Assessment of disease-associated missense variants in \textit{RYR2} on transcript splicing

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Supplementary Table 1. Predicted splicing effects of RYR2 missense variants.

| c.DNA change | Protein change | Effect on splicing | Number of tools in agreement |
|--------------|----------------|--------------------|------------------------------|
| c.37T>C      | F13L           | No                 |                              |
| c.38T>G      | F13C           | No                 |                              |
| c.85C>G      | H29D           | No                 |                              |
| c.184C>T     | L62F           | No                 |                              |
| c.217C>G     | L73V           | Introduce 5' Splice Site | 1                            |
| c.230C>T     | A77V           | Introduce 5' Splice Site | 2                            |
| c.241A>C     | M81L           | No                 |                              |
| c.344A>G     | Y115C          | No                 |                              |
| c.365G>A     | R122H          | No                 | 1                            |
| c.490C>T     | P164S          | Deletion 5' Splice Site | 1                            |
| c.494C>A     | A165D          | Deletion 5' Splice Site | 1                            |
| c.497C>G     | S166C          | Introduce 5' Splice Site | 4                            |
| c.506G>A     | R169Q          | Deletion 5' Splice Site | 1                            |
| c.506G>T     | R169L          | Introduce 3' Splice Site | 1                            |
| c.527G>A     | R176Q          | Deletion 5' Splice Site | 4                            |
| c.533G>C     | G178A          | Deletion 5' Splice Site | 1                            |
| c.556G>A     | V186M          | No                 |                              |
| c.567A>T     | E189D          | No                 |                              |
| c.649A>G     | I217V          | Introduce 5' Splice Site | 1                            |
| c.688G>T     | G230C          | Deletion 5' Splice Site | 1                            |
| c.719A>G     | H240R          | No                 |                              |
| c.725A>T     | D242V          | Introduce 5' Splice Site | 1                            |
| c.727G>A     | E243K          | Introduce 5' Splice Site | 1                            |
| c.985T>C     | F329L          | No                 |                              |
| c.994C>T     | R332W          | No                 |                              |
| c.1069G>A    | G357S          | Introduce 3' Splice Site | 2                            |
| c.1144G>A    | V382M          | Deletion 5' Splice Site | 2                            |
| c.1198C>G    | D400H          | No                 |                              |
| c.1202A>G    | D401G          | Introduce 5' Splice Site | 1                            |
| c.1217C>T    | S406L          | No                 |                              |
| c.1220G>T    | R407I          | No                 |                              |
| c.1221A>T    | R407S          | No                 |                              |
| c.1237T>A    | S413T          | No                 |                              |
| c.1240C>T    | R414C          | No                 |                              |
| c.1241G>T    | R414L          | No                 |                              |
| c.1244C>G    | T415R          | No                 |                              |
