

Original DNA Strand

Gene: TYR (OCA1)

Name:

KEY

DNA: TACGAGCGACAAACATGACGGACGACACCTCAAAGGCTGGAGGCCGGTAAAG

mRNA: AUG CUC CUG GCU GUU UUG UAC UGC CUG CUG UGG AGU UUC CAG ACC UCC GCU GGC CAU UUC

AAS: MET LEU LEU ALA VAL LEU TYR CYS LEU LEU TRP SER PHE GLU THR SER ALA GLY HIS PHE

Mutation 1

← Deletion "G"

Frameshift

DNA: TACGAGCGACAAACATGACGGACGACACCTCAAAGGCTGGAGGCCGGTAAAGG

mRNA: AUG CUC CUG GCU GUU UUG UAC UGC UGC UGU GGA GUU UCC AGA CCU CCG CUG GCC AUU UCC

AAS: MET LEU LEU ALA VAL LEU TYR CYS CYS GLY VAL SER ARG PRO PTO LEU ALA ISO SER

Mutation 2

Point/Mis sense

DNA: TACGAGACCGACAAACATGACGGACGACACCTCAAAGGCTGGAGGCCGGTAAAGG

mRNA: AUG CUC UUG GCU GUU UUG UAC UGC CUG CUG UGG AGU UUC CAG ACC UCC GCU GGC CAA UUC

AAS: MET LEU LEU ALA VAL LEU TYR CYS LEU LEU TRP SER PHE GLU THR SER ALA GLY GLU PHE

Mutation 3

← silent

DNA: TACGAGACCGACAAACATGACGGACGACACCTCAAAGGCTGGAGGCCGGTAAAGG

mRNA: AUG CUC UUG GCU GUU UUG UAC UGC CUG CUG UGC AGU UUC CAG ACC UCC GCU GGC CAU UUC

AAS: MET LEU LEU ALA VAL LEU TYR CYS LEU LEU TRP SER PHE GLU THR SER ALA GLY HIS PHE

Original DNA Strand Gene: OCA2 (OCA2) Name: _____

DNA: TAGCACGTGTTGAGACCGCCGGTACGACCCAGGGAACGTCGTGACCGTCGTGACCCGA

mRNA: AUC GUG CAC AGA ACU CUG GCG GCC AUG CUG GGU UCC CUU GCA GCA CUG ~~GCA~~ GCA CUG GCU

AAS: ILE VAL HIS ARG THR LEU ALA ALA MET LEU GLY SER LEU ALA ALA LEU ALA LEU ALA

Mutation 1

Point

DNA: TAGCACGTGTTGAGACCGCCGGTACGACCCAGGGAACGTCGTGACCGTCGTGACCCGA

mRNA: AUC GUG CAC UGA ACU CUG GCG GCC AUG CUG GGU UCC CUU GCA GCA CUG GCA CUG GCU

AAS: ILE VAL HIS ~~STOP~~ THR LEU ALA MET LEU GLY SER LEU ALA ALA LEU ALA LEU ALA

Mutation 2

Stop Point

DNA: TAGCACGTGTTGAGACCGCCGGTACGACCCAGGGAACGTCGTGACCGTCGTGACCCGA

mRNA: AUC GUG CAC AGA ACU CUG GCG GCC AUG CUG GGU UCC CUU GCA GCA CUG GCA CUG GCU

AAS: ILE VAL HIS ARG THR LEU ALA ALA MET LEU GLY SER LEU ALA ALA LEU ALA LEU VAL

Mutation 3

Sub

Silent

DNA: TAGCACGTGTTGAGACCGCCGGTACGACCCAGGGAACGTCGTGACCGTCGTGACCCGA

mRNA: AUC GUG CAC AGA ACU CUG GCG GCC AUG CUG GGU UCC CUU GCA GCA CUG GCA CUG GCU

AAS: ILE VAL HIS ARG THR LEU ALA ALA MET LEU GLY SER LEU ALA ALA LEU ALA LEU ALA

Original DNA Strand

Gene: TYRP-1 (OCA3) Name:

