Supplementary Material

Identification of The Role of Wnt/β-catenin Pathway through Integrated Analyses and *in vivo* Experiments in Vitiligo

Table S1 The Clinical Information of The Patients

Patient ID	Gender	Age	Duration	Progression	Classification	BSA [a]	Biopsy Area	Associated Disorders [b] or Family History
1	F	62Y	2Y	Stable	NSV	1%	Vulva	N
2	F	37Y	1Y	Stable	NSV	4%	Scalp	N
3	M	18Y	3Y	Stable	NSV	1.5%	Face	N
4	M	26Y	2Y	Stable	NSV	3%	Prepuce	N
5	F	22Y	5 Mon	Unstable	NSV	2%	Upper Limb	N
6	F	25Y	13Mon	Unstable	NSV	4%	Perianal Region	N

Notes: a. The severity of the disease is scored by body surface area(BSA) of depigmentation.

b. Associated disorders include psoriasis, alopecia areata, lupus erythematosus, rheumatoid arthritis, diabetes and so on.All patients had not received vitiligo-related treatment prior to surgical biopsy.**Abbreviations:** F, female; M, male; Y, years; Mon, months; NSV, nonsegmental vitiligo; BSA, body surface area; N, none;

Table S2 The Clinical Information of The Healthy Volunteer

Healthy Volunteer ID	Gender	Age	Biopsy Area	Associated Disorders [a] or Family History of Vitiligo
1	F	29Y	Cervical Region	N
2	F	28Y	Back	N
3	M	36Y	Cervical Region	N
4	M	48Y	Face	N
5	F	29Y	Back	N
6	M	32Y	Upper Limb	N

Notes: a. Associated disorders include psoriasis, alopecia areata, lupus erythematosus, rheumatoid arthritis, diabetes and so on.

Abbreviations: F, female; M, male; Y, years; N, none.

Table S3 The q-PCR Reaction Conditions

Stages	Reps	Temperature	Time
Stage1	1	95℃	5min
Stage2	40	95℃	10sec
		60℃	30sec
Stage3	1	95℃	15sec
		60℃	60sec
		95℃	15sec

Abbreviations: min: minute; sec: second.

Table S4 The Primer Information For q-PCR Analysis in Zebrafish.

Gene	Primer Sequence (5'to 3')
β-actin [1]	Forward: GAAGGAGATCACCTCTCTTGCTC
	Reverse: GTTCTGTTTAGAAGCACTTCCTGTG
tyr	Forward: ACTACCGAGAGGCAGAGGTTCATC
	Reverse: TTGGCGAACATTGGCGTGGAG
mitf [2]	Forward: TGTACAGCAATCATGCTCTTCC
	Reverse: GTCCCCAGCTCCTTAATTCTGTC
β-catenin [3]	Forward: CAAGAGCAAGTAGCAGACATCG
	Reverse: CTGTGTGGAAGGTATCTGCATG
lef1 [4]	Forward: CACGTTCCTACACCTGTCCCTAA
	Reverse: AAGCAAGTGAGCGAGTGGACAT

Source / reference of the primers:

1. Wehner D, Cizelsky W, Vasudevaro MD,et al.Wnt/β-catenin signaling defines organizing centers that orchestrate growth and differentiation of the regenerating zebrafish caudal fin.*Cell Rep*.2014;6(3):467-81.doi: 10.1016/j.celrep.2013.12.036.
2. Lister JA, Capper A, Zeng Z, et al.A conditional zebrafish MITF mutation reveals MITF levels are critical for melanoma promotion vs.regression *in vivo*.*J Invest Dermatol.*2014;134(1):133-140.doi: 10.1038/jid.2013.293.

3. Gorsuch RA, Lahne M, Yarka CE, Petravick ME, Li J, Hyde DR. Sox2 regulates Müller glia reprogramming and proliferation in the regenerating zebrafish retina via Lin28 and Ascl1a.*Exp Eye Res*.2017;161:174-192. doi: 10.1016/j.exer.2017.05.012.

