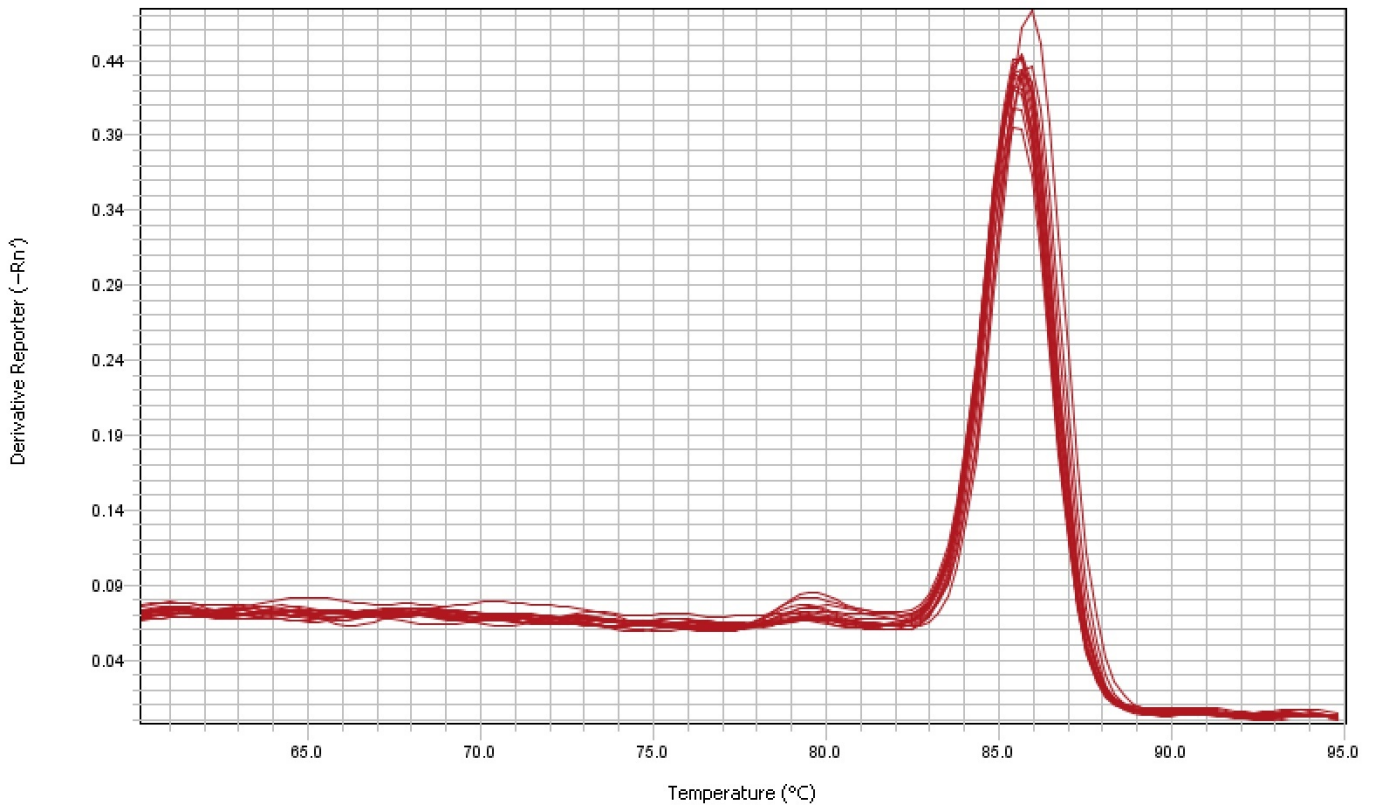
**Melt Curve Plot of ERK**

**Melt Curve Plot**



**Melt Curve Plot of  $\beta$ -catenin**

### Melt Curve Plot



### Melt Curve Plot of GAPDH

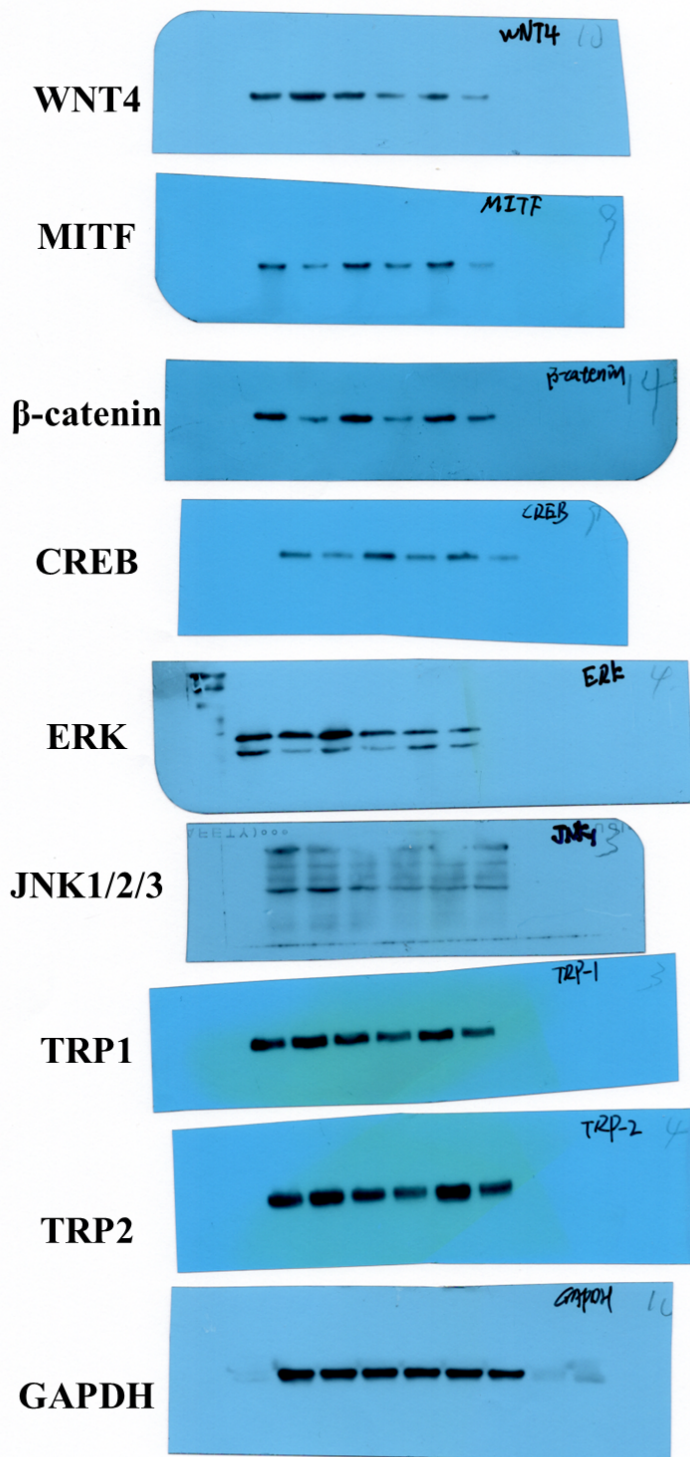
## 5. The data in qRT-PCR

Gene	Group	Sample	Ct1	Ct2	Ct3	Ct Mean	ΔCt	2 <sup>-ΔCt</sup>	2 <sup>-ΔΔCt</sup>	2 <sup>-ΔΔCt</sup> Mean	SD	Related mRNA Level (% of control)	SD	p-value
Mitf	FLF	T1	21.70	21.65	21.69	21.68	5.09	2.935E-02	0.84	0.78	0.086	77.554	8.623	0.025
		T2	21.56	21.58	21.54	21.56	5.01	3.096E-02	0.88					
		T3	22.08	22.08	22.09	22.09	5.32	2.510E-02	0.72					
	Control	N1	22.42	22.64	22.38	22.48	4.86	3.436E-02	0.98	1.00	0.036	100.000	3.618	/
		N2	22.49	22.16	22.13	22.26	4.77	3.657E-02	1.04					
		N3	21.93	22.03	22.11	22.02	4.86	3.438E-02	0.98					
TYR	FLF	T1	18.12	18.16	18.14	18.14	1.55	3.419E-01	1.45	1.18	0.025	118.289	2.464	0.024
		T2	18.31	18.31	18.50	18.37	1.82	2.824E-01	1.20					
		T3	18.57	18.67	18.68	18.64	1.87	2.742E-01	1.17					
	Control	N1	19.76	19.60	19.64	19.67	2.05	2.416E-01	1.03	1.00	0.031	100.000	3.093	/
