Supplementary Table 1: Identified variants in Arab individuals with sporadic and autosomal recessive rod cone dystrophy.

Gene	Ref_Seq	Change at DNA level	Change at Protein level	Family/ sample ID	N	Origin	Authors	Year
ABCA4	NM_000350.2	c.4793C>A	p.(Ala1598Asp)	arRP-F007	2	KSA	Abu-Safieh et al	2013
ABCA4	NM_000350.2	c.4316G>A	p.(Gly1439Asp)	arRP-F119	1	KSA	Abu-Safieh et al	2013
ABCA4	NM_000350.2	c.4316G>A	p.(Gly1439Asp)	sRP-018	1	KSA	Abu-Safieh et al	2013
ABCA4	NM_000350.2	c.5391_5392del	p.(Ala1798*)	09DG00134	1	KSA	Patel et al	2016
ABCA4	NM_000350.2	c.1630_1633dup	p.(Asn545Argfs*12)	09DG00194	1	KSA	Patel et al	2016
ABCA4	NM_000350.2	[c.2815G>T];[c.1615del]	p.[(Glu939*);(Leu539Serfs*29)]	10DG1130	1	KSA	Patel et al	2016
ABCA4	NM_000350.2	[c.1140T>A];[c.5642C>G]	p.[(Asn380Lys);(Ala1881Gly)]	11DG2106	1	KSA	Patel et al	2016
ABCA4	NM_000350.2	c.5391_5392del	p.(Ala1798*)	13DG2102	1	KSA	Patel et al	2016
ABCA4	NM_000350.2	[c.3482G>A];[c.5917del] **	p.[(Arg1161His);(Val1973*)]	09DG01320	4	Syrian	Patel et al	2018
ABCA4	NG_009073.1(NM_000350.2)	c.5460+1G>A	p.(=)	F1A	4	Jordan	Abu-Ameerh et al	2019
AGBL5	NM_021831.5	c.1255dup	p.(Thr419Asnfs*32)	16	1	Emirates Arab	Khan A O	2019
ARL2BP	NG_033905.1(NM_012106.3)	c.101-1G>C	p.(=)	MOL0807	1	muslim	Davidson et al	2013
ARL2BP	NG_033905.1(NM_012106.3)	c.207+1G>T	p.(=)	-	2	Morocco	Audo et al	2017
ARL6	NM_177976.2	c.266C>T **	p.(Ala89Val)	DGU-F15	4	KSA	Aldahmesh et al	2009
ARL6	NM_177976.2	c.362G>A	p.(Arg121His)	11DG2051	1	KSA	Patel et al	2016
BBS2	NM_031885.3	c.943C>T	p.(Arg315Trp)	10DG1111	1	KSA	Patel et al	2016
C8orf37	NM_177965.3	c.529C>T	p.(Arg177Trp)	11DG1769	1	KSA	Patel et al	2016
C8orf37	NM_177965.3	c.529C>T	p.(Arg177Trp)	12DG0138	1	KSA	Patel et al	2016
CERKL	NM_201548.4	c.734T>C	p.(Leu245Pro)	sRP-045	1	KSA	Abu-Safieh et al	2013
CERKL	NM_201548.4	c.734T>C	p.(Leu245Pro)	-	1	KSA	Khan et al	2015
CERKL	NM_001030311.2	c.999C>A	p.(Cys333*)	-	1	KSA	Khan et al	2015
CERKL	NM_001030311.2	c.890T>C	p.(Ile297Thr)	11DG2308	1	KSA	Patel et al	2016
CERKL	NG_021178.2(NM_001030313.2)	c.238+1G>A	p.(=)	12DG0401	1	KSA	Patel et al	2016
CERKL	NG_021178.2(NM_201548.4)	c.1151+3_1151+6del **	p.(=)	F12	2	Tunisia	Habibi et al	2016
CERKL	NG_021178.2(NM_201548.4)	c.1151+3_1151+6del **	p.(=)	F13	1	Tunisia	Habibi et al	2016
CERKL	NG_021178.2(NM_201548.4)	c.1151+3_1151+6del **	p.(=)	F14	1	Tunisia	Habibi et al	2016

CERKL	NG_021178.2(NM_201548.4)	c.1151+3_1151+6del **	p.(=)	F15	1	Tunisia	Habibi et al	2016
CERKL	NM_001030311.2	c.999C>A	p.(Cys333*)	12DG0399	2	KSA	Patel et al	2018
CERKL	NM_201548.4	c.1187_1188del **	p.(Gln396Argfs*20) **	F1: V-30	1	Jordan	Azab B et al	2019
CNGB1	NM_001297.1	c.2957A>T	p.(Lys986Met)	sRP-005	1	KSA	Abu-Safieh et al	2013
CNGB1	NM_001297.4	c.2957A>T	p.(Asn986Ile)	12DG0391	1	KSA	Patel et al	2016
CNGB1	NM_001297.4	c.2957A>T	p.(Asn986Ile)	12DG1256	1	KSA	Patel et al	2016
CNGB1	NM_001297.4	c.2294G>T	p.(Arg765Leu)	12DG2309	1	KSA	Patel et al	2016
CNGB1	NM_001297.4	c.2293C>T	p.(Arg765Cys)	F2	2	Tunisia	Habibi et al	2016
CRB1	NM_201253.1	c.3159T>G	p.(Cys1053Trp)	DGU-F11	4	KSA	Aldahmesh et al	2009
CRB1	NM_201253.1	c.80G>C	p.(Cys27Phe)	DGU-F12	1	KSA	Aldahmesh et al	2009
CRB1	NM_201253.2	c.3495T>G	p.(Cys1165Trp)	arRP-F030	2	KSA	Abu-Safieh et al	2013
CRB1	NM_201253.2	c.1429G>A	p.(Gly477Arg)	arRP-F062	3	KSA	Abu-Safieh et al	2013
CRB1	NM_201253.2	c.2024G>A	p.(Trp675*)	sRP-014	1	KSA	Abu-Safieh et al	2013
CRB1	NM_201253.2	c.80G>T	p.(Cys27Phe)	sRP-086	1	KSA	Abu-Safieh et al	2013
CRB1	NM_201253.2	c.2234C>T	p.(Thr745Met)	sRP-087	1	KSA	Abu-Safieh et al	2013
CRB1	NM_201253.2	c.1772_1775del **	p.(Cys591Serfs*29) **	-	2	Lebanon	Jalkh et al	2014
CRB1	NM_201253.2	c.1180T>C	p.(Cys394Arg)	09DG00277	1	KSA	Patel et al	2016
CRB1	NM_201253.2	c.2330_2336del	p.(Pro777Leufs*4)	10DG0001	1	KSA	Patel et al	2016
CRB1	NM_201253.2	c.1180T>C	p.(Cys394Arg)	10DG1183	1	KSA	Patel et al	2016
CRB1	NM_201253.2	c.1180T>C	p.(Cys394Arg)	11DG1394	1	KSA	Patel et al	2016
CRB1	NM_201253.2	c.2701G>T	p.(Val901Phe)	12DG0833	1	KSA	Patel et al	2016
CRB1	NM_201253.2	c.80G>T	p.(Cys27Phe)	13DG0249	1	KSA	Patel et al	2016
CRB1	NM_201253.2	c.1463T>C	p.(Phe488Ser)	14DG2055	1	KSA	Patel et al	2016
EMC1	NM_015047.3	c.430G>A	p.(Ala144Thr)	sRP-001	1	KSA	Abu-Safieh et al	2013
EYS	NM_001142800.1	c.32dup	p.(Met12Aspfs*14)	arPR-F027	5	KSA	Abu-Safieh et al	2013
EYS	NM_001142800.1	c.6050G>T	p.(Gly2017Val)	arRP-F098	1	KSA	Abu-Safieh et al	2013
EYS	NM_001142800.1	c.6050G>T	p.(Gly2017Val)	sRP-007	1	KSA	Abu-Safieh et al	2013
EYS	NM_001142800.1	c.179del	p.(Leu60Trpfs*3)	10DG1649	1	KSA	Patel et al	2016
EYS	NM_001142800.1	c.910dup **	p.(Trp304Leufs*9) **	-	12	KSA	Hashmi et al	2018

