

Appendix 1-table 11. *CDKN2A* missense VUSs reproted in ClinVar.

Residue	Variant	Fucntional characterization	Accession
1	p.Met1Arg	Neutral	VCV000660169
1	p.Met1Leu	Neutral	VCV001475625
1	p.Met1Lys	Neutral	VCV000487018
1	p.Met1Thr	Neutral	VCV000483341
1	p.Met1Val	Neutral	VCV000820481
2	p.Glu2Asp	Neutral	VCV001756617
2	p.Glu2Gln	Neutral	VCV000406722
3	p.Pro3Ser	Indeterminate	VCV000532281
4	p.Ala4Gly	Indeterminate	VCV000628437
4	p.Ala4Thr	Indeterminate	VCV001500852
4	p.Ala4Val	Neutral	VCV001058585
5	p.Ala5Glu	Indeterminate	VCV000489864
5	p.Ala5Thr	Neutral	VCV000233536
5	p.Ala5Val	Neutral	VCV000580530
6	p.Gly6Ala	Neutral	VCV000572416
6	p.Gly6Arg	Deleterious	VCV000133879
6	p.Gly6Trp	Neutral	VCV001525531
6	p.Gly6Val	Neutral	VCV000220777
7	p.Ser7Cys	Neutral	VCV000489865
8	p.Ser8Arg	Neutral	VCV000968555
8	p.Ser8Gly	Neutral	VCV000480814
8	p.Ser8Thr	Neutral	VCV000532290
9	p.Met9Arg	Neutral	VCV000821690
9	p.Met9Ile	Neutral	VCV000656960
9	p.Met9Leu	Neutral	VCV000483321
9	p.Met9Thr	Neutral	VCV000483319
9	p.Met9Val	Neutral	VCV000483345
10	p.Glu10Ala	Indeterminate	VCV001798627
10	p.Glu10Asp	Neutral	VCV000822896
10	p.Glu10Lys	Indeterminate	VCV001797426
11	p.Pro11Ala	Neutral	VCV000651162
11	p.Pro11Arg	Neutral	VCV001332591
11	p.Pro11Thr	Indeterminate	VCV001405946
12	p.Ser12Ala	Neutral	VCV001507985
12	p.Ser12Leu	Indeterminate	VCV000236988
12	p.Ser12Trp	Neutral	VCV001022671
13	p.Ala13Asp	Neutral	VCV000483348
13	p.Ala13Ser	Neutral	VCV000569262
13	p.Ala13Val	Neutral	VCV000187508
14	p.Asp14Asn	Neutral	VCV000628442
14	p.Asp14Glu	Neutral	VCV001466187
14	p.Asp14Gly	Neutral	VCV001059920
15	p.Trp15Cys	Neutral	VCV000182422
16	p.Leu16Gln	Deleterious	VCV000463509
17	p.Ala17Asp	Indeterminate	VCV000923872

17	p.Ala17Gly	Neutral	VCV001803801
17	p.Ala17Val	Neutral	VCV000825441
18	.Thr18Arg	Indeterminate	VCV000630845
18	p.Thr18Lys	Indeterminate	VCV000491580
18	p.Thr18Met	Indeterminate	VCV000485513
18	p.Thr18Pro	Deleterious	VCV000232702
19	p.Ala19Asp	Neutral	VCV002775057
19	p.Ala19Ser	Neutral	VCV001041797
20	p.Ala20Glu	Deleterious	VCV001750950
20	p.Ala20Gly	Deleterious	VCV000220344
20	p.Ala20Ser	Indeterminate	VCV000664488
20	p.Ala20Thr	Indeterminate	VCV001062691
20	p.Ala20Val	Indeterminate	VCV001001191
21	p.Ala21Asp	Deleterious	VCV001392805
21	p.Ala21Ser	Neutral	VCV000928884
21	p.Ala21Thr	Indeterminate	VCV000418120
21	p.Ala21Val	Neutral	VCV000631322
22	p.Arg22Gln	Neutral	VCV000491581
22	p.Arg22Gly	Deleterious	VCV000863230
22	p.Arg22Leu	Neutral	VCV000463510
22	p.Arg22Trp	Indeterminate	VCV000833936
