

Supplemental Table S1: Primers, PCR product size, and PCR temperature

Gene (Variant)	Ascension Number	Forward Primer	Reverse Primer	PCR Product(s)	PCR Temp
<i>Epha1</i>	<a href="#">NM_023580.4</a>	AGCTTCTCCACATCAGGGAC	CACCAAACCTCCCCTTCTCCTA	892bp	54°C
<i>Epha2</i>	<a href="#">NM_010139.3</a>	GTCCATGTCTTGACACACGTC	CAACTCCTGCCAGTACCAGA	701bp	54°C
<i>Epha3</i> (1/2) <sup>1</sup>	<a href="#">NM_010140.4/</a> <a href="#">NM_001362452.1</a>	CATGGCTTGTACCCGACCTC	TGACCACCGTGAGGACAATG	722bp	55°C
<i>Epha4</i>	<a href="#">NM_007936.3</a>	GAGAGCTTGGGTGGATAGCA	TTTGTCAAGCTTGGCATTCA	711bp	53.5°C
<i>Epha5</i> (1/4/5/8/10)	<a href="#">NM_001402749.1/</a> <a href="#">NM_001402752.1/</a> <a href="#">NM_001402753.1/</a> <a href="#">NM_007937.3/</a> <a href="#">NM_001402757.1</a>	TGGGAAATGCATGTGCAAGG	GCACCATCCCGTTTACCATC	2186bp/ 1916bp/ 1850bp/ 1760bp/ 1694bp	55°C
<i>Epha5</i> (2/3/7/9/11/ 12/13) <sup>2</sup>	<a href="#">NM_001402750.1/</a> <a href="#">NM_001402751.1/</a> <a href="#">NM_001402755.1/</a> <a href="#">NM_001402756.1/</a> <a href="#">NM_001402758.1/</a> <a href="#">NM_001402759.1/</a> <a href="#">NM_001402760.1</a>	CTCTCTGGCAGGCTGCTATT	TCAGAAAACTACTCACTCCAAGGT	2171bp/ 2105bp/ 1835bp/ 1769bp/ 1679bp/ 1613bp/ 1610bp	55°C
<i>Epha5</i> (for sequencing) <sup>3</sup>	N/A	N/A	GGGATCTTCATAAGTGTGCGGA	N/A	N/A
<i>Epha5</i> (6) <sup>4</sup>	<a href="#">NM_001402754.1</a>	CTCTCTGGCAGGCTGCTATT	TGACTGGAGAAGGAGCTTGG	1013bp	55°C
<i>Epha5</i> (14)	<a href="#">NM_001402761.1</a>	CTCTCTGGCAGGCTGCTATT	CTCACACAAGTTTGCCTGGAA	650bp	55°C
<i>Epha6</i>	<a href="#">NM_007938.2</a>	GACAGGCTACAGTGGCTACA	TACTTCATGCCTGACGCGAT	804bp	55°C
<i>Epha7</i> (1/3) <sup>5</sup>	<a href="#">NM_010141.4/</a> <a href="#">NM_001290434.1</a>	AGCAAGGCTGACCAAGAAGG	AGTTCCCAGGGGTGTTTTCA	963bp	55°C

Gene (Variant)	Ascension Number	Forward Primer	Reverse Primer	PCR Product(s)	PCR Temp
<i>Epha7</i> (2) <sup>6</sup>	<a href="#">NM_001122889.1</a>	ACAACGGGGGAAGAAACGAT	CGGTTTATAAACTGACAGGTGCT	771bp	55°C
<i>Epha8</i>	<a href="#">NM_007939.2</a>	GAAGATCATAGGCTCGGGGGA	CTCCCACATGACCACACCAA	577bp	55°C
<i>Epha10</i> (1) <sup>7</sup>	<a href="#">NM_001256432.2</a>	TATCCTCCTGGACTCCAAAGC	TTGTAAAACCCTGGGGGACA	765bp	55°C
<i>Epha10</i> (2) <sup>7</sup>	<a href="#">NM_177671.6</a>	TATCCTCCTGGACTCCAAAGC	TCCCTATCCCATCCCTCTGG	775bp	55°C