EYS	NM_001142800.1	c.875_888delinsTTT	p.(Glu292Valfs*17)	16DG0629	2	KSA	Patel et al	2018
FAM161A	NM_001201543	c.1003C>T	p.(Arg335*)	AQ09	2	Palestine	Zobor et al	2014
FAM161A	NM_032180.2	c.685C>T	p.(Arg229*)	09DG00352	1	KSA	Patel et al	2016
FAM161A	NM_032180.2	c.685C>T	p.(Arg229*)	11DG1421	1	KSA	Patel et al	2016
FAM161A	NM_032180.2	c.685C>T	p.(Arg229*)	11DG1804	1	KSA	Patel et al	2016
FAM161A	NM_001201543	c.678_681del **	p.(Lys227Asnfs*17)	F11	2	Tunisia	Habibi et al	2016
GPR125	NM_145290.3	c.2504C>G	p.(Ser835Cys)	sRP-022	1	KSA	Abu-Safieh et al	2013
GPR125	NM_145290.3	c.2504C>G	p.(Ser835Cys)	09DG00459	1	KSA	Patel et al	2016
IMPG2	NM_016247.3	c.2346_2347del	p.(Arg782Serfs*24)	arRP-F071	4	KSA	Abu-Safieh et al	2013
IMPG2	NM_016247.3	c.2346_2347del	p.(Arg782Serfs*24)	09DG01587	1	KSA	Patel et al	2016
IMPG2	NM_016247.3	c.2274G>A	p.(Trp758*)	11DG2068	1	KSA	Patel et al	2016
IMPG2	NM_016247.3	c.2274G>A	p.(Trp758*)	12DG0554	1	KSA	Patel et al	2016
IMPG2	NM_016247.3	c.513T>G	p.(Tyr171*)	12DG1252	1	KSA	Patel et al	2016
IMPG2	NM_016247.3	c.2274G>A	p.(Trp758*)	12DG2330	1	KSA	Patel et al	2016
IMPG2	NM_016247.3	c.909-802 _1154-539del	p.(Gly304Glufs*9) **	09DG00922	6	KSA	Patel et al	2018
IMPG2	NM_016247.3	c.2274G>A	p.(Trp758*)	15DG0195	1	KSA	Patel et al	2018
IMPG2	NM_016247.3	c.2274G>A	p.(Trp758*)	15DG2178	3	KSA	Patel et al	2018
IMPG2	NM_016247.3	c.189dup	p.(Gln64Thrfs*9)	Fam 1	4	Emirates	Khan et al	2019
IMPG2	NM_016247.3	c.189dup	p.(Gln64Thrfs*9)	Fam 2	1	Emirates	Khan et al	2019
IMPG2	NG_028284.1 (NM_016247.3)	c.533+4_533+7del	p.(=)	Fam 3	1	Emirates	Khan et al	2019
IMPG2	NM_016247.3	c.3262C>T	p.(Arg1088*)	Fam 4	1	Emirates	Khan et al	2019
LRAT	NM_004744.4	c.233_242del	p.(Leu78Argfs*85)	12DG1182	1	KSA	Patel et al	2016
LRAT	NM_004744.3	c.241_242del	p.(Leu81Aspfs*40)	12DG0405	1	KSA	Patel et al	2018
MERTK	NM_006343.2	c.1335_1336del	p.(Ala446Serfs*28) **	DGU-F16	3	KSA	Aldahmesh et al	2009
MERTK	NG_011607.1 (NM_006343.2)	c.(1144+1_1145-1)_(1296+1_1297-1)del**	-	Second Family	0	KSA	Mackay et al	2010
MERTK	NM_006343.2	c.2323C>T	p.(Arg775*)	-	3	Morocco	Ksantini et al	2012
MERTK	NM_006343.2	c.2214del	p.(Cys738Trpfs*32)	10DG1152	1	KSA	Patel et al	2016
MERTK	NM_006343.2	c.2214del	p.(Cys738Trpfs*32)	11DG1924	1	KSA	Patel et al	2016
MERTK	NM_006343.2	c.2214del	p.(Cys738Trpfs*32)	12DG0434	1	KSA	Patel et al	2016
MERTK	NM_006343.2	c.325A>T	p.(Lys109*)	12DG0949	1	KSA	Patel et al	2016