24	p.Arg24Gly	Neutral	VCV001481554
24	p.Arg24Leu	Neutral	VCV000532272
25	p.Val25Ile	Neutral	VCV001376284
25	p.Val25Leu	Neutral	VCV001400825
26	p.Glu26Ala	Neutral	VCV002748212
26	p.Glu26Gln	Neutral	VCV000919572
27	p.Glu27Ala	Neutral	VCV000628014
27	p.Glu27Asp	Indeterminate	VCV000949317
27	p.Glu27Gly	Indeterminate	VCV000483333
27	p.Glu27Lys	Neutral	VCV001761576
28	p.Val28Leu	Neutral	VCV000231005
28	p.Val28Met	Neutral	VCV000827567
29	p.Arg29Gln	Neutral	VCV002127104
29	p.Arg29Leu	Neutral	VCV002023352
29	p.Arg29Pro	Deleterious	VCV001041690
29	p.Arg29Trp	Neutral	VCV000483334
30	p.Ala30Gly	Deleterious	VCV002775056
30	p.Ala30Val	Indeterminate	VCV000246070
32	p.Leu32Val	Neutral	VCV000532278
33	p.Glu33Gly	Neutral	VCV002005989
33	p.Glu33Lys	Neutral	VCV002809872
33	p.Glu33Val	Neutral	VCV002863240
34	p.Ala34Gly	Neutral	VCV002449061
34	p.Ala34Thr	Neutral	VCV000489862
34	p.Ala34Val	Indeterminate	VCV000483329
35	p.Gly35Arg	Neutral	VCV000483347
35	p.Gly35Glu	Indeterminate	VCV000188292

35	p.Gly35Val	Deleterious	VCV000406709
36	p.Ala36Ser	Neutral	VCV000532277
36	p.Ala36Thr	Indeterminate	VCV000489863
36	p.Ala36Val	Neutral	VCV000483324
37	p.Leu37Arg	Neutral	VCV001331763
38	p.Pro38Ser	Indeterminate	VCV000822217
39	p.Asn39Ile	Indeterminate	VCV002680551
39	p.Asn39Lys	Indeterminate	VCV000629162
39	p.Asn39Ser	Neutral	VCV002136748
40	p.Ala40Pro	Indeterminate	VCV001063406
40	p.Ala40Ser	Neutral	VCV000491563
40	p.Ala40Val	Indeterminate	VCV003230252
41	p.Pro41Ala	Neutral	VCV000406713
41	p.Pro41Arg	Indeterminate	VCV001755139
41	p.Pro41Leu	Neutral	VCV001755177
41	p.Pro41Ser	Neutral	VCV002804807
42	p.Asn42Asp	Indeterminate	VCV000656316
42	p.Asn42Lys	Deleterious	VCV000664863
42	p.Asn42Ser	Neutral	VCV000406711
43	p.Ser43Asn	Neutral	VCV000954477
43	p.Ser43Gly	Neutral	VCV000630389
43	p.Ser43Thr	Neutral	VCV000569634
44	p.Tyr44Cys	Neutral	VCV000630012
45	p.Gly45Ala	Neutral	VCV001054175
45	p.Gly45Arg	Neutral	VCV000463483
45	p.Gly45Cys	Neutral	VCV001052395
45	p.Gly45Ser	Indeterminate	VCV000463482
46	p.Arg46Gln	Indeterminate	VCV000631208
46	p.Arg46Pro	Deleterious	VCV000532274
46	p.Arg46Trp	Neutral	VCV000573855
47	p.Arg47Lys	Neutral	VCV002976242
48	p.Pro48Gln	Deleterious	VCV001042953
49	p.Ile49Met	Neutral	VCV000483330
50	p.Gln50His	Deleterious	VCV001045852
50	p.Gln50Leu	Indeterminate	VCV000133878
50	p.Gln50Lys	Deleterious	VCV000584732
51	p.Val51Ile	Neutral	VCV000463485
51	p.Val51Phe	Deleterious	VCV002735266
52	p.Met52Ile	Indeterminate	VCV002132254
52	p.Met52Thr	Neutral	VCV000418881
