

Figure 2.1: Representation of a normal healthy heart beat as seen on an electrocardiogram (Goldberger *et al.*, 2018).

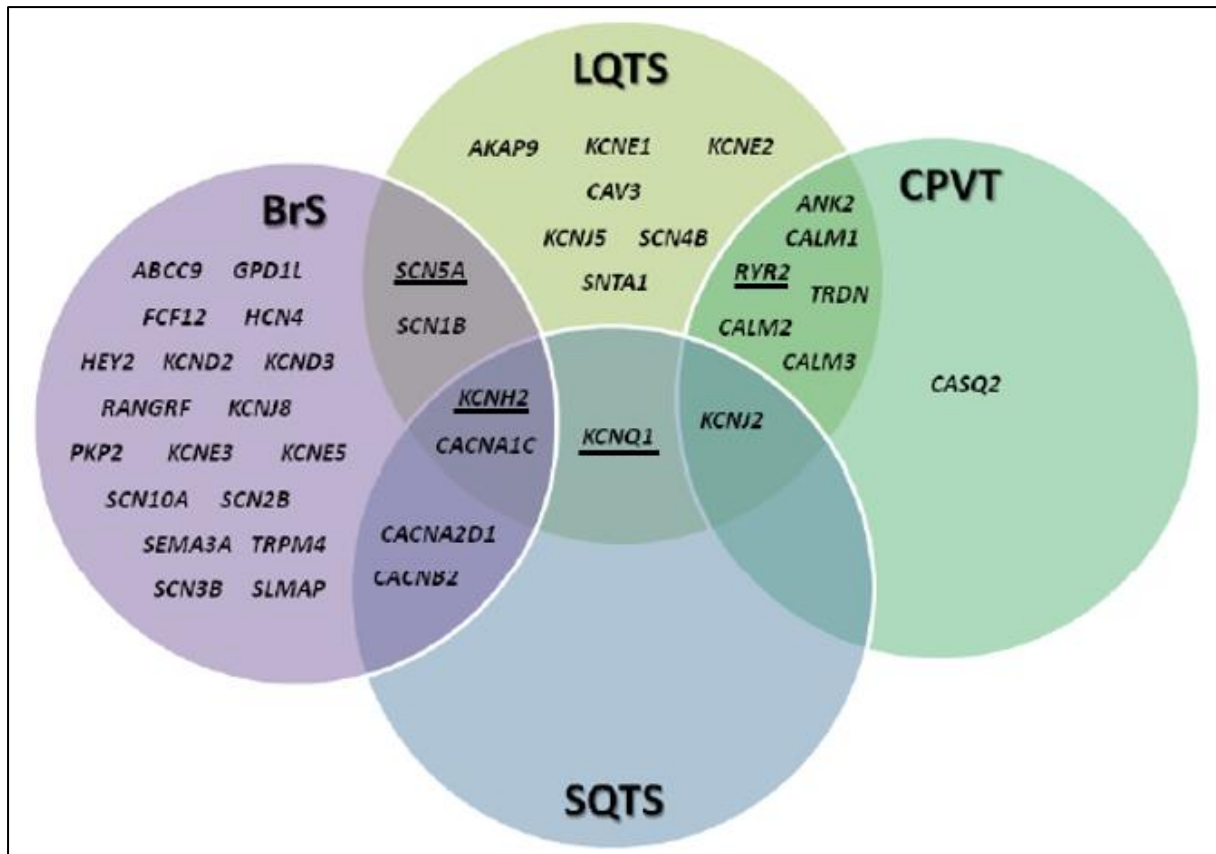


Figure 2.2: Genes associated with the relevant channelopathies: Brugada syndrome (BrS), long QT syndrome (LQTS), short QT syndrome (SQTS) and catecholaminergic polymorphic ventricular tachycardia (CPVT) (Fernández-Falgueras *et al.*, 2017). The underlined genes are the genes that are most predominantly linked to channelopathies (Anderson *et al.*, 2016).

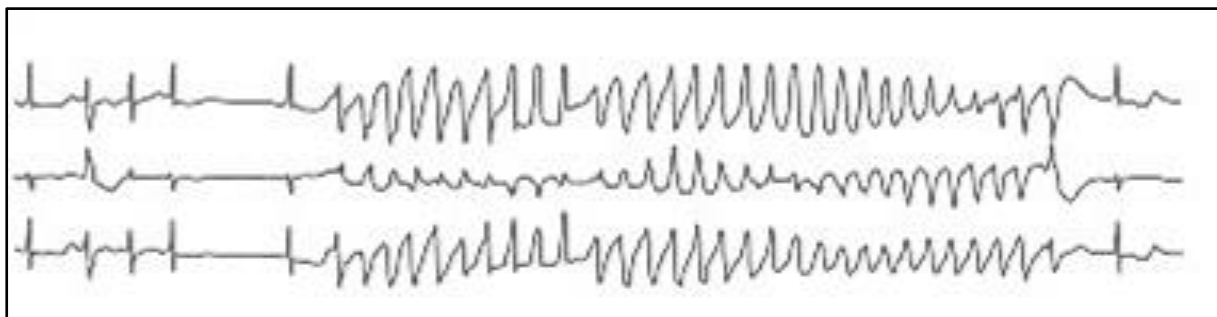


Figure 2.3: An electrocardiogram recording of a patient with prolonged QT interval and occurrences of variable torsade de pointes (Nussbaum *et al.*, 2015).