		N2	19.62	19.52	19.65	19.60	2.11	2.313E-01	0.98					
		N3	19.20	19.31	19.28	19.26	2.10	2.328E-01	0.99					
TRP1	FLF	T1	25.04	24.93	24.96	24.98	8.39	2.982E-03	0.36	0.38	0.021	37.897	2.144	0.000
		T2	24.87	24.98	24.82	24.89	8.35	3.075E-03	0.37					
		T3	25.04	24.97	24.99	25.00	8.23	3.324E-03	0.40					
	Control	N1	24.46	24.43	24.51	24.47	6.85	8.672E-03	1.05	1.00	0.049	100.000	4.890	/
		N2	24.41	24.43	24.41	24.41	6.93	8.216E-03	1.00					
		N3	24.12	24.18	24.15	24.15	6.99	7.868E-03	0.95					
TRP2	FLF	T1	30.16	30.40	30.37	30.31	13.72	7.406E-05	0.28	0.31	0.035	31.043	3.469	0.000
		T2	30.05	30.15	30.40	30.20	13.65	7.761E-05	0.30					
		T3	30.04	30.19	30.34	30.19	13.42	9.120E-05	0.35					
	Control	N1	29.32	29.69	29.42	29.48	11.86	2.689E-04	1.03	1.00	0.099	100.000	9.901	/
		N2	29.28	29.33	29.23	29.28	11.79	2.816E-04	1.08					
		N3	29.18	29.42	29.11	29.24	12.07	2.319E-04	0.89					
MC1R	FLF	T1	22.45	22.40	22.54	22.46	5.87	1.705E-02	1.36	1.38	0.125	137.629	12.461	0.010
		T2	22.30	22.32	22.20	22.27	5.73	1.890E-02	1.51					