53	p.Met53Thr	Indeterminate	VCV001480737
54	p.Met54Arg	Indeterminate	VCV000819690
54	p.Met54Ile	Neutral	VCV000819708
54	p.Met54Leu	Neutral	VCV001483043
54	p.Met54Thr	Neutral	VCV000819689
55	p.Gly55Ala	Indeterminate	VCV002563916
55	p.Gly55Arg	Deleterious	VCV000579094
55	p.Gly55Val	Deleterious	VCV002136747

56	p.Ser56Arg	Neutral	VCV000463488
56	p.Ser56Asn	Neutral	VCV000463487
56	p.Ser56Gly	Neutral	VCV002563910
57	p.Ala57Asp	Neutral	VCV000483325
57	p.Ala57Gly	Neutral	VCV000187272
58	p.Arg58Gln	Neutral	VCV002083590
58	p.Arg58Gly	Neutral	VCV000532285
58	p.Arg58Leu	Neutral	VCV002416022
59	p.Val59Ala	Neutral	VCV001434858
59	p.Val59Glu	Deleterious	VCV000491569
59	p.Val59Leu	Neutral	VCV002122385
59	p.Val59Met	Neutral	VCV001007891
60	p.Ala60Pro	Indeterminate	VCV000532284
60	p.Ala60Thr	Neutral	VCV000406705
60	p.Ala60Val	Neutral	VCV000570547
61	p.Glu61Asp	Neutral	VCV000236982
62	p.Leu62Val	Neutral	VCV000969307
64	p.Leu64Val	Neutral	VCV002775055
65	p.Leu65Phe	Neutral	VCV000966551
66	p.His66Asp	Neutral	VCV000969054
66	p.His66Gln	Neutral	VCV000573530
66	p.His66Pro	Deleterious	VCV000419802
66	p.His66Tyr	Neutral	VCV001348846
67	p.Gly67Asp	Neutral	VCV000216273
67	p.Gly67Cys	Neutral	VCV002563913
67	p.Gly67Ser	Neutral	VCV000925139
68	p.Ala68Gly	Neutral	VCV000628976
68	p.Ala68Ser	Neutral	VCV001355040
68	p.Ala68Thr	Neutral	VCV001784739
69	p.Glu69Ala	Neutral	VCV002891892
69	p.Glu69Asp	Neutral	VCV001052397
69	p.Glu69Lys	Indeterminate	VCV000966903
70	p.Pro70Arg	Neutral	VCV000185936
70	p.Pro70Leu	Neutral	VCV000463490
70	p.Pro70Ser	Indeterminate	VCV001486509
70	p.Pro70Thr	Neutral	VCV001374577
71	p.Asn71Thr	Deleterious	VCV001786361
71	p.Asn71Tyr	Deleterious	VCV000485514
72	p.Cys72Gly	Neutral	VCV001436072
72	p.Cys72Phe	Indeterminate	VCV001320714
72	p.Cys72Ser	Indeterminate	VCV000532279
73	p.Ala73Thr	Neutral	VCV001986070
74	p.Asp74Ala	Deleterious	VCV000802463
74	p.Asp74Asn	Deleterious	VCV000483340
74	p.Asp74Glu	Neutral	VCV000660824
74	p.Asp74His	Neutral	VCV000802464
74	p.Asp74Val	Deleterious	VCV000820911
75	p.Pro75Ala	Neutral	VCV001788244

75	p.Pro75Leu	Neutral	VCV000483326
75	p.Pro75Ser	Neutral	VCV000644311
76	p.Ala76Ser	Indeterminate	VCV002059365
76	p.Ala76Thr	Neutral	VCV000489866
77	p.Thr77Ala	Indeterminate	VCV000567670
77	p.Thr77Ser	Indeterminate	VCV000582983
78	p.Leu78Arg	Indeterminate	VCV001493577
78	p.Leu78Phe	Neutral	VCV000630762
78	p.Leu78Pro	Indeterminate	VCV000483349
78	p.Leu78Val	Neutral	VCV002814776
79	p.Thr79Asn	Neutral	VCV000491570