| c.1244C>T    | T415I          | No                 |                              |
| c.1255A>T    | I419F          | Deletion 5' Splice Site | 1                            |
| c.1259G>A    | R420Q          | Introduce 3' Splice Site | 1                            |
| c.1258C>T    | R420W          | No                 |                              |
| c.1298T>C    | L433P          | No                 |                              |
| c.1318G>A    | A440T          | Deletion 3' Splice Site | 1                            |
| c.1396C>G    | P466A          | No                 |                              |
| c.1454G>A    | R485Q          | Introduce 3' Splice Site | 1                            |
| c.1458A>C    | Q486H          | No                 |                              |
| c.1519G>A    | V507I          | No                 |                              |
| c.1604A>G    | E535G          | Deletion 3' Splice Site | 1                            |
| c.1640A>G    | N547S          | No                 |                              |
| c.1646C>T    | A549V          | No                 |                              |
| c.1663C>G    | L555V          | No                 |                              |
| c.1847C>T    | S616L          | No                 |                              |
| c.1871C>T    | A624V          | No                 |                              |
| c.1903A>C    | N635H          | No                 |                              |
| SNP          | Amino Acid | Type                          | Position |
|-------------|------------|-------------------------------|----------|
| c.1918A>G   | R640G      | No                            |          |
| c.1939C>T   | R647C      | No                            |          |
| c.2216G>A   | R739H      | No                            |          |
| c.2267G>A   | S756N      | Deletion 3' Splice Site       | 2        |
| c.2306G>T   | R769L      | No                            |          |
| c.2320A>C   | P774T      | No                            |          |
| c.2389G>A   | R929H      | Deletion 5' Splice Site       |          |
| c.2267G>A   | S756N      | Deletion 3' Splice Site       | 2        |
| c.2306G>T   | R769L      | No                            |          |
| c.2320A>C   | P774T      | No                            |          |
| c.2389G>A   | R929H      | Deletion 5' Splice Site       |          |
| c.2216G>A   | R739H      | No                            |          |
| c.2267G>A   | S756N      | Deletion 3' Splice Site       | 2        |
| c.2306G>T   | R769L      | No                            |          |
| c.2320A>C   | P774T      | No                            |          |
| c.2389G>A   | R929H      | Deletion 5' Splice Site       |          |
| c.2216G>A   | R739H      | No                            |          |
| c.2267G>A   | S756N      | Deletion 3' Splice Site       | 2        |
| c.2306G>T   | R769L      | No                            |          |
| c.2320A>C   | P774T      | No                            |          |
| c.2389G>A   | R929H      | Deletion 5' Splice Site       |          |
| c.2216G>A   | R739H      | No                            |          |
| c.2267G>A   | S756N      | Deletion 3' Splice Site       | 2        |
| c.2306G>T   | R769L      | No                            |          |
| c.2320A>C   | P774T      | No                            |          |
| c.2389G>A   | R929H      | Deletion 5' Splice Site       |          |
| c.2216G>A   | R739H      | No                            |          |