DNA: CGGACACTGCTCTCCCAAGAGTATCAGTCCCTTTTAGAAGACCTGAATTCATTTCTTCTT
mRNA: GCC UGU GAC GAG AGG GUU CUC AUA GUC AGG AGA AAU CUU CUG GAC UUA AGU AAA GAA GAA
AAs: Ala Cys Asp Glu Arg Val Leu Iso Ile Val Arg Arg Asn Leu Leu Asp Leu Ser Lys Glu Glu

Mutation 1

DNA: CGGACACTGCTCTCCCAAGAGTATCAGTCCCTTTTAGAAGACCTGTTAACTCATTCTTCTTCTT
mRNA: GCC UGU GAC GAG AGG GUU CUC AUA GUC AGG AGA AAU CUU CUG GAC AUU GAG UAA AGA AGA
AAs: Ala Cys Asp Glu Arg Val Leu Iso Ile Val Arg Arg Asn Leu Leu Asp Iso Ile Glu STOP Arg Arg

↓
Frameshift

Mutation 2

DNA: CGGACACTGCTCTCCCAAGAGTATCAGTCCCTTTTAGAAGACCTGAGTTCATTTCTTCTTCTT
mRNA: GCC UGU GAC GAG AGG GUU CUC AUA GUC AGG AGA AAU CUU CUG GAC UCA AGU AAA GAA GAA
AAs: Ala Cys Asp Glu Arg Val Leu Iso Ile Val Arg Arg Asn Leu Leu Asp Ser Ser Lys Glu Glu

Mutation 3

DNA: CGGACACTGCTCTCCCAAGAGTATCAGTCCCTTTTAGAAGACCTGAATTCATTTCTTCTTCTTCTT
mRNA: GCC UGU GAC GAG AGG GUU CUC AUA GUC AGG AGA AAU CUU CUG GAC UUA AGU AAA AAA GAA
AAs: Ala Cys Asp Glu Arg Val Leu Iso Ile Val Arg Arg Asn Leu Leu Asp Leu Ser Lys Lys Glu

Original DNA Strand

Gene: SLIC45A2 (OCA4)

Name: _____

DNA: CTCCGTCGCATACACTGGGGTCAAGACGAGTCCGATCCAGACGGGTCGTCGGACATGTCG

mRNA: **GAG** **GCA** **GCG** **UAU** **GUU** **ACC** **CCA** **GUC** **CUG** **CUC** **AGC** **GUA** **GGU** **CUG** **CCC** **AGC** **AGC** **CUG** **UAC** **AGC**

AAS: Gln Ala Ala Tyr Val Thr Pro Val Leu Leu Ser Val Gly Leu Pro Ser Ser Leu Tyr Ser

Mutation 1

DNA: CTCCGTCGCATACACTGGGGTCAAGACGAGTCCGATCCAGACGGGTCGTCGGACATGTCG

mRNA: **GAG** **GCA** **GCG** **UAU** **GUU** **ACC** **CCA** **GUC** **CUG** **CUC** **AGC** **GUA** **GGU** **CUG** **CCC** **AGC** **AGC** **CUC** **UAC** **AGG**

AAS: Gln Ala Ala Tyr Val Thr Pro Val Leu Leu Ser Val Gly Leu Pro Ser Ser Leu Tyr Ser

silent

Mutation 2

DNA: CTCCGTCGCATACACTGGGGTCAAGACGAGTCCGATCCAGACGGGTCGTCGGACATGTCG

mRNA: **GAG** **GCA** **GCG** **UAU** **GUU** **ACC** **CCA** **GUC** **CUG** **CUC** **AGC** **GUA** **GGU** **CUG** **CCC** **AGC** **AGC** **CUU** **UAG** **AGC**

AAS: Gln Ala Ala Tyr Val Thr Pro Val Leu Leu Ser Val Gly Leu Pro Ser Ser Leu ~~stop~~ Ser

Mutation 3

DNA: CTCCGTCGCATACACTGGGGTCAAGACGAGTCCGATCCAGACGGGTCGTCGGACATGTCG

mRNA: **GAG** **GCA** **GCG** **UAU** **GUU** **ACC** **CCA** **GUC** **CUG** **CUC** **AGC** **GUA** **GGU** **CUG** **CCC** **AGC** **AGC** **CUU** **UAC** **GAG**

AAS: Gln Ala Ala Tyr Val Thr Pro Val Leu Leu Ser Val Gly Leu Pro Ser Ser Leu Tyr Gly