**Happy Blue Baby**

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**Part 1: Grandma provides a clue**

While the doctors were testing the newborn baby, her Grandma’s comment 'My son had the same thing,' gave the doctors an important clue.

Q1. What did this comment suggest to the doctors?

Q2. Draw a pedigree chart for the Newborn baby with information provided by Grandma.

Ans:

Q3. The doctors found a single nucleotide mutation in the Toms River Baby’s fetal hemoglobin gene. The mutation changed the codon 67 sequence from GTG to ATG. Consult the genetic code (<https://www.genome.gov/genetics-glossary/Genetic-Code>) and list what mutation was seen in the baby – i.e. what amino acid does the original codon correspond to and what is the mutated amino acid?

Q4. Is the mutated residue side chain similar to or different from that found in the native protein? Draw the chemical structure of the side chains of these amino acids and explain in terms of the size and physicochemical properties.