| c.2267G>A   | S756N      | Deletion 3' Splice Site       | 2        |
| c.2306G>T   | R769L      | No                            |          |
| c.2320A>C   | P774T      | No                            |          |
| c.2389G>A   | R929H      | Deletion 5' Splice Site       |          |
| c.2216G>A   | R739H      | No                            |          |
| c.2267G>A   | S756N      | Deletion 3' Splice Site       | 2        |
| c.2306G>T   | R769L      | No                            |          |
| c.2320A>C   | P774T      | No                            |          |
| c.2389G>A   | R929H      | Deletion 5' Splice Site       |          |
| c.2216G>A   | R739H      | No                            |          |
| c.2267G>A   | S756N      | Deletion 3' Splice Site       | 2        |
| c.2306G>T   | R769L      | No                            |          |
| c.2320A>C   | P774T      | No                            |          |
| c.2389G>A   | R929H      | Deletion 5' Splice Site       |          |
| c.2216G>A   | R739H      | No                            |          |
| c.2267G>A   | S756N      | Deletion 3' Splice Site       | 2        |
| c.2306G>T   | R769L      | No                            |          |
| c.2320A>C   | P774T      | No                            |          |
| c.2389G>A   | R929H      | Deletion 5' Splice Site       |          |
| c.2216G>A   | R739H      | No                            |          |
| c.2267G>A   | S756N      | Deletion 3' Splice Site       | 2        |
| c.2306G>T   | R769L      | No                            |          |
| c.2320A>C   | P774T      | No                            |          |
| c.2389G>A   | R929H      | Deletion 5' Splice Site       |          |
| c.2216G>A   | R739H      | No                            |          |
| c.2267G>A   | S756N      | Deletion 3' Splice Site       | 2        |
| c.2306G>T   | R769L      | No                            |          |
| c.2320A>C   | P774T      | No                            |          |
| c.2389G>A   | R929H      | Deletion 5' Splice Site       |          |
| c.2216G>A   | R739H      | No                            |          |
| c.2267G>A   | S756N      | Deletion 3' Splice Site       | 2        |
| c.2306G>T   | R769L      | No                            |          |
| c.2320A>C   | P774T      | No                            |          |
| c.2389G>A   | R929H      | Deletion 5' Splice Site       |          |
| c.2216G>A   | R739H      | No                            |          |
| c.2267G>A   | S756N      | Deletion 3' Splice Site       | 2        |
| c.2306G>T   | R769L      | No                            |          |
| c.2320A>C   | P774T      | No                            |          |
| c.2389G>A   | R929H      | Deletion 5' Splice Site       |          |
| c.2216G>A   | R739H      | No                            |          |
| c.2267G>A   | S756N      | Deletion 3' Splice Site       | 2        |
| c.2306G>T   | R769L      | No                            |          |
| c.2320A>C   | P774T      | No                            |          |
| c.2389G>A   | R929H      | Deletion 5' Splice Site       |          |
| c.2216G>A   | R739H      | No                            |          |
| c.2267G>A   | S756N      | Deletion 3' Splice Site       | 2        |
| c.2306G>T   | R769L      | No                            |          |
| c.2320A>C   | P774T      | No                            |          |
| c.2389G>A   | R929H      | Deletion 5' Splice Site       |          |
| SNP     | Protein Change | Splice Impact          |