		T3	22.81	22.71	22.75	22.75	5.98	1.579E-02	1.26					
	Control	N1	23.86	23.84	23.95	23.88	6.27	1.299E-02	1.04	1.00	0.067	100.000	6.703	/
		N2	23.72	23.76	23.76	23.75	6.26	1.304E-02	1.04					
		N3	23.58	23.57	23.64	23.60	6.43	1.156E-02	0.92					
CREB	FLF	T1	22.38	22.36	22.38	22.38	5.79	1.813E-02	0.58	0.60	0.046	59.564	4.552	0.001
		T2	22.23	22.09	22.19	22.17	5.62	2.032E-02	0.65					
		T3	22.69	22.56	22.53	22.60	5.82	1.764E-02	0.56					
	Control	N1	22.55	22.45	22.55	22.52	4.90	3.353E-02	1.07	1.00	0.067	100.000	6.740	/
		N2	22.50	22.49	22.46	22.48	5.00	3.134E-02	1.00					
		N3	22.20	22.51	22.05	22.25	5.09	2.930E-02	0.93					
WNT4	FLF	T1	30.76	30.98	31.63	31.13	14.54	4.211E-05	0.48	0.52	0.042	52.156	4.169	0.021
		T2	31.50	30.71	30.35	30.85	14.31	4.935E-05	0.56					
		T3	31.21	31.25	30.99	31.15	14.38	4.694E-05	0.53					
	Control	N1	31.21	30.66	30.43	30.77	13.15	1.101E-04	1.24	1.00	0.219	100.000	21.928	/
		N2	31.04	31.19	30.92	31.05	13.56	8.257E-05	0.93					
		N3	30.86	30.78	31.08	30.91	13.75	7.267E-05	0.82					