79	p.Thr79Ile	Neutral	VCV000630548
79	p.Thr79Pro	Deleterious	VCV000463491
79	p.Thr79Ser	Neutral	VCV000967063
80	p.Arg80Gln	Indeterminate	VCV000376385
80	p.Arg80Gly	Indeterminate	VCV000483353
80	p.Arg80Pro	Deleterious	VCV002688757
81	p.Pro81Ser	Deleterious	VCV000664812
81	p.Pro81Thr	Indeterminate	VCV000629992
82	p.Val82Glu	Indeterminate	VCV000833905
82	p.Val82Leu	Neutral	VCV000628722
82	p.Val82Met	Neutral	VCV001063226
84	p.Asp84Glu	Indeterminate	VCV002868822
84	p.Asp84His	Deleterious	VCV002200354
85	p.Ala85Phe	Indeterminate	VCV000423274
85	p.Ala85Pro	Indeterminate	VCV001376090
85	p.Ala85Ser	Neutral	VCV000532289
85	p.Ala85Thr	Indeterminate	VCV000236983
85	p.Ala85Val	Indeterminate	VCV001438157
86	p.Ala86Gly	Neutral	VCV001793349
86	p.Ala86Ser	Neutral	VCV001793230
87	p.Arg87Gln	Indeterminate	VCV003230255
88	p.Glu88Gln	Indeterminate	VCV000619828
88	p.Glu88Lys	Indeterminate	VCV000821566
88	p.Glu88Val	Neutral	VCV001794163
89	p.Gly89Ala	Indeterminate	VCV000565793
89	p.Gly89Cys	Deleterious	VCV002087960
89	p.Gly89Ser	Deleterious	VCV000009408
89	p.Gly89Val	Deleterious	VCV001802421
90	p.Phe90Cys	Neutral	VCV000532291
90	p.Phe90Leu	Neutral	VCV002095801
91	p.Leu91Gln	Neutral	VCV000619829
91	p.Leu91Met	Indeterminate	VCV002762000
92	p.Asp92Glu	Neutral	VCV001795780
92	p.Asp92His	Neutral	VCV002030149
93	p.Thr93Ala	Indeterminate	VCV001795894
93	p.Thr93Arg	Indeterminate	VCV000232366
93	p.Thr93Lys	Deleterious	VCV001796014

93	p.Thr93Met	Indeterminate	VCV001796019
93	p.Thr93Pro	Deleterious	VCV001795891
94	p.Leu94Val	Neutral	VCV001796309
95	p.Val95Glu	Neutral	VCV001796819
95	p.Val95Gly	Neutral	VCV002001636
96	p.Val96Leu	Indeterminate	VCV002106366
96	p.Val96Met	Neutral	VCV000821875
97	p.Leu97Pro	Deleterious	VCV000962431
98	p.His98Arg	Neutral	VCV002151380
98	p.His98Gln	Neutral	VCV000822346
98	p.His98Tyr	Neutral	VCV000419560
99	p.Arg99Leu	Indeterminate	VCV002867606
99	p.Arg99Trp	Indeterminate	VCV000483350
100	p.Ala100Thr	Neutral	VCV000629701
100	p.Ala100Val	Neutral	VCV000924911
101	p.Gly101Ala	Indeterminate	VCV001129005
101	p.Gly101Arg	Indeterminate	VCV000463494
101	p.Gly101Glu	Indeterminate	VCV000419180
102	p.Ala102Leu	Deleterious	VCV001799155
102	p.Ala102Thr	Deleterious	VCV000463495
102	p.Ala102Val	Indeterminate	VCV000234071
103	p.Arg103Gln	Neutral	VCV001141816
103	p.Arg103Pro	Neutral	VCV000406703
103	p.Arg103Trp	Neutral	VCV000423630
104	p.Leu104Pro	Neutral	VCV001014833
105	p.Asp105Ala	Indeterminate	VCV001728158
105	p.Asp105Asn	Neutral	VCV000491573
105	p.Asp105Glu	Indeterminate	VCV001728273