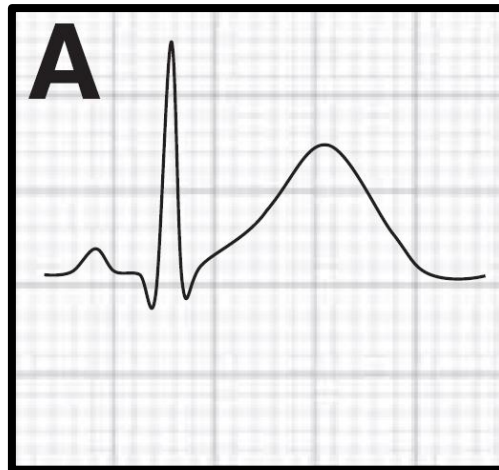


Figure 2.4: An electrocardiogram example of long QT syndrome one (Asatryan & Medeiros-Domingo, 2019).

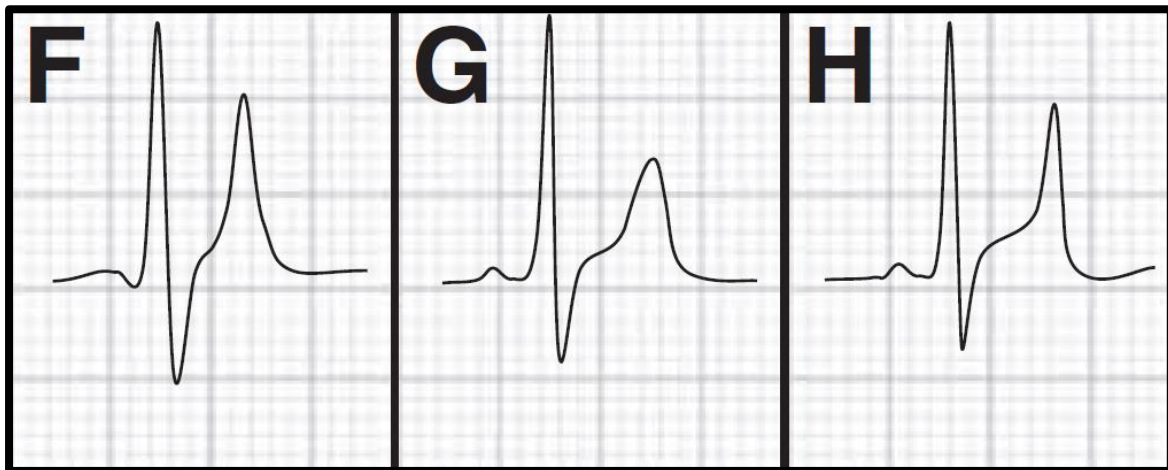


Figure 2.5: An electrocardiogram example of short QT syndrome one to three (Asatryan & Medeiros-Domingo, 2019).