MERTK	NM_006343.2	c.2214del	p.(Cys738Trpfs*32)	12DG1797	1	KSA	Patel et al	2016
MERTK	NG_011607.1 (NM_006343.2)	c.1604+2T>G	p.(=)	12DG2585	1	KSA	Patel et al	2016
MERTK	NM_006343.2	c.2189+1G>T	p.(=)	13DG0011	1	KSA	Patel et al	2016
MERTK	NM_006343.2	c.2262C>G	p.(Tyr754*)	13DG0999	1	KSA	Patel et al	2016
MERTK	NG_011607.1 (NM_006343.2)	c.1604+2T>G	p.(=)	-	1	KSA	Audo et al	2018
MERTK	NM_006343.2	c.2323C>T	p.(Arg775*)	-	2	Morocco	Audo et al	2018
MERTK	NM_006343.2	c.1335_1336del **	p.(Ala446Serfs*28)	11DG0677	4	KSA	Patel et al	2018
MERTK	NM_006343.2	c.2219C>T	p.(Ala740Val)	F2286	2	North Africa	Audo et al	2018
MERTK	NG_011607.1 (NM_006343.2)	[c.2079+2T>G]; [c.1951C>T]	p.[(=);(Arg651*)]	F2600	1	Lebanon	Audo et al	2018
MERTK	NM_006 343.2	c.1301_1302del	p.(Glu434Alafs*40)	F382	2	North Africa	Audo et al	2018
MERTK	NM_006343.2	c.2214del	p.(Cys738Trpfs*32)	53	1	Emirates	Khan A O	2019
MERTK	NM_006343.2	c.2214del	p.(Cys738Trpfs*32)	54	1	Emirates	Khan A O	2019
MERTK	NM_006343.2	c.2214del	p.(Cys738Trpfs*32)	55	1	Emirates	Khan A O	2019
MERTK	NM_006343.2	c.2214del	p.(Cys738Trpfs*32)	56	1	Emirates	Khan A O	2019
NR2E3	NM_014249.3	c.932G>A	p.(Arg311Gln)	F4	2	Tunisia	Habibi et al	2016
NR2E3	NM_014249.3	c.932G>A	p.(Arg311Gln)	14DG0753	1	KSA	Patel et al	2018
NR2E3	NM_014249.2	c.951del	p.(Thr318Argfs*6)	sRP-040	1	KSA	Abu-Safieh et al	2013
NR2E3	NM_014249.2	c.951del	p.(Thr318Argfs*6)	sRP-051	1	KSA	Abu-Safieh et al	2013
PCARE	NM_001029883.2	[c.802C>T]; [c.2756_2768del]	p.[(Gln268*);(Lys919Thrfs*2)]	9	1	Lebanon	Gerth-Kahlert et al	2017
PCARE	NM_001029883.2	c.1377del **	p.(Phe459Leufs*39)	12DG0758	2	Iraqi	Patel et al	2018
PCARE	NM_001029883.2	c.1525del	p.(Thr509Leufs*32)	arRP-F038	2	KSA	Abu-Safieh et al	2013
PCARE	NM_001029883.2	c.2967del	p.(Val990Trpfs*45)	61	1	Emirates	Khan A O	2019
PDE6A	NM_000440.2	c.304C>A	p.(Arg102Ser)	arRP-F072	2	KSA	Abu-Safieh et al	2013
PDE6A	NM_000440.2	c.1358_1359del **	p.(Ile453Serfs*8) **	-	1	Emirates	Nair et al	2017
PDE6B	NM_001145291.1	c.2419T>A	p.(Trp807Arg)	Us	2	Tunisia	Hmani Aifa et al	2009
PDE6B	NM_001145291.1	c.810C>A	p.(Cys270*)	arRP-F049	1	KSA	Abu-Safieh et al	2013
PDE6B	NM_000283.3	c.121_125del **	p.(Pro41Glufs*123) **	F18	1	Morocco	Coppieters et al	2014
PDE6B	NG_009839.1 (NM_000283.3)	c.992+1G>A	p.(=)	14DG1966	1	KSA	Patel et al	2016
PDE6B	NM_001145291.1	c.1010A>G	p.(His337Arg)	F10	4	Tunisia	Habibi et al	2016