<i>Ephb1</i> (1) <sup>7</sup>	<a href="#">NM_173447.3</a>	GAGGTGGCGTGTACTAGTGT	AATTCCCGGACGGCTTCATT	884bp	55°C
<i>Ephb1</i> (2) <sup>7</sup>	<a href="#">NM_001168296.1</a>	GAGGTGGCGTGTACTAGTGT	GAACTCCCCTCGGCCTGT	822bp	55°C
<i>Ephb2</i> (1/2) <sup>8</sup>	<a href="#">NM_001290753.2/</a> <a href="#">NM_010142.4</a>	TCAGGAACCTTCAAGGCCAA	CTCAAACCCCCGTCTGTTAC	894bp	55°C
<i>Ephb3</i>	<a href="#">NM_010143.1</a>	CGGACGAGATGACCTCCTTT	GTATCCCACCTTCAGCGTCT	925bp	55°C
<i>Ephb4</i> (1) <sup>7</sup>	<a href="#">NM_001159571.1</a>	AGCAAAGCTGGCTTCTACCT	AGAAAGAAACCCAATGCGCC	810bp	55°C
<i>Ephb4</i> (2) <sup>7</sup>	<a href="#">NM_010144.6</a>	AGCAAAGCTGGCTTCTACCT	GAGGCACCTCACGGTCA	796bp	55°C
<i>Ephb6</i> (1/2) <sup>9</sup>	<a href="#">NM_007680.5/</a> <a href="#">NM_001146351.2</a>	CCGAGAGACCTTCACCCTTT	CTCGACTCTCAGTCAGTCCC	938bp	55°C

<i>Efnal</i> (1) <sup>10</sup>	<a href="#">NM_010107.4</a>	GCGCTATGGAGTTCCTTTGG	GCGTACACCCTCACTGAGAT	633bp	55°C
<i>Efnal</i> (2) <sup>10</sup>	<a href="#">NM_001162425.1</a>	GCTGATTGAGAGGTTCCGT	GCGTACACCCTCACTGAGAT	549bp	55°C

Gene (Variant)	Ascension Number	Forward Primer	Reverse Primer	PCR Product(s)	PCR Temp
<i>Efna2</i>	<a href="#">NM_007909.3</a>	GCTGACCGATACGCAGTCTA	GACACTAGGAGCCCAGAAGG	547bp	55°C
<i>Efna3</i> (1/2) <sup>11</sup>	<a href="#">NM_010108.2/</a> <a href="#">NM_001377116.1</a>	CGGCATGCGGTATACTGGAAC	CTAGGAGGCCAAGAGCGTC	600bp/ 522bp	55°C
<i>Efna4</i>	<a href="#">NM_007910.2</a>	ACTCCTCTAACCCCAGGTTG	ACTCTCAGGAGACGGAGGAT	517bp	55°C
<i>Efna5</i> (1/2) <sup>11</sup>	<a href="#">NM_207654.2/</a> <a href="#">NM_010109.3</a>	AGGCGTGATGTTGCACG	ACTGTGCTATAATGTCAAAAGCATC	700bp/ 619bp	53°C

<i>Efnb1</i>	<a href="#">NM_010110.5</a>	TCACTTGCAACAAGCCACAC	TGTAGTAGATGTTCCGCCGGG	735bp	55°C
<i>Efnb2</i> (1/2) <sup>11</sup>	<a href="#">NM_010111.6/</a> <a href="#">NM_001368299.1</a>	GAGGGACTCTGTGTGGAAGT	CAGGCCTCAGACCTTGTAGT	997bp/ 904bp	55°C
<i>Efnb3</i>	<a href="#">NM_007911.5</a>	TCGGCGAATAAGAGGTTCCA	CTTCTCGTAGTGAGGGCAGA	831bp	55°C

<sup>1</sup>Variant 1 has one additional amino acid Q478 due to an AGC insertion at 1558-1560 in the mRNA sequence.

<sup>2</sup>This set of primers will also amplify *Epha5* variant 6 with the same size product as variant 11. Thus, a different set of primers was used to amplify variant 6.

<sup>3</sup>To distinguish the large number of *Epha5* variants, a sequencing primer was designed for the middle of the amplified transcripts to distinguish between variants 1/4/5/8/10 and variants 2/3/7/9/11/12/13.

<sup>4</sup>These primers will also amplify *Epha5* variants 8, 10, 11, 12, and 13 for a product that is 848bp. The brain control and lens samples have a band at 848bp indicating the PCR reaction worked, but no larger band at 1013bp for variant 6 was detected.

<sup>5</sup>Compared to variant 3, variant 1 has four additional amino acids KFPG (601-604) due to a TTAAATTTCCAG insertion at 2052-2063 in the mRNA sequence.

<sup>6</sup>Reverse primer is specific for variant 2.

<sup>7</sup>Reverse primers are specific for each variant.

<sup>8</sup>Variant 1 has one additional amino acid Q477 due to an AGC insertion at 1609-1611 in the mRNA sequence.

<sup>9</sup>Variants 1 and 2 are identical in the coding region.

<sup>10</sup>Forward primers are specific for each variant.

<sup>11</sup>Primers amplify two variants that can be distinguished by size.