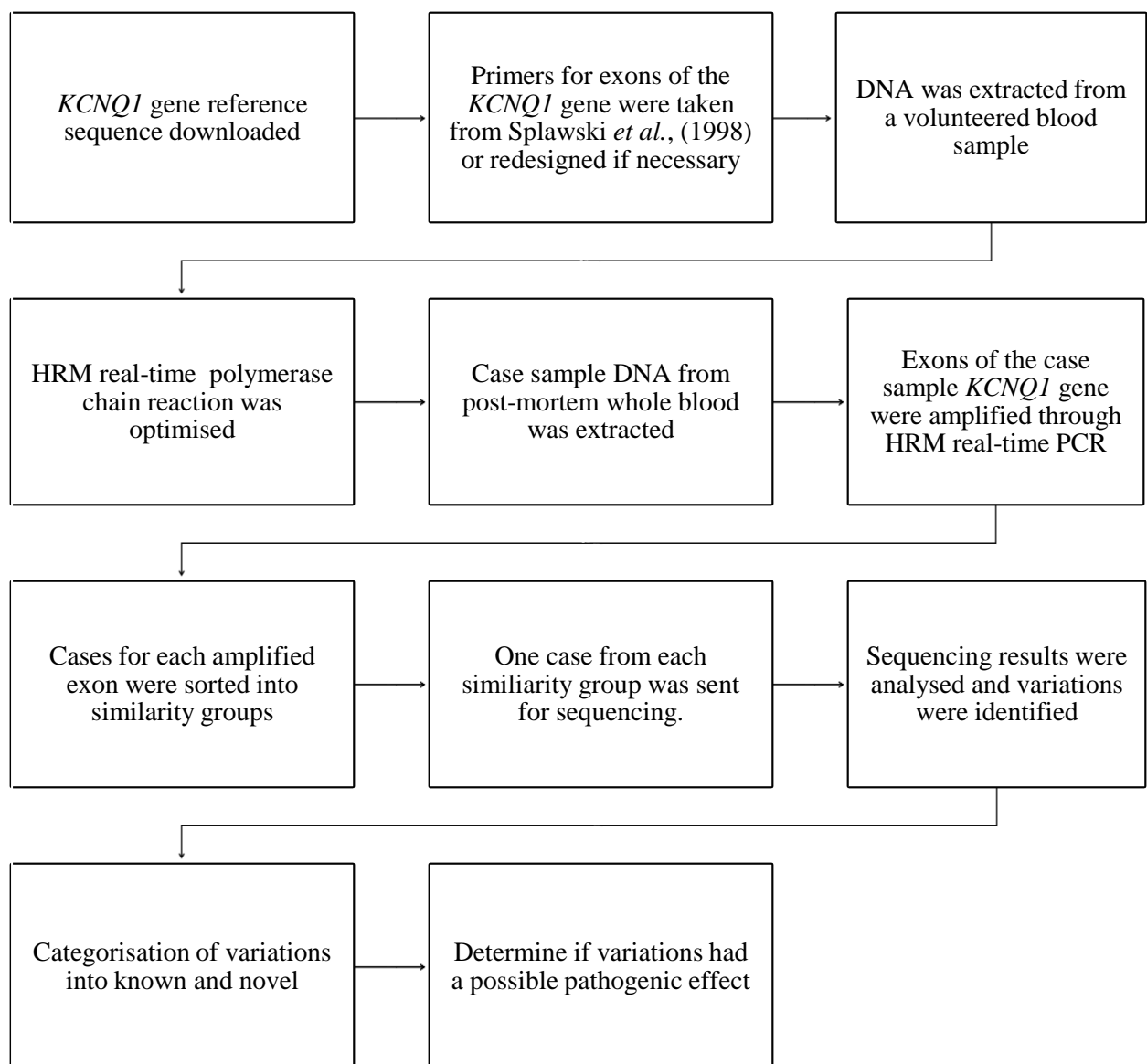
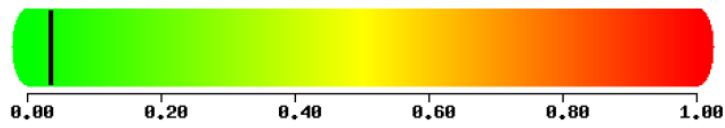


Figure 3.1: A step-by-step representation of the procedure that was followed for this research study.

HumDiv

This mutation is predicted to be **BENIGN** with a score of 0.034 (sensitivity: 0.95; specificity: 0.82)



HumVar

This mutation is predicted to be **BENIGN** with a score of 0.026 (sensitivity: 0.94; specificity: 0.58)

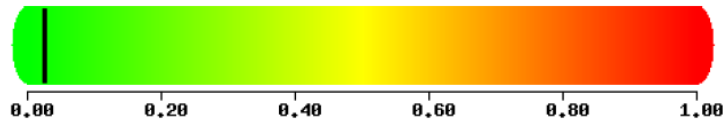


Figure 4.31: The results from PolyPhen-2 program on the significance of the VUS c.1007 G>C. HumDiv is the preferred model for rare alleles and HumVar is the preferred model for Mendelian diseases (Adzhubei *et al.*, 2013).

References:

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- Anderson, J.H., Tester, D.J., Will, M.L. and Ackerman, M.J. 2016. Whole-exome molecular autopsy after exertion-related sudden unexplained death in the young. *Circulation. Cardiovascular Genetics*, 9 (3), pp.259-265.doi:10.1161/CIRCGENETICS.115.001370.
- Asatryan, B. and Medeiros-Domingo, A. 2019. Emerging implications of genetic testing in inherited primary arrhythmia syndromes. *Cardiology in Review*, 27 (1), pp.23-33.doi:10.1097/CRD.0000000000000203.
- Goldberger, A.L., Goldberger, Z.D. and Shvilkin, A. 2018. *Goldberger's clinical electrocardiography: A simplified approach*. Ninth edition ed. Philadelphia, PA: Elsevier.
- Nussbaum, R., McInnes, R. and Willard, H. 2015. *Thompson & Thompson Genetics in Medicine*. 8th ed. Tennessee, USA: Elsevier.