PDE6B	NG_009839.1 (NM_000283.3)	c.992+1G>A	p.(=)	09DG00148	1	KSA	Patel et al	2018
PROM1	NM_001145848.1	c.1530C>G	p.(Tyr510*)	arRP-F054	2	KSA	Abu-Safieh et al	2013
PROM1	NG_011696.2 (NM_006017.2)	c.2130+2del **	p.(=)	09DG00585	1	KSA	Patel et al	2016
PROM1	NM_006017.2	c.604C>G	p.(Arg202Gly)	12DG0402	1	KSA	Patel et al	2016
PROM1	NM_006017.2	c.1354dup **	p.(Tyr452Leufs*13) **	F8	1	Tunisia	Habibi et al	2016
RBP3	NM_002900.2	c.1162C>T	p.(Arg388*)	sRP-003	1	KSA	Abu-Safieh et al	2013
REEP6	NM_001329556.1	c.267G>A	p.(Trp89*)	-	1	North Africa	Méjécase et al	2017
RLBP1	NM_000326.5	c.452G>A **	p.(Arg151Gln) **	KKESH-099	7	KSA	Katsanis et al	2001
RLBP1	NG_008116.1 (NM_000326.4)	c.(525+1_526+1)_(*418_?)del*	-	-	1	Morocco	Humbert	2006
RLBP1	NM_000326.1	c.446C>T	p.(Ser149Phe)	arRP-F069	4	KSA	Abu-Safieh et al	2013
RLBP1	NG_008116.1 (NM_000326.4)	c.(525+1_526+1)_(*418_?)del*	-	MTP1554	1	Morocco	Dessalces et al	2013
RLBP1	NG_008116.1 (NM_000326.4)	c.(525+1_526+1)_(*418_?)del*	-	MTP1633	3	Morocco	Dessalces et al	2013
RLBP1	NG_008116.1 (NM_000326.4)	c.(525+1_526+1)_(*418_?)del*	-	MTP1789	1	Morocco	Dessalces et al	2013
RLBP1	NG_008116.1 (NM_000326.4)	c.(525+1_526+1)_(*418_?)del*	-	MTP1838	2	Morocco	Dessalces et al	2013
RLBP1	NG_008116.1 (NM_000326.4)	c.(525+1_526+1)_(*418_?)del*	-	MTP702	1	Morocco	Dessalces et al	2013
RLBP1	NM_000326.4	c.452G>A	p.(Arg151Gln)	sRP-015	1	KSA	Abu-Safieh et al	2013
RLBP1	NM_000326.4	c.452G>A	p.(Arg151Gln)	09DG00114	1	KSA	Patel et al	2016
RLBP1	NM_000326.4	c.286_297del	p.(Phe96_Phe99del)	10DG0529	1	KSA	Patel et al	2016
RP1	NM_006269.1	c.662del **	p.(Ala221Glyfs*43) **	DGU-F1	3	KSA	Aldahmesh et al	2009
RP1	NM_006269.1	c.606C>A	p.(Asp202Glu)	DGU-F2	3	KSA	Aldahmesh et al	2009
RP1	NM_006269.1	c.3428del **	p.(Asn1143Ilefs*25)	arRP-DF01	3	KSA	Al Rashed et al	2012
RP1	NM_006269.1	c.3677_3678dup **	p.(Glu1227Metfs*29)	arRP-F101	4	KSA	Al Rashed et al	2012
RP1	NM_006269.1	c.4552A>T	p.(Lys1518*)	arRP-F28	4	KSA	Al Rashed et al	2012
RP1	NM_006269.1	c.3428del	p.(Asn1143Ilefs*25)	arRP-F43	4	KSA	Al Rashed et al	2012
RP1	NM_006269.1	c.3428del	p.(Asn1143Ilefs*25)	arRP-F84	4	KSA	Al Rashed et al	2012
RP1	NM_006269.1	c.3396G>A	p.(Trp1132*) **	sRP-19	1	KSA	Al Rashed et al	2012

RP1	NM_006269.1	c.4242_4243del	p.(His1414Glnfs*5)	arRP-F111	2	KSA	Abu-Safieh et al	2013
RP1	NM_006269.1	c.3428del	p.(Asn1143Ilefs*25)	arRP-F114	2	KSA	Abu-Safieh et al	2013
RP1	NM_006269.1	c.4242_4243del	p.(His1414Glnfs*5)	arRP-F116	3	KSA	Abu-Safieh et al	2013
RP1	NM_006269.1	c.5008G>A	p.(Ala1670Thr)	arRP-FD02	5	KSA	Abu-Safieh et al	2013
RP1	NM_006269.1	c.606C>A	p.(Asp202Glu)	sRP-047	1	KSA	Abu-Safieh et al	2013
RP1	NM_006269.1	c.1012C>T	p.(Arg338*)	sRP-084	1	KSA	Abu-Safieh et al	2013
RP1	NM_006269.1	c.3428del	p.(Asn1143Ilefs*25)	09DG00881	1	KSA	Patel et al	2016
RP1	NM_006269.1	c.3428del	p.(Asn1143Ilefs*25)	09DG00920	1	KSA	Patel et al	2016
RP1	NM_006269.1	c.3428del	p.(Asn1143Ilefs*25)	09DG01025	1	KSA	Patel et al	2016
RP1	NM_006269.1	c.662del	p.(Ala221Glyfs*43)	11DG2524	1	KSA	Patel et al	2016
RP1	NM_006269.1	c.1719_1723del	p.(Ser574Cysfs*7)	12DG1405	1	KSA	Patel et al	2016
RP1	NM_006269.1	c.606C>A	p.(Asp202Glu)	13DG1132	1	KSA	Patel et al	2016
RP1	NM_006269.1	c.3396G>A	p.(Trp1132*) **	15DG0607	1	KSA	Patel et al	2018
RP1	NM_006269.1	c.3396G>A	p.(Trp1132*) **	17DG0901	3	KSA	Patel et al	2018
RP1	NM_006269.1	c.3544_3545insAGAAAAGCTG	p.(Ala1182Glufs*20) **	Fam A	2	KSA	Albarry et al	2019
RP1L1	NM_178857.5	c.5959C>T	p.(Gln1987*)	12DG2561	1	KSA	Patel et al	2016
RP1L1	NM_178857.5	c.3955_3956insGGACTAAAGTAATAGAAGGGCTGCAAGAAGAGAGGGTGCAGTTAGAGG	p.(Glu1318_Ala1319insGlyThrLysValIleGluGlyLeuGlnGluGluArgValGlnLeuGlu) **	Fam B	1	KSA	Albarry et al	2019
RPE65	NM_000329.2	c.310G>C	p.(Gly104Arg)	arRP-F075	4	KSA	Abu-Safieh et al	2013
RPE65	NM_000329.2	c.131G>A	p.(Arg44Gln)	09DG00042	1	KSA	Patel et al	2016
RPE65	NM_000329.2	c.1366del	p.(Glu456Lysfs*30)	11DG2533	1	KSA	Patel et al	2016
RPE65	NM_000329.2	c.544C>T	p.(His182Tyr)	F5	3	Tunisia	Habibi et al	2016
RPE65	NG_008472.2 (NM_000329.2)	c.[1129-2A>G]	p.(=)	F6	2	Tunisia	Habibi et al	2016
RPE65	NM_000329.2	[c.271C>T];[c.515T>A]	p.[(Arg91Trp);(Val172Asp)]	F7	2	Tunisia	Habibi et al	2016
RPE65	NM_000329.2	c.993G>A	p.(Trp331*)	63	1	Emirates	Khan A O	2019
RPE65	NG_008472.2 (NM_000329.2)	c.(?_-1)_(1128+1_1129–1)del	-	64	1	Emirates	Khan A O	2019
SPATA7	NM_018418.4	c.288T>A	p.(Cys96*)	11DG1400	1	KSA	Patel et al	2016
TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	arRP-F002	8	KSA	Abu-Safieh et al	2013
TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	arRP-F003	2	KSA	Abu-Safieh et al	2013
TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	arRP-F013	3	KSA	Abu-Safieh et al	2013

TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	arRP-F015	2	KSA	Abu-Safieh et al	2013
TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	arRP-F020	3	KSA	Abu-Safieh et al	2013
TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	arRP-F052	2	KSA	Abu-Safieh et al	2013
TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	arRP-F106	3	KSA	Abu-Safieh et al	2013
TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	arRP-F121	3	KSA	Abu-Safieh et al	2013
TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	sRP-010	1	KSA	Abu-Safieh et al	2013
TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	sRP-021	1	KSA	Abu-Safieh et al	2013
TULP1	NM_003322.3	c.901C>T	(p.Gln301*)	-	10	Arabian Peninsula	Khan et al	2015
TULP1	NM_003322.4	c.901C>T	p.(Gln301*)	09DG00491	1	KSA	Patel et al	2016
TULP1	NM_003322.4	c.901C>T	p.(Gln301*)	09DG00492	1	KSA	Patel et al	2016
TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	11DG0480	1	KSA	Patel et al	2016
TULP1	NG_009077.1 (NM_003322.4)	c.1495+1G>A	p.(=)	11DG1963	1	KSA	Patel et al	2016
TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	12DG0751	1	KSA	Patel et al	2016
TULP1	NG_009077.1 (NM_003322.4)	c.1256G>A	p.(Arg419Gln)	12DG1758	1	KSA	Patel et al	2016
TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	12DG2327	1	KSA	Patel et al	2016
TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	13DG2124	1	KSA	Patel et al	2016
TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	11DG1028	3	KSA	Patel et al	2018
TULP1	NM_003322.3	c.901C>T	p.(Gln301*)	11DG1052	13	KSA	Patel et al	2018
USH2A	NM_206933.2	c.842C>A	p.(Thr281Lys)	11DG1451	1	KSA	Patel et al	2016
USH2A	NM_206933.2	[c.2276G>T];[c.5776+1G>A]	p.[(Cys759Phe);p.(=)]	11DG1558	1	KSA	Patel et al	2016
USH2A	NG_009497.2 (NM_206933.2)	[c.1923T>A];[c.14294T>C]	p.[(Cys641*);(Val4765Ala)]	13DG0370	2	Jordan	Patel et al	2018
USH2A	NM_206933.2	c.4033G>C	p.(Ala1345Pro)	14DG0544	3	KSA	Patel et al	2018
ZNF408	NG_052967.1 (NM_024741.3)	c.653-1G>T	p.(=)	-	3	Tunisia	Habibi et al	2017

Supplementary Table 2: Identified variants in Arab individuals with dominant and x-linked rod cone dystrophy.

Gene	Ref_Seq	DNA change	Protein change	Status	Family/sample ID	N	Country	Authors/Year	Inheritance
CRX	NM_000554.4	c.695del	p.(Pro232Argfs*139)	Htz	09DG00180	1	KSA	Patel et al- 2016	adRCD
CRX	NM_000554.4	c.274G>A	p.(Ala92Thr)	Htz	09DG00976	1	KSA	Patel et al- 2016	adRCD
CRX	NM_000554.4	c.425A>G	p.(Tyr142Cys)	Htz	11DG2472	1	KSA	Patel et al- 2016	adRCD
CRX	NM_000554.4	c.425A>G	p.(Tyr142Cys)	Htz	12DG0648	1	KSA	Patel et al- 2016	adRCD
PRPF8	4-	c.6928A>.G	p.(Arg2310Gly)	Htz	62	1	Emirates	Khan AO- 2019	adRCD
SNRNP200	NM_014014.4	c.6308A>G	p.(Asn2103Ser)	Htz	11DG0274	1	KSA	Patel et al- 2016	adRCD
SNRNP200	NM_014014.4	c.2593G>A	p.(Gly865Ser)	Htz	12DG0322	1	KSA	Patel et al- 2016	adRCD
RP2	NM_006915.2	c.2T>C	-	Hemi	12DG2227	1	KSA	Patel et al- 2016	xLRCD
RP2	NM_006915.2	c.352C>T	p.(Arg118Cys)	Hmz	10DG0873	1	KSA	Patel et al- 2016	xLRCD
RPGR		ORF15+588G>A	p.(Ala196Thr)	Hemi	-	-	Jordan	Haddad et al- 2016	xLRCD

Ref_Seq: Reference Sequence, N: Number of sequenced individuals, Htz: heterozygous, KSA: kingdom of Saudi Arabia, adRCD: autosomal dominant rod-cone dystrophy, Hemi: hemizygous, xLRCD: xLinked rod-cone dystrophy.

Supplementary Table 3: MeSH terms used to systematically screen all papers dealing with the genetics of rod cone dystrophy in the Arab Countries