105	p.Asp105Tyr	Neutral	VCV000584518
106	p.Val106Ala	Neutral	VCV000463497
106	p.Val106Glu	Indeterminate	VCV000823098
106	p.Val106Leu	Indeterminate	VCV001728421
106	p.Val106Met	Neutral	VCV001392243
107	p.Arg107Leu	Neutral	VCV001005179
107	p.Arg107Pro	Neutral	VCV000630455
107	p.Arg107Ser	Neutral	VCV000463498
108	p.Asp108Glu	Indeterminate	VCV001498736
108	p.Asp108Val	Deleterious	VCV002767690
109	p.Ala109Asp	Neutral	VCV000420995
109	p.Ala109Pro	Deleterious	VCV000127525
109	p.Ala109Ser	Neutral	VCV000628079
110	p.Trp110Arg	Neutral	VCV002109926
111	p.Gly111Arg	Neutral	VCV000230231
111	p.Gly111Asp	Neutral	VCV001416042
111	p.Gly111Cys	Neutral	VCV002625891
111	p.Gly111Ser	Neutral	VCV000463499
111	p.Gly111Val	Deleterious	VCV001487529
112	p.Arg112Cys	Indeterminate	VCV002775054

112	p.Arg112His	Neutral	VCV000142887
112	p.Arg112Leu	Indeterminate	VCV000823661
112	p.Arg112Pro	Deleterious	VCV001730600
112	p.Arg112Ser	Neutral	VCV001995012
113	p.Leu113Pro	Deleterious	VCV000833598
114	p.Pro114Ser	Indeterminate	VCV001405931
114	p.Pro114Thr	Deleterious	VCV000376382
115	p.Val115Glu	Indeterminate	VCV000246437
115	p.Val115Gly	Neutral	VCV000236987
115	p.Val115Leu	Neutral	VCV002013862
115	p.Val115Met	Neutral	VCV001469323
116	p.Asp116Glu	Neutral	VCV000489867
116	p.Asp116Tyr	Neutral	VCV002563909
117	p.Leu117Pro	Indeterminate	VCV000833600
118	p.Ala118Thr	Neutral	VCV000491574
119	p.Glu119Lys	Neutral	VCV000570565
120	p.Glu120Asp	Neutral	VCV000823988
121	p.Leu121Arg	Indeterminate	VCV002723614
121	p.Leu121Pro	Neutral	VCV000566923
122	p.Gly122Arg	Neutral	VCV000009422
122	p.Gly122Ser	Neutral	VCV001468600
123	p.His123Tyr	Neutral	VCV002836865
124	p.Arg124Gly	Indeterminate	VCV000582036
124	p.Arg124Pro	Neutral	VCV000824122
124	p.Arg124Ser	Neutral	VCV000824106
125	p.Asp125Asn	Neutral	VCV000858988
125	p.Asp125Glu	Neutral	VCV002497223
125	p.Asp125Gly	Neutral	VCV000834371
126	p.Val126Leu	Neutral	VCV000489868
127	p.Ala127Val	Neutral	VCV002030143
128	p.Arg128Gln	Neutral	VCV000581636
128	p.Arg128Gly	Indeterminate	VCV001735329
128	p.Arg128Pro	Deleterious	VCV000483344
128	p.Arg128Trp	Neutral	VCV000575361
129	p.Tyr129Asp	Indeterminate	VCV000480813
129	p.Tyr129His	Neutral	VCV001735601
130	p.Leu130Gln	Indeterminate	VCV002744302
130	p.Leu130Met	Neutral	VCV000406704
131	p.Arg131Cys	Deleterious	VCV001350948
131	p.Arg131His	Neutral	VCV000620615
131	p.Arg131Leu	Neutral	VCV002625894
131	p.Arg131Ser	Neutral	VCV001366069
132	p.Ala132Thr	Indeterminate	VCV001362170
132	p.Ala132Val	Neutral	VCV000630452