|---------|----------------|------------------------|
| c.6503A>G | H2168R         | No                     |
| c.6532G>A | V2178I         | No                     |
| c.6574A>T | M2192L         | Introduce 5' Splice Site 2 |
| c.6636A>C | K2212N         | Introduce 5' Splice Site 1 |
| c.6637G>T | A2213N         | No                     |
| c.6639G>A | H2216V         | No                     |
| 6680 G>T | G2227V         | No                     |
| c.6683G>T | G2228V         | Deletion 5' Splice Site 1 |
| c.6737C>T | R2267H         | Deletion 5' Splice Site 1 |
| c.6800G>A | R2268H         | Deletion 3' Splice Site 1 |
| c.6886G>C | R2268H         | Deletion 3' Splice Site 1 |
| c.6916G>A | V2306L         | No                     |
| c.6919T>C | F2307L         | No                     |
| c.6933G>T | K2312N         | Introduce 5' Splice Site 1 |
| c.6992C>T | P2328S         | Introduce 5' Splice Site 3 |
| c.7024G>A | G2342R         | Deletion 3' Splice Site 2 |
| c.7076G>A | R2359Q         | No                     |
| c.7099G>A | G2367R         | Introduce 3' Splice Site 2 |
| c.7157A>T | N2386I         | No                     |
| c.7159G>C | A2387P         | Deletion 3' Splice Site 1 |
| c.7159G>A | A2387T         | Deletion 3' Splice Site 1 |
| c.7160C>T | A2387V         | Introduce 5' Splice Site 1 |
| c.7169C>T | T2390I         | Introduce 5' Splice Site 5 |
| c.7175A>G | Y2392C         | No                     |
| c.7181C>G | A2394G         | Introduce 5' Splice Site 4 |
| c.7199G>T | G2400V         | No                     |
| c.7202G>T | R2401L         | No                     |
| c.7202G>A | R2401H         | No                     |
| c.7205G>A | C2402Y         | No                     |
| c.7207G>A | A2403T         | No                     |
| c.7210C>A | P2404T         | No                     |
| c.7258A>T | R2420W         | Deletion 3' Splice Site 1 |
| c.7259G>C | R2420T         | Deletion 3' Splice Site 1 |
| c.7260G>T | R2420S         | Deletion 5' Splice Site 1 |
| c.7400C>T | A2467V         | No                     |
| c.7422G>C | R2474S         | Deletion 5' Splice Site 1 |
| c.7420A>G | R2474G         | Deletion 3' Splice Site 5 |
| c.7423G>T | V2475F         | No                     |
| c.7447T>A | F2483I         | No                     |
| c.7469T>C | V2490A         | Deletion 5' Splice Site 3 |
| c.7493C>T | A2498V         | Introduce 5' Splice Site 1 |
| c.7511C>T | T2504M         | No                     |
| c.7528A>G | T2510A         | No                     |
| c.7598C>T | P2533L         | No                     |
| c.7600G>A | L2534V         | No                     |
| c.7813A>G | M2605V         | Introduce 5' Splice Site 4 |
| c.7820T>C | L2607P         | No                     |
| c.7883G>A | G2628E         | No                     |
| c.7925G>A | R2642K         | No                     |
| c.8018C>T | A2673V         | Introduce 5' Splice Site 1 |
| c.8145G>T | E2715D         | Deletion 3' Splice Site 1 |
| c.8147A>T | K2716I         | No                     |
| SNP Position | Mutation | Amino Acid Change | Effect |
|--------------|----------|-------------------|--------|
| c.8162T>C    | I2721T   | No                |
| c.8470C>T    | R2824W   | No                |
| c.8794T>C    | Y2932H   | No                |
| c.8873A>G    | Q2958R   | Deletion 3' Splice Site |
| c.9352G>A    | G3118R   | 1                  |
| c.9560A>G    | K3187R   | Introduce 5' Splice Site |
| c.9569G>A    | R3190Q   | No                |
| c.9655G>A    | V3219M   | No                |