Search	MeSH Terms
Search 1	rod cone dystrophy and (africa, northern[mesh] OR algeria[mesh] OR egypt[mesh] OR libya[mesh] OR morocco[mesh] OR tunisia[mesh] OR south sudan[mesh] OR sudan[mesh] OR middle east[mesh:noexp] OR bahrain[mesh] OR iraq[mesh] OR jordan[mesh] OR kuwait[mesh] OR lebanon[mesh] OR oman[mesh] OR qatar[mesh] OR saudi arabia[mesh] OR syria[mesh] OR united arab emirates[mesh] OR yemen[mesh] OR algeria*[tw] OR somalia[mesh] OR mauritania[mesh] OR djibouti[mesh] OR arabs[mesh] OR comoros[mesh] OR bahrain*[tw] OR egypt*[tw] OR iraq*[tw] OR jordan*[tw] OR kuwait*[tw] OR lebanon[tw] OR lebanese[tw] OR libanaise[tw] OR yemen*[tw] OR aden[tw] OR sanaa[tw] OR UAE[tw] OR emirat*[tw] OR abu-dhabi[tw] OR dubai[tw] OR libya*[tw] OR morocco[tw] OR moroccan*[tw] OR oman*[tw] OR muscat[tw] OR palestin*[tw] OR gaza[tw] OR west-bank[tw] OR qatar*[tw] OR katar*[tw] OR quatar*[tw] OR saudi*[tw] OR KSA[tw] OR syria*[tw] OR tunis*[tw] OR ifni[tw] OR trucial state*[tw] OR comoros*[tw] OR north africa*[tw] OR northern Africa*[tw] OR sudan*[tw] OR MENA[tw] OR EMRO[tw] OR middle east*[tw] OR east mediterranean[tw] OR eastern mediterranean[tw] OR near east*[tw] OR orient[tw] OR arabs[tw] OR arab[tw] OR arabia[tw] OR somali*[tw] OR mauritania*[tw] OR djibouti*[tw] OR levant[tw])
Search 2	retinitis pigmentosa and (africa, northern[mesh] OR algeria[mesh] OR egypt[mesh] OR libya[mesh] OR morocco[mesh] OR tunisia[mesh] OR south sudan[mesh] OR sudan[mesh] OR middle east[mesh:noexp] OR bahrain[mesh] OR iraq[mesh] OR jordan[mesh] OR kuwait[mesh] OR lebanon[mesh] OR oman[mesh] OR qatar[mesh] OR saudi arabia[mesh] OR syria[mesh] OR united arab emirates[mesh] OR yemen[mesh] OR algeria*[tw] OR somalia[mesh] OR mauritania[mesh] OR djibouti[mesh] OR arabs[mesh] OR comoros[mesh] OR bahrain*[tw] OR egypt*[tw] OR iraq*[tw] OR jordan*[tw] OR kuwait*[tw] OR lebanon[tw] OR lebanese[tw] OR libanaise[tw] OR yemen*[tw] OR aden[tw] OR sanaa[tw] OR UAE[tw] OR emirat*[tw] OR abu-dhabi[tw] OR dubai[tw] OR libya*[tw] OR morocco[tw] OR moroccan*[tw] OR oman*[tw] OR muscat[tw] OR palestin*[tw] OR gaza[tw] OR west-bank[tw] OR qatar*[tw] OR katar*[tw] OR quatar*[tw] OR saudi*[tw] OR KSA[tw] OR syria*[tw] OR tunis*[tw] OR ifni[tw] OR trucial state*[tw] OR comoros*[tw] OR north africa*[tw] OR northern Africa*[tw] OR sudan*[tw] OR MENA[tw] OR EMRO[tw] OR middle east*[tw] OR east mediterranean[tw] OR eastern mediterranean[tw] OR near east*[tw] OR orient[tw] OR arabs[tw] OR arab[tw] OR arabia[tw] OR somali*[tw] OR mauritania*[tw] OR djibouti*[tw] OR levant[tw])
Search 3	inherited retinal diseases and (africa, northern[mesh] OR algeria[mesh] OR egypt[mesh] OR libya[mesh] OR morocco[mesh] OR tunisia[mesh] OR south sudan[mesh] OR sudan[mesh] OR middle east[mesh:noexp] OR bahrain[mesh] OR iraq[mesh] OR jordan[mesh] OR kuwait[mesh] OR lebanon[mesh] OR oman[mesh] OR qatar[mesh] OR saudi arabia[mesh] OR syria[mesh] OR united arab emirates[mesh] OR yemen[mesh] OR algeria*[tw] OR somalia[mesh] OR mauritania[mesh] OR djibouti[mesh] OR arabs[mesh] OR comoros[mesh] OR bahrain*[tw] OR egypt*[tw] OR iraq*[tw] OR jordan*[tw] OR kuwait*[tw] OR lebanon[tw] OR lebanese[tw] OR libanaise[tw] OR yemen*[tw] OR aden[tw] OR sanaa[tw] OR UAE[tw] OR emirat*[tw] OR abu-dhabi[tw] OR dubai[tw] OR libya*[tw] OR morocco[tw] OR moroccan*[tw] OR oman*[tw] OR muscat[tw] OR palestin*[tw] OR gaza[tw] OR west-bank[tw] OR qatar*[tw] OR katar*[tw] OR quatar*[tw] OR saudi*[tw] OR KSA[tw] OR syria*[tw] OR tunis*[tw] OR ifni[tw] OR trucial state*[tw] OR comoros*[tw] OR north africa*[tw] OR northern Africa*[tw] OR sudan*[tw] OR MENA[tw] OR EMRO[tw] OR middle east*[tw] OR east mediterranean[tw] OR eastern mediterranean[tw] OR near east*[tw] OR orient[tw] OR arabs[tw] OR arab[tw] OR arabia[tw] OR somali*[tw] OR mauritania*[tw] OR djibouti*[tw] OR levant[tw])
Search 4	retinal dystrophies and (africa, northern[mesh] OR algeria[mesh] OR egypt[mesh] OR libya[mesh] OR morocco[mesh] OR tunisia[mesh] OR south sudan[mesh] OR sudan[mesh] OR middle east[mesh:noexp] OR bahrain[mesh] OR iraq[mesh] OR jordan[mesh] OR kuwait[mesh] OR lebanon[mesh] OR oman[mesh] OR qatar[mesh] OR saudi arabia[mesh] OR syria[mesh] OR united arab emirates[mesh] OR yemen[mesh] OR algeria*[tw] OR somalia[mesh] OR mauritania[mesh] OR djibouti[mesh] OR arabs[mesh] OR comoros[mesh] OR bahrain*[tw] OR egypt*[tw] OR iraq*[tw] OR jordan*[tw] OR kuwait*[tw] OR lebanon[tw] OR lebanese[tw] OR libanaise[tw] OR yemen*[tw] OR aden[tw] OR sanaa[tw] OR UAE[tw] OR emirat*[tw] OR abu-dhabi[tw] OR dubai[tw] OR libya*[tw] OR morocco[tw] OR moroccan*[tw] OR oman*[tw] OR muscat[tw] OR palestin*[tw] OR gaza[tw] OR west-bank[tw] OR qatar*[tw] OR katar*[tw] OR quatar*[tw] OR saudi*[tw] OR KSA[tw] OR syria*[tw] OR tunis*[tw] OR ifni[tw] OR trucial state*[tw] OR comoros*[tw] OR north africa*[tw] OR northern Africa*[tw] OR sudan*[tw] OR MENA[tw] OR EMRO[tw] OR middle east*[tw] OR east mediterranean[tw] OR eastern mediterranean[tw] OR near east*[tw] OR orient[tw] OR arabs[tw] OR arab[tw] OR arabia[tw] OR somali*[tw] OR mauritania*[tw] OR djibouti*[tw] OR levant[tw])