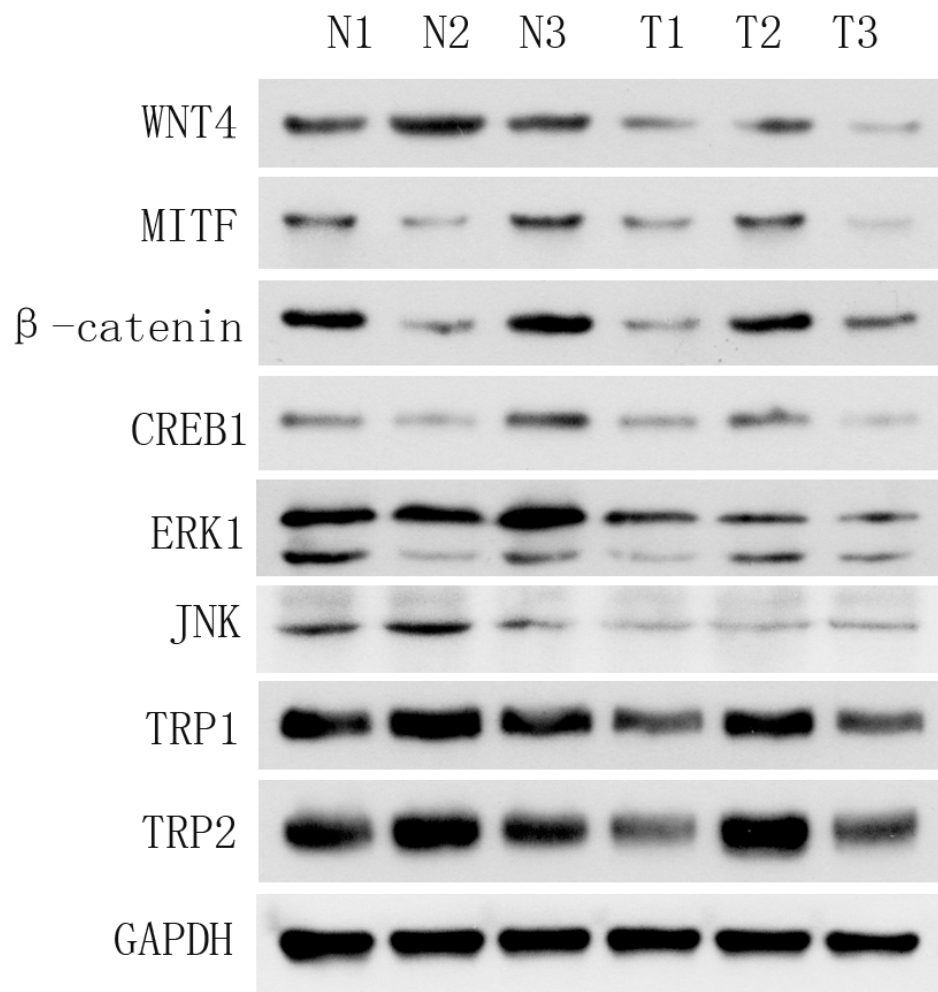
JNK	FLF	T1	23.94	23.95	23.88	23.92	7.34	6.193E-03	0.42	0.44	0.032	44.220	3.240	0.000
		T2	23.80	23.78	23.47	23.69	7.14	7.095E-03	0.48					
		T3	24.06	24.09	24.06	24.07	7.30	6.361E-03	0.43					
	Control	N1	23.73	23.72	23.79	23.75	6.13	1.428E-02	0.96	1.00	0.081	100.000	8.135	/
		N2	23.55	23.62	23.14	23.44	5.95	1.619E-02	1.09					
		N3	23.18	23.35	23.44	23.32	6.16	1.396E-02	0.94					
ERK	FLF	T1	19.11	19.27	19.28	19.22	2.63	1.613E-01	0.57	0.56	0.060	55.863	5.997	0.002
		T2	19.08	19.01	19.15	19.08	2.53	1.726E-01	0.61					
		T3	19.55	19.51	19.78	19.61	2.84	1.393E-01	0.49					
	Control	N1	19.32	19.43	19.33	19.36	1.74	2.993E-01	1.06	1.00	0.085	100.000	8.532	/
		N2	19.44	19.60	19.33	19.46	1.97	2.547E-01	0.90					
		N3	18.93	18.97	18.90	18.93	1.77	2.929E-01	1.04					
$\beta$ -catenin	FLF	T1	20.42	20.46	20.42	20.44	3.85	6.951E-02	0.64	0.63	0.063	62.531	6.318	0.003
		T2	20.31	20.43	20.22	20.32	3.77	7.323E-02	0.68					
		T3	20.70	20.70	21.09	20.83	4.06	5.999E-02	0.56					
	Control	N1	20.71	20.67	20.58	20.65	3.03	1.221E-01	1.13	1.04	0.087	104.335	8.742	/
		N2	20.68	20.52	20.70	20.63	3.15	1.129E-01	1.04					
		N3	20.49	20.32	20.51	20.44	3.28	1.032E-01	0.96					
GAPDH	FLF	T1	16.57	16.47	16.73	16.59								
		T2	16.42	17.08	16.15	16.55								
		T3	16.86	16.79	16.66	16.77								
	Control	N1	17.34	17.82	17.69	17.62								
		N2	17.35	17.49	17.61	17.49								
		N3	17.22	17.09	17.17	17.16								