4. Yin A, Korzh S, Winata CL, Korzh V, Gong Z.Wnt signaling is required for early development of zebrafish swimbladder.*PLoS One*.2011;6(3):e18431.doi: 10.1371/journal.pone.0018431.

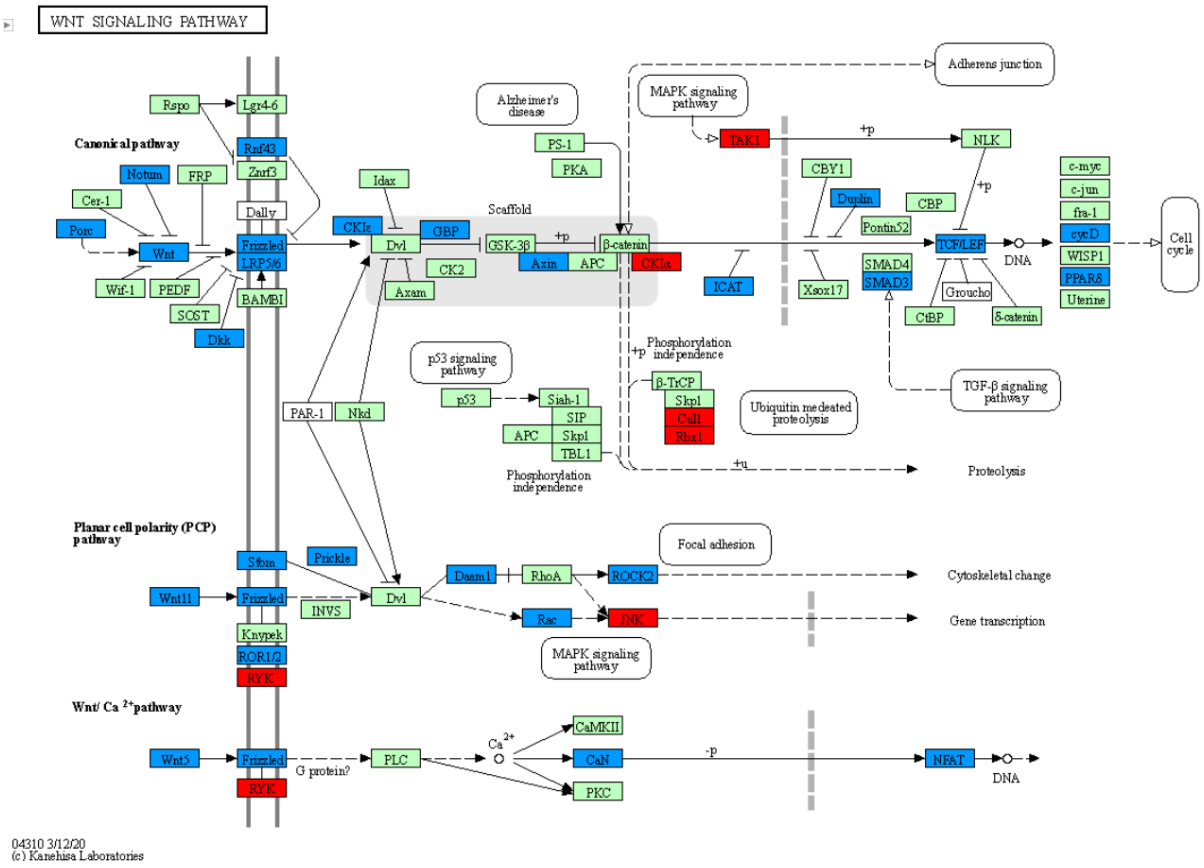

Figure S1 DEGs enriched in Wnt signaling pathway. Red represented upregulated DEGs and

Blue represented downregulated DEGs. DEGs, differentially expressed genes.