| c.9688C>A    | Q3230K   | No                |
| c.9910C>G    | Q3304E   | No                |
| c.10708C>T   | R3570W   | No                |
| c.10742G>A   | R3581K   | No                |
| c.10844G>A   | R3615Q   | Introduce 5' Splice Site |
| c.10913A>C   | D3638A   | No                |
| c.11017C>T   | R3673W   | No                |
| c.11197G>A   | D3733N   | Introduce 5' Splice Site |
| c.11332C>T   | L3778F   | Deletion 5' Splice Site |
| c.11395T>C   | S3799P   | No                |
| c.11399G>T   | C3800F   | Deletion 5' Splice Site |
| c.11426A>G   | E3809G   | Deletion 3' Splice Site |
| c.11515C>T   | L3839F   | No                |
| c.11570A>G   | Y3857C   | No                |
| c.11583G>C   | Q3861H   | Deletion 3' Splice Site |
| c.11628C>G   | D3876E   | Introduce 5' Splice Site |
| c.11636T>C   | L3879P   | No                |
| c.11773C>G   | Q3925E   | No                |
| c.11814C>A   | S3938R   | No                |
| c.11827G>A   | A3943T   | No                |
| c.11836G>A   | G3946S   | Introduce 3' Splice Site |
| c.11837G>C   | G3946A   | No                |
| c.11837G>A   | G3946D   | No                |
| c.11876C>T   | S3959L   | No                |
| c.11916G>T   | M3972I   | No                |
| c.11917G>A   | D3973N   | Deletion 3' Splice Site |
| c.11917G>C   | D3973H   | No                |
| c.11921T>A   | L3974Q   | Deletion 3' Splice Site |
| c.11929G>T   | D3977Y   | Introduce 5' Splice Site |
| c.11934G>A   | M3978I   | Deletion 5' Splice Site |
| c.11969T>A   | V3990D   | No                |
| c.11989A>G   | K3997E   | No                |
| c.12006G>A   | M4002I   | No                |
| c.12013G>A   | E4005K   | Introduce 5' Splice Site |
| c.12058T>C   | F4020L   | No                |
| c.12121G>A   | G4041R   | Introduce 3' Splice Site |
| c.12226G>A   | E4076K   | No                |
| c.12272C>T   | A4091V   | Introduce 5' Splice Site |
| c.12271G>A   | A4091T   | No                |
| c.12290A>G   | N4097S   | Deletion 3' Splice Site |
| c.12312C>G   | N4104K   | Introduce 3' Splice Site |
| c.12311A>T   | N4104I   | No                |
| c.12313C>T   | L4105F   | No                |
| c.12643A>G   | M4107V   | No                |
| c.12322C>A   | H4108N   | No                |
| c.12324A>C   | H4108Q   | No                |
| c.12326T>G   | M4109R   | Introduce 3' Splice Site |
| c.12325A>G   | M4109V   | No                |
| Change | Position | Effect | Description |
|--------|----------|--------|-------------|
| c.12343C>T | L4115F | No | |
| c.12364A>C | S4122R | No | |
| c.12370A>G | S4124N | Deletion 3' Splice Site | 1 |
| c.12371A>G | S4124G | Deletion 3' Splice Site | 1 |
| c.12371G>C | S4124T | Deletion 3' Splice Site | 1 |
| c.12371G>A | S4124N | Deletion 5' & 3 Splice Site | 5 & 3 |
| c.12372A>C | S4124R | No | |
| c.12476A>C | Q4159P | Deletion 3' Splice Site | 1 |
| c.12476T>A | S4168T | No | |
| c.12502T>A | S4178S | Introduce 3' Splice Site | 3 |
| c.12533A>G | N4178Y | No | |
| c.12545A>C | E4182A | Introduce 5' Splice Site | 1 |
| c.12544G>A | E4182Q | Introduce 3' Splice Site | 1 |
| c.12559G>A | E4187Q | Introduce 5' Splice Site | 1 |
| c.12563T>C | L4188P | No | |
| c.12579G>A | C4193W | No | |
| c.12602A>G | Q4201R | Deletion 3' Splice Site | 3 |
| c.12611T>A | A4204V | Introduce 5' Splice Site | 1 |
| c.12639G>C | E4213Q | Introduce 5' Splice Site | 1 |
| c.12640T>C | T4158P | No | |
| c.12665G>A | Y4149C | No | |
| c.12767T>C | M4256T | No | |
| c.12791T>C | L4264P | No | |
| c.12892A>G | V4299M | No | |
| c.13081G>C | Q4471R | No | |