Search 5	rod cone dystrophy or retinitis pigmentosa or inherited retinal diseases or retinal dystrophies or inherited retinal disease or retinal dystrophy) and (africa, northern[mesh] OR algeria[mesh] OR egypt[mesh] OR libya[mesh] OR morocco[mesh] OR tunisia[mesh] OR south sudan[mesh] OR sudan[mesh] OR middle east[mesh:noexp] OR bahrain[mesh] OR iraq[mesh] OR jordan[mesh] OR kuwait[mesh] OR lebanon[mesh] OR oman[mesh] OR qatar[mesh] OR saudi arabia[mesh] OR syria[mesh] OR united arab emirates[mesh] OR yemen[mesh] OR algeria*[tw] OR somalia[mesh] OR mauritania[mesh] OR djibouti[mesh] OR arabs[mesh] OR comoros[mesh] OR bahrain*[tw] OR egypt*[tw] OR iraq*[tw] OR jordan*[tw] OR kuwait*[tw] OR lebanon[tw] OR lebanese[tw] OR libanaise[tw] OR yemen*[tw] OR aden[tw] OR sanaa[tw] OR UAE[tw] OR emirat*[tw] OR abu-dhabi[tw] OR dubai[tw] OR libya*[tw] OR morocco[tw] OR moroccan*[tw] OR oman*[tw] OR muscat[tw] OR palestin*[tw] OR gaza[tw] OR west-bank[tw] OR qatar*[tw] OR katar*[tw] OR quatar*[tw] OR saudi*[tw] OR KSA[tw] OR syria*[tw] OR tunis*[tw] OR ifni[tw] OR trucial state*[tw] OR comoros*[tw] OR north africa*[tw] OR northern Africa*[tw] OR sudan*[tw] OR MENA[tw] OR EMRO[tw] OR middle east*[tw] OR east mediterranean[tw] OR eastern mediterranean[tw] OR near east*[tw] OR orient[tw] OR arabs[tw] OR arab[tw] OR arabia[tw] OR somali*[tw] OR mauritania*[tw] OR djibouti*[tw] OR levant[tw])
Search 6	retinal dystrophy and (africa, northern[mesh] OR algeria[mesh] OR egypt[mesh] OR libya[mesh] OR morocco[mesh] OR tunisia[mesh] OR south sudan[mesh] OR sudan[mesh] OR middle east[mesh:noexp] OR bahrain[mesh] OR iraq[mesh] OR jordan[mesh] OR kuwait[mesh] OR lebanon[mesh] OR oman[mesh] OR qatar[mesh] OR saudi arabia[mesh] OR syria[mesh] OR united arab emirates[mesh] OR yemen[mesh] OR algeria*[tw] OR somalia[mesh] OR mauritania[mesh] OR djibouti[mesh] OR arabs[mesh] OR comoros[mesh] OR bahrain*[tw] OR egypt*[tw] OR iraq*[tw] OR jordan*[tw] OR kuwait*[tw] OR lebanon[tw] OR lebanese[tw] OR libanaise[tw] OR yemen*[tw] OR aden[tw] OR sanaa[tw] OR UAE[tw] OR emirat*[tw] OR abu-dhabi[tw] OR dubai[tw] OR libya*[tw] OR morocco[tw] OR moroccan*[tw] OR oman*[tw] OR muscat[tw] OR palestin*[tw] OR gaza[tw] OR west-bank[tw] OR qatar*[tw] OR katar*[tw] OR quatar*[tw] OR saudi*[tw] OR KSA[tw] OR syria*[tw] OR tunis*[tw] OR ifni[tw] OR trucial state*[tw] OR comoros*[tw] OR north africa*[tw] OR northern Africa*[tw] OR sudan*[tw] OR MENA[tw] OR EMRO[tw] OR middle east*[tw] OR east mediterranean[tw] OR eastern mediterranean[tw] OR near east*[tw] OR orient[tw] OR arabs[tw] OR arab[tw] OR arabia[tw] OR somali*[tw] OR mauritania*[tw] OR djibouti*[tw] OR levant[tw])

Supplementary Table 4.

Gene	Description
Calcium binding protein 4 (CABP4)	Three Saudi individuals carrying a homozygous frameshift insertion were reported until today. *CABP4* is known for its association with recessive Leber Congenital Amaurosis (20157620) and Congenital stationary night blindness (16960802).
Cadherin-Related Family, Member 1 (CDHR1)	Despite its known association with Cone and Cone-rod dystrophy, Patel et al**,** reported mutations among three Saudi cases with arRCD c.476C>A; p.Ala159Glu, c.1536T>A; p.Tyr512* and c.709del; p.Glu237Argfs*30 in (26355662) and in a Palestinian one; c.338del; p.(Gly113Alafs*2) (30054919) .
Cyclic Nucleotide-Gated Channel, Alpha-3 (CNGA3) and Wd Repeat-Containing Protein 19 (WDR19)	Furthermore, Patel el al reported two homozygous missense in c.2050G>A; p.Gly684Arg and c.2777G>T; p.Ser926Ile in *CNGA3* and WDR19 respectively, the two genes previously shown to be associated with syndromic forms of retinal dystrophies (26355662).
Endoplasmic Reticulum Membrane Protein Complex, Subunit 1 (EMC1), G-Protein Coupled Receptor 125 (GPR125) and KIAA1549	Abu-Safieh et al in 2013 identified homozygous mutations; c.430G>A: p.Ala144Thr, c.2504C>G:p.Ser835Cys**,** c.2399_2400insAA: p.(Glu801Metfs*9) in novel genes, not previously known for their association with non-syndromic arRCD such as *EMC1***,** *GPR125* and *KIAA1549* genes respectively among (23105016). Direct sequencing of patients from the replication cohort revealed a patient who is homozygous for the same mutation in *EMC1* but not *GPR125* or *KIAA1549*. It is of importance to mention that the three previously mentioned genes are found exclusively mutated in Arabic populations.
Potasium channel subfamily V member 2 (KCNV2)	One nonsense mutation; c.427G>T; p.(Glu143*) in *KCNV2*was recurrently identified in 6 Saudi individuals with arRCD (26355662, 23105016) despite being a gene that is known to cause cone dystrophy (16909397).
Leber Congenital Amaurosis 5 (LCA5)	Using WES, Abu Safieh et al in 2013 reported a homozygous frameshift deletion in *LCA5*: c.256del; p.(Gln86Argfs*25) carried by a Saudi Arabian individual (23105016). Although *LCA5* is known for its association with leber congenital amaurosis, Abu Safieh et al reported it with arRCD.
Otogelin Like (OTOGL)	In an Algerian family with arRCD, Astuti et al recently identified Segregating compound heterozygous variants c.2318C>T and c.2833C>T; p.(Pro773Leu) and p.(Arg945*) were identified in *Otogelin Like* (*OTOGL*) (29320387). Segregation was done in all family members. Of importance, this variation occurs was found homozygous in two supposed health persons from ExAC database (29320387), an observation that decreases the plausibility of being considered as pathogenic. In additionm, pathogenic mutations in *OTOGL* are associated with sensorineural hearing loss. Since the authors admit that homozygosity mapping indicates two homozygous regions in which no currently known IRD-associated genes appear (29320387), we think that all of the above does not support *OTOGL* as RCD gene and favors the implication of a novel gene.