Reproduced from: Kanehisa M, Furumichi M, Sato Y, Ishiguro-Watanabe M, Tanabe M. KEGG: integrating viruses and cellular organisms. *Nucleic Acids Res*. 2021;49(D1):D545-D551. doi: 10.1093/nar/gkaa970

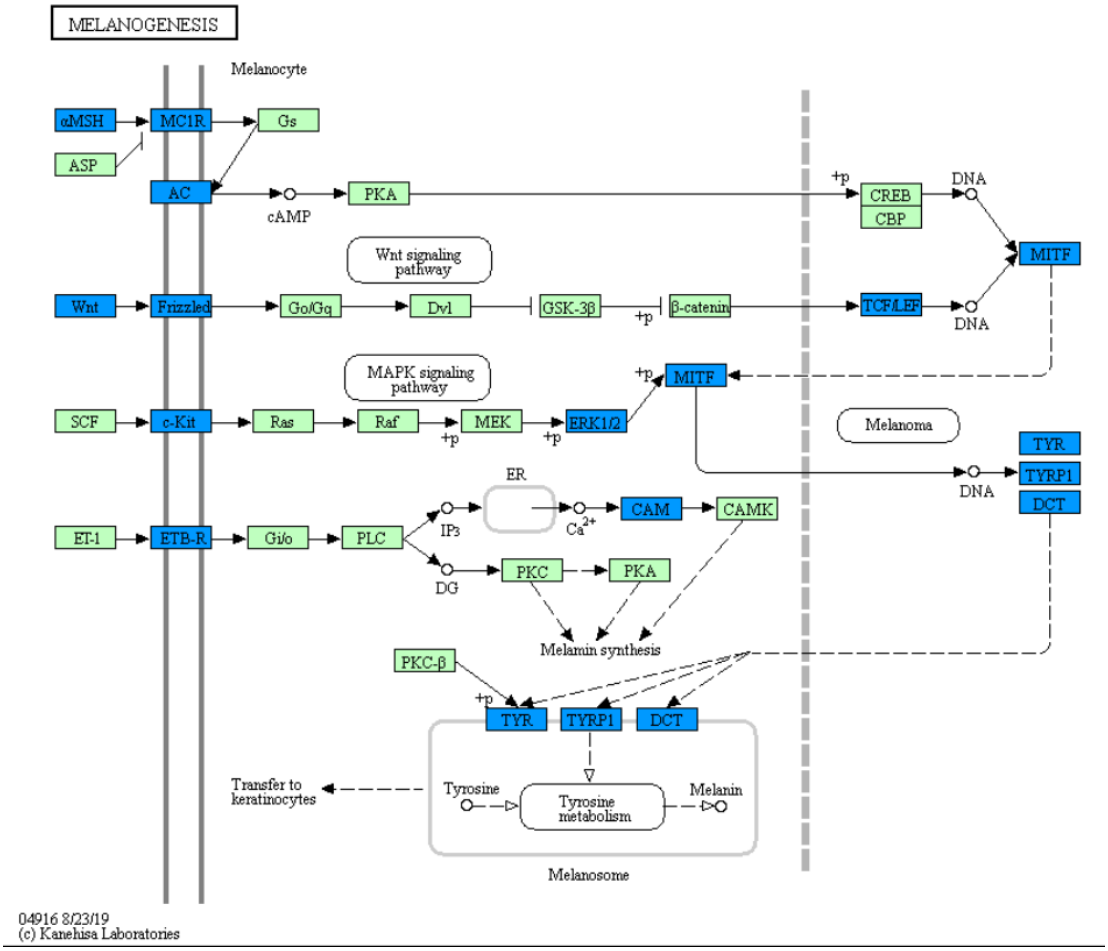

Figure S2 DEGs enriched in Melanogenesis signaling pathway. Red represented upregulated

DEGs and Blue represented downregulated DEGs. DEGs, differentially expressed genes.