Western blot

1. The raw figure in Western blot



2. Western blot image. (Figure 4. B1)



### 3. The data in Western Blot

the control group (N1, N2, N3)								
IOD	1	2	3	N Mean	SD	Related protein/GAPGH Ratio (% of control)		
	N1	N2	N3			N Mean	SD	p-value
WNT4	391.656	600.970	436.780	476.469	77.892	15.069	2.463	/
MITF	238.616	91.651	343.726	224.664	89.530	7.105	2.831	/
β-catenin	1343.457	139.714	1667.530	1505.494	132.302	47.612	4.184	/
CREB1	188.885	91.024	376.268	218.725	102.491	6.917	3.241	/
ERK1	1608.422	1389.669	2158.301	1718.797	280.032	54.358	8.856	/
	82.030	44.435	168.263	98.242	44.891	3.107	1.420	/
JNK1/2/3	378.022	630.282	238.529	415.611	140.405	13.144	4.440	/
TRP-1	2225.597	3199.248	1869.204	2047.401	145.497	64.751	4.601	/
TRP-2	1868.111	3506.461	1420.075	1644.093	182.910	51.996	5.785	/
GAPDH	3367.727	3010.313	3107.884	3161.975	130.634	100.000	4.131	/
the FLF group (T1, T2, T3)								
IOD	4	5	6	T Mean	SD	Related protein/GAPGH Ratio (% of control)		
	T1	T2	T3			T Mean	SD	p-value
WNT4	123.271	221.581	52.687	132.513	59.981	4.457	2.017	0.013
MITF	72.190	249.540	52.162	124.631	76.818	4.191	2.583	0.050
β-catenin	123.529	1128.049	203.006	163.267	32.446	5.491	1.091	0.015
CREB1	86.963	180.011	54.962	107.312	45.934	3.609	1.545	0.932
ERK1	401.834	250.466	144.721	265.674	91.379	8.935	3.073	0.004
	43.343	232.876	80.142	118.787	71.066	3.995	2.390	0.780
JNK1/2/3	46.164	80.695	63.852	63.570	12.210	2.138	0.411	0.038
TRP-1	614.394	2561.109	577.640	596.017	15.005	20.045	0.505	0.015
TRP-2	616.957	3865.034	894.087	755.522	113.138	25.409	3.805	0.078
GAPDH	2992.237	2989.768	2938.360	2973.455	21.509	100.000	0.723	0.156

\*The deviation of data marked in blue is too large and the data should be discarded.