133	p.Ala133Ser	Neutral	VCV000933583
133	p.Ala133Thr	Neutral	VCV000630684
134	p.Ala134Gly	Neutral	VCV001737089
134	p.Ala134Pro	Neutral	VCV000495536

134	p.Ala134Ser	Neutral	VCV000532288
134	p.Ala134Val	Neutral	VCV000650117
135	p.Gly135Ala	Neutral	VCV001061502
135	p.Gly135Arg	Neutral	VCV000928883
135	p.Gly135Glu	Indeterminate	VCV000463504
135	p.Gly135Trp	Neutral	VCV000937971
135	p.Gly135Val	Neutral	VCV000843913
136	p.Gly136Ala	Neutral	VCV000483335
136	p.Gly136Asp	Indeterminate	VCV000925925
136	p.Gly136Cys	Indeterminate	VCV002563912
136	p.Gly136Ser	Neutral	VCV000483342
137	p.Thr137Ile	Neutral	VCV000824601
138	p.Arg138Gly	Neutral	VCV000233990
138	p.Arg138Lys	Neutral	VCV001353011
138	p.Arg138Thr	Neutral	VCV001738148
139	p.Gly139Asp	Indeterminate	VCV000491576
139	p.Gly139Cys	Neutral	VCV001316508
139	p.Gly139Ser	Neutral	VCV000141419
139	p.Gly139Val	Neutral	VCV002172999
140	p.Ser140Arg	Neutral	VCV000824656
140	p.Ser140Asn	Neutral	VCV000485512
141	p.Asn141Asp	Neutral	VCV000631362
141	p.Asn141Lys	Neutral	VCV000953252
142	p.His142Arg	Neutral	VCV000184564
142	p.His142Asp	Neutral	VCV000840158
142	p.His142Gln	Neutral	VCV000246046
142	p.His142Tyr	Neutral	VCV000824721
143	p.Ala143Gly	Neutral	VCV000630386
143	p.Ala143Val	Neutral	VCV001739412
144	p.Arg144Gly	Neutral	VCV000532270
144	p.Arg144His	Neutral	VCV000406723
144	p.Arg144Leu	Neutral	VCV000463505
144	p.Arg144Pro	Neutral	VCV000576389
145	p.Ile145Arg	Neutral	VCV002563906
145	p.Ile145Lys	Neutral	VCV000658624
145	p.Ile145Val	Neutral	VCV000645545
146	p.Asp146Asn	Neutral	VCV000578446
146	p.Asp146Glu	Neutral	VCV002012076
146	p.Asp146Gly	Neutral	VCV002680552
146	p.Asp146His	Neutral	VCV000824834
146	p.Asp146Tyr	Neutral	VCV002820920
146	p.Asp146Val	Neutral	VCV000928297
147	p.Ala147Val	Neutral	VCV000406716
148	p.Ala148Pro	Neutral	VCV000483343
148	p.Ala148Ser	Neutral	VCV000406706
148	p.Ala148Val	Indeterminate	VCV000231700
150	p.Gly150Arg	Neutral	VCV002775052
150	p.Gly150Asp	Neutral	VCV000483331

150	p.Gly150Cys	Neutral	VCV002094524
151	p.Pro151Leu	Neutral	VCV000406724
151	p.Pro151Ser	Indeterminate	VCV001741192
152	p.Ser152Leu	Neutral	VCV000630384
153	p.Asp153Asn	Neutral	VCV000532292
153	p.Asp153Gly	Neutral	VCV000939445
153	p.Asp153His	Neutral	VCV001741633
153	p.Asp153Val	Neutral	VCV000406721
154	p.Ile154Asn	Neutral	VCV000491579
155	p.Pro155Ala	Neutral	VCV000406720
155	p.Pro155Arg	Neutral	VCV000859084
156	p.Asp156Asn	Neutral	VCV000629192
156	p.Asp156Tyr	Indeterminate	VCV001171898
156	p.Asp156Val	Neutral	VCV001742377