Reproduced from: Kanehisa M, Furumichi M, Sato Y, Ishiguro-Watanabe M, Tanabe M. KEGG: integrating viruses and cellular organisms. *Nucleic Acids Res.* 2021;49(D1):D545-D551. doi: 10.1093/nar/gkaa970

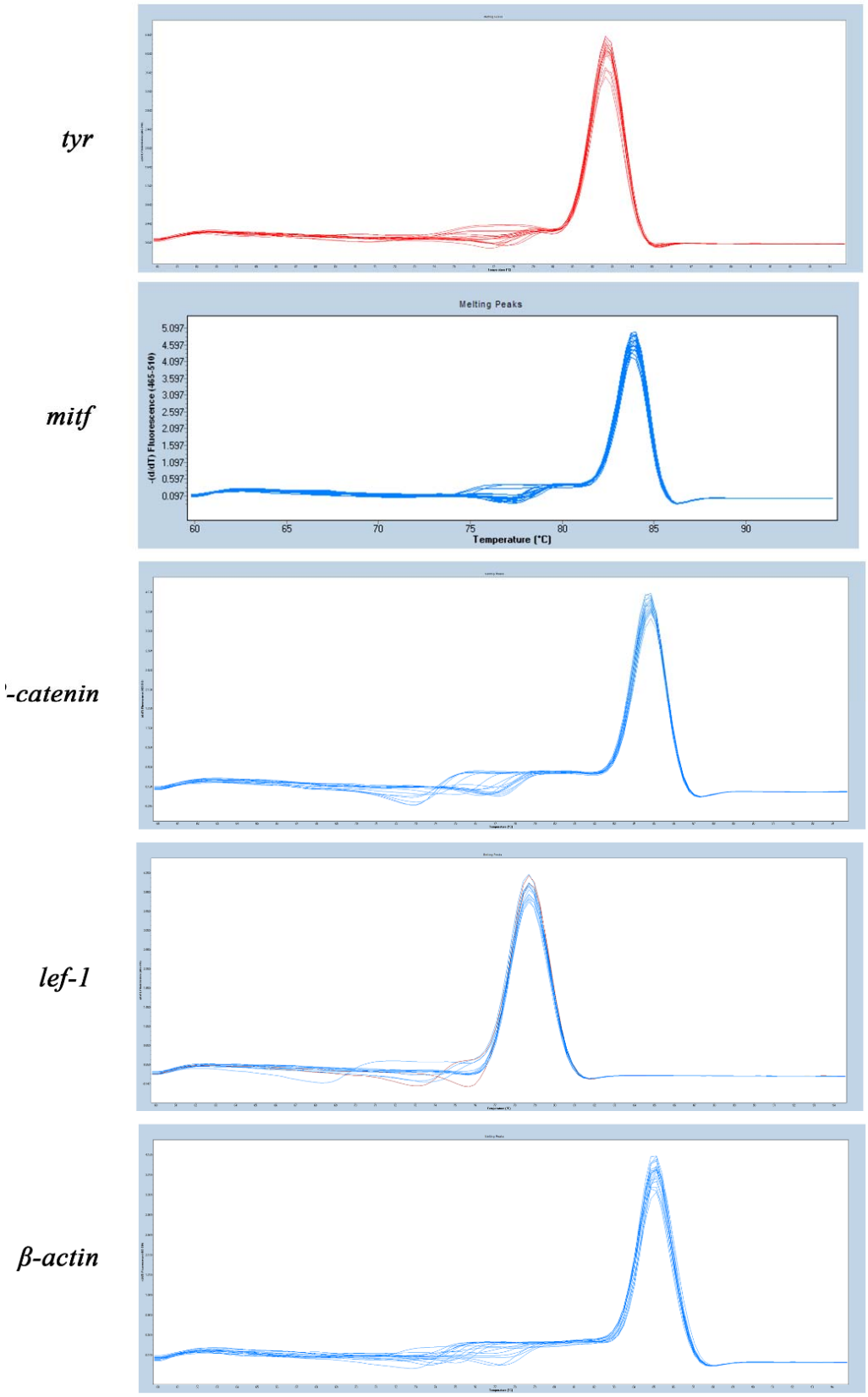

Figure S3 Melt-curve analysis of *tyr*,*mitf*,*β-catenin*,*lef-1* and *β-actin* genes. The melting curves are single peaks, indicating that the products of q-PCR are specific.