**Title:** Happy Blue Baby

**Author:** Shuchismita Dutta (contact author: sdutta@rcsb.rutgers.edu)

**Abstract**: This case explores the reasons for why an otherwise healthy infant turned blue, soon after birth. All tests done in the neonatal intensive care unit were unable to diagnose possible reasons for the cyanosis, so the infant was taken to a specialist. The case begins with reading a local newspaper report and an abstract of the scientific report describing how doctors were able to make a diagnosis. Molecular explorations in the case focus on understanding the structural basis of the cause, heredity, and long-term impact of the rare mutation identified in the infant.

**Learning Objectives**: The case was developed at the interface of biology and chemistry to enable introductory biology students explore chemical interactions that stabilize the structure and enable functions of biological molecules. There is flexibility in the depth of disciplinary contents covered and the case can even be used to teach advanced students about concepts in biochemistry, such as oxygen binding. By the end of the case, students should develop some basic understanding of biomolecular structure-function relationships.

**Molecules explored**: The primary molecule studied in this case is hemoglobin. Visualization and explorations of various hemoglobin structures include those of native, mutant, and variant proteins.

**Implementation**: The case can be implemented using either a flipped approach and/or through in-class discussions.

**Subject Headings**: Biology (General) and Biochemistry

**Keywords**: hemoglobin; mutation; anemia; cyanosis; hydrophobic; Heme; Oxygen binding

**Topical Area**: Scientific method; Molecular structure representation; Visualization

**Educational Level**: Undergraduate lower division

**Formats**: Word file and Website

**Type/Method**: Directed, Interrupted

**Language**: English

**Date Posted**: June 2020.

**Citation**: Dutta, S. (2020). [**Happy Blue Baby**](http://dx.doi.org/10.25334/2R67-W933). [Molecular CaseNet Faculty Mentoring Network](https://qubeshub.org/groups/molcasenet), QUBES Educational Resources. [doi:10.25334/2R67-W933](http://dx.doi.org/10.25334/2R67-W933)