Peripherin 2 (PRPH2)	lthough admitted by Abu Safieh et al, that *PRPH2* is not known for its association with arRCD, the authors reported a Saudi Arabian simplex case having a homozygous missense in this gene; c.1013A>G; p.(Asp338Gly) (23105016).
Retinol Dehydrogenase 12 (RDH12)	Three recurrent missense mutations; c.139G>A; p.(Ala47Thr), c.226G>C; p.(Gly76Arg), c.464C>T; p.Thr155Ile17 were identified in 10 individuals from three different countries (KSA, Morocco and Algeria) (24625443, 26355662, 30054919). Although known for causing dominant RCD, the autosomal recessive cases of RDH12 are seen with leber congenital amaurosis (15322982).
Retinitis Pigmentosa Gtpase Regulator-Interacting Protein (RPGRIP1)	Similar to *RLBP1*, a nonsense mutation**;** c.154C>T, p.(Arg52*) in *RPGRIP1* was found also associated with RPA in an individual from Saudi Arabia using autozygome guided sequencing (23105016).

Supplementary Table 5: List of individuals with rod cone dystrophy reported in more than one study.

Gene	Ref_Seq	Change at DNA level	Change at Protein level	**Status**	**Family/ sample ID**	**N**	**Origin**	**Authors**	**Year**
CYP4V2		c.1348C>T	p.Gln450*	Hm	-	2	Middle East	Lin et al	2005
MERTK		9 kb deletion removing exon 8.	-	Hm	A	2	Middle Eastern	Mackay et al	2010
RP1	NM_006269.1	c.4552A>T	p. (Lys1518*)	Hm	arPR-F028	4	KSA	Abu-Safieh et al	2013
RP1	NM_006269.1	c.3428 delA	p.(Asn1143Ilefs*25)	Hm	arRP-F043	4	KSA	Abu-Safieh et al	2013
RP1	NM_006269.1	c.3428 delA	p.(Asn1143Ilefs*25)	Hm	arRP-F084	4	KSA	Abu-Safieh et al	2013
RP1	NM_006269.1	c.3677_3678dupA	p.(Glu1227Metfs*29)	Hm	arRP-F101	4	KSA	Abu-Safieh et al	2013
RP1	NM_006269.1	c.662delC	p.(Ala221Glyfs*20)	Hm	DGU-F1	3	KSA	Abu-Safieh et al	2013
RP1	NM_006269.1	c.3396G>A	p.(Trp1131*)	Hm	sRP-019	1	KSA	Abu-Safieh et al	2013
MERTK	NM_006343.2	c.1335_1336del	p.(Ala446Serfs*28)	Hm	DGU-F16	3	KSA	Abu-Safieh et al	2013
CRB1	NM_201253.2	c.3495T>G	p.(Cys1165Trp)	Hm	DGU-F11	4	KSA	Abu-Safieh et al	2013
MKKS	NM_018848.3	c.295T>C	p.(Cys99Arg)	hmz	11DG1165	1	ksa	Patel et al	2016
GPR179	NM_001004334.3	c.349G>A	p.(Asp117Asn)	Hm	14DG0286	1	KSA	Patel et al	2016
CRX	NM_000554.4	c.695del	p.(Pro232Argfs*139)	N.A	09DG00180	1	KSA	Patel et al	2016
CRX	NM_000554.4	c.274G>A	p.(Ala92Thr)	N.A	09DG00976	1	KSA	Patel et al	2016
CRX	NM_000554.4	c.425A>G	p.(Tyr142Cys)	N.A	11DG2472	1	KSA	Patel et al	2016
CRX	NM_000554.4	c.425A>G	p.(Tyr142Cys)	N.A	12DG0648	1	KSA	Patel et al	2016
BBS4	NM_033028.4	c.1311_1312insT & c.262del	p.(Lys438*) & p.(Glu88Asnfs*54)	C Ht	12DG0398	1	KSA	Patel et al	2016
MERTK	NM_006343.2	c.2262C>G	p.(Tyr754*)	Hm	-	1	KSA	Audo et al	2018
MERTK	NM_006343.2	c.325A>T	p.(Lys109*)	Hm	-	1	KSA	Audo et al	2018
MERTK	NM_006343.2	c.1335_1336del	p.(Ala446Serfs*28)	Hm	-	1	KSA	Audo et al	2018
MERTK	NM_006343.2	c.2214del	p.(Cys738Trpfs*32)	Hm	F1281	1	Middle East (ksa)	Audo et al	2018
IMPG2	NM_016247.3	c.189dup	p.(Gln64Thrfs*9)	hmz	40	1	Emirates	Khan A O	2019
IMPG2	NM_016247.3	c.533+4_533+7del	(p.?)	hmz	41	1	Emirates	Khan A O	2019
IMPG2	NM_016247.3	c.3262C>T	p.(Arg1088*)	hmz	42	1	Emirates	Khan A O	2019
IMPG2	NM_016247.3	189dup	p.(Gln64Thrfs*9)	hmz	43	1	Emirates	Khan A O	2019