| c.13175A>G | K4361Q | Introduce 3' Splice Site | 1 |
| c.13249C>G | E4417Q | No | |
| c.13291G>A | E4431K | No | |
| c.13411G>A | G4471R | No | |
| c.13463A>C | Q4488P | No | |
| c.13489C>T | R4497C | No | |
| c.13496T>G | F4499C | No | |
| c.13512G>A | M4504I | Deletion 5' Splice Site | 2 |
| c.13528G>A | A4510T | No | |
| c.13655G>A | H4552R | Deletion 3' Splice Site | 1 |
| c.13666G>A | A4556T | No | |
| c.13672C>T | H4558Y | No | |
| c.13695C>A | S4565R | Introduce 5' Splice Site | 1 |
| c.13735C>T | H4579Y | Introduce 3' Splice Site | 1 |
| c.13737C>A | H4579Q | Introduce 3' Splice Site | 1 |
| c.13759A>G | I4587V | No | |
| c.13759A>C | I4587L | No | |
| c.13781A>G | K4594R | Introduce 3' Splice Site | 2 |
| c.13781A>G | L4594R | No | |
| c.13798T>C | F4600L | No | |
| Position | SNV | Effect | Change | Description |
|----------|-----|--------|--------|-------------|
| c.13819G>C | A4607P | No | | |
| c.13823G>A | R4608Q | Introduce 3' Splice Site | 1 | |
| c.13822C>T | R4608W | No | | |
| c.13831G>A | E4611K | No | | |
| c.13892A>T | D4631V | Introduce 5' Splice Site | 2 | |
| c.13933T>A | W4645R | Introduce 3' Splice Site | 3 | |
| c.13948G>A | K4650E | No | | |
| c.13957G>T | V4653F | Deletion 5' Splice Site | 3 | |
| c.14009T>A | L4670H | Introduce 5' Splice Site | 1 | |
| c.14011G>C | G4671R | No | | |
| c.14148C>T | D4716E | No | | |
| c.14174A>G | Y4725C | Introduce 5' Splice Site | 1 | |
| c.14222T>A | A4741V | No | | |
| c.14224C>T | H4742Y | No | | |
| c.14251A>C | K4750Q | No | | |
| c.14285A>C | H4762P | No | | |
| c.14301C>G | L4767L | Introduce 5' Splice Site | 2 | |
| c.14311G>A | V4771I | Deletion 5' Splice Site | 1 | |
| c.14314G>A | G4772S | Introduce 3' Splice Site | 2 | |
| c.14369G>A | R4790Q | No | | |
| c.14414A>G | K4805R | Introduce 3' Splice Site | 1 | |
| c.14461G>A | V4821I | Deletion 5' Splice Site | 1 | |
| c.14465G>A | R4822H | Deletion 5' Splice Site | 1 | |
| c.14542A>G | I4848V | Introduce 5' Splice Site | 1 | |
| c.14552T>G | F4851C | No | | |
| c.14553A>C | F4851L | No | | |
| c.14579C>G | A4860G | No | | |
| c.14593C>G | L4865V | Introduce 5' Splice Site | 1 | |
| c.14601T>G | I4867M | Deletion 3' Splice Site | 1 | |
| c.14599A>G | I4867V | No | | |
| c.14635C>A | Q4879K | No | | |
| c.14639T>C | V4880A | Deletion 5' Splice Site | 1 | |
| c.14683A>G | N4895D | Deletion 5' Splice Site | 1 | |
| c.14704C>T | P4902S | Deletion 3' Splice Site | 1 | |
| c.14705C>T | P4902L | Deletion 3' Splice Site | 1 | |
| c.14771G>A | G4904D | Introduce 3' Splice Site | 1 | |
| c.14713T>C | F4905L | No | | |
| c.14726C>T | T4909I | Deletion 3' Splice Site | 1 | |
| c.14756T>C | L4919S | No | | |
| c.14803G>A | G4936R | No | | |
| c.14806C>A | Q4936K | No | | |
| c.14813C>T | S4938F | No | | |
| c.15162T>C | W4949R | No | | |
| c.14848G>A | E4950K | No | | |
| c.14876G>A | R4959Q | Introduce 3' Splice Site | 2 | |
| c.14885A>G | Y4962C | Introduce 5' Splice Site | 1 | |
| cDNA change | Protein change | Variant hotspot region | Sex | Age (years) | Inheritance | Ethnicity | Trigger | Cardiac Phenotype | Reference |
|-------------|----------------|------------------------|-----|-------------|-------------|-----------|---------|------------------|-----------|
| c.497C>G    | p.(Ser166Cys)  | I                      | Female | 11          | Unknown     | Unknown   | Exercise | Syncope          | (Shigemizu et al., 2015) |
| c.527G>A    | p.(Arg176Gln)  | I                      | Male   | 12          | Unknown     | Unknown   | Exercise | Syncope          | (Tester et al., 2005b) |
| c.6272A>G   | p.(Gln2091Arg) | Male                   | 29     | Paternal    | White British | Unknown | Sudden death | unpublised       |
| c.6961G>A   | p.(Val2321Met) | II                     | Female | 23          | Unknown     | Japanese | Stress   | Sudden death     | (Nishio et al., 2008) |
| c.7169C>T   | p.(Thr2390Ile) | II                     | Male   | 11          | Paternal    | Unknown   | Exercise | Cardiac arrest. Sinus bradycardia. Exercise induced premature ventricular contractions | (Ohno et al., 2015) |
| c.7181C>G   | p.(Arg2394Gly) | II                     | Female | 15          | Unknown     | European  | Exercise | Monomorph premature ventricular beats | (Postma et al, 2005) |
| c.7420A>G   | p.(Arg2474Gly) | II                     | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown | (Kawamura et al., 2013) |
| c.7813A>G   | p.(Met2605Val) | Non-hotspot region     | Unknown | 40          | Paternal    | Unknown   | Unknown | Unknown | (van der Werf et al., 2012) |
| c.11399G>T  | p.(Cys3800Phe) | III                    | Female | 58          | Unknown     | Unknown   | Startled | Aborted cardiac arrest | (Tester et al., 2005) |
| c.12371G>A  | p.(Ser4124Asn) | III                    | Male   | 9           | Maternal    | Unknown   | Unknown | Syncope | (Ohno et al., 2015) |

References
KAWAREMURA, OHNO S, NAIKI N, NAGAOKA I, DOCHI K, WANG Q, HASEGAWA K, KIMURA H, MIYAMOTO A, MIZUSAWA Y, ITOH H, MAKIYAMA T, SUMITOMO N, UHINOHAMA H, OYAMA K, MURAKOSHI N, AONUMA K, HORIGOME H, HONDA T, YOSHINAGA M, ITO M, HORIE M. 2013. - Genetic background of catecholaminergic polymorphic ventricular tachycardia in Japan. - Circ J. 2013;77(7):1705-13. doi: 10.1253/circj.cj-12-1460. Epub 2013 Apr 18., - 1705-13.
NISHIO, H., IWATA, M., TAMURA, A., MIYAZAKI, T., TSUBOI, K. & SUZUKI, K. 2008. Identification of a novel mutation V2321M of the cardiac ryanodine receptor gene of sudden unexplained death and a
phenotypic study of the gene mutations. Legal Medicine, 10, 196-200.

OHNO, S., HASEGAWA, K. & HORIE, M. 2015. Gender Differences in the Inheritance Mode of RYR2 Mutations in Catecholaminergic Polymorphic Ventricular Tachycardia Patients. PloS one, 10, e0131517-e0131517.

POSTMA, A. V., DENJOY, I., KAMBLOCK, J., ALDERS, M., LUPOGLAZOFF, J. M., VAKSMANN, G., DUBOSQ-BIDOT, L., SEBILLON, P., MANNENS, M. M. A. M., GUICHENNEY, P. & WILDE, A. A. M. 2005. Catecholaminergic polymorphic ventricular tachycardia: RYR2 mutations, bradycardia, and follow up of the patients. Journal of medical genetics, 42, 863-870.

SHIGEMIZU, D., AIBA, T., NAKAGAWA, H., OZAKI, K., MIYA, F., SATAKE, W., TODA, T., MIYAMOTO, Y., FUJIMOTO, A., SUZUKI, Y., KUBO, M., TSUNODA, T., SHIMIZU, W. & TANAKA, T. 2015. Exome Analyses of Long QT Syndrome Reveal Candidate Pathogenic Mutations in Calmodulin-Interacting Genes. PloS one, 10, e0130329-e0130329.

TESTER, D. J., KOPPLIN, L. J., WILL, M. L. & ACKERMAN, M. J. 2005b. Spectrum and prevalence of cardiac ryanodine receptor (RyR2) mutations in a cohort of unrelated patients referred explicitly for long QT syndrome genetic testing. Heart Rhythm, 2, 1099-1105.

VAN DER WERF, C., NEDEREND, I., HOFMAN, N., VAN GELOVEN, N., EBINK, C., FROHN-MULDER INGRID, M. E., ALINGS, A. M. W., BOSKER HANS, A., BRACKE FRANK, A., VAN DEN HEUVEL, F., WAALEWIJN REINIER, A., BIKKER, H., VAN TINTELEN, J. P., BHUIYAN ZAHURUL, A., VAN DEN BERG MAARTEN, P. & WILDE ARTHUR, A. M. 2012. Familial Evaluation in Catecholaminergic Polymorphic Ventricular Tachycardia. Circulation: Arrhythmia and Electrophysiology, 5, 748-756.