Claims

1. Ibrutinib for use in the treatment of follicular lymphoma (FL) in a subject not having one or more mutations selected from:

Gene	Transcript	Allele	Codon change	AA change
AHNAK	ENST00000378024	A/T	gTt/gAt	V3640D
AHNAK	ENST00000378024	T/C	aAg/aGg	K2180R
AHNAK	ENST00000378024	C/T	Ggg/Agg	G799R
AHNAK	ENST00000378024	G/C	Caa/Gaa	Q3796E
AHNAK	ENST00000378024	T/C	gAt/gGt	D4045G
ARID1A	ENST00000324856	C/T	Cga/Tga	R693*
ARID1A	ENST00000324856	T/C	cTc/cCc	L2056P
ARID1A	ENST00000324856	G/A	Ggc/Agc	G1375S
ARID1A	ENST00000324856	A/G	Aat/Gat	N1997D
ARID1A	ENST00000324856	C/A	taC/taA	Y229*
ATP6AP1	ENST00000369762	T/C	aTg/aCg	M342T
ATP6AP1	ENST00000369762	T/A	gTc/gAc	V374D
ATP6AP1	ENST00000369762	T/C	cTg/cCg	L82P
ATP6AP1	ENST00000369762	C/G	aCa/aGa	T222R
ATP6AP1	ENST00000369762	G/A	Gcc/Acc	A415T
ATP6AP1	ENST00000369762	G/A	Ggg/Agg	G363R
ATP6AP1	ENST00000369762	G/A	Ggg/Agg	G363R
BCL9L	ENST00000334801	T/G	Aat/Cat	N627H
BCL9L	ENST00000334801	T/G	Aat/Cat	N627H
BCL9L	ENST00000334801	T/G	Aat/Cat	N627H
BCL9L	ENST00000334801	T/G	Aat/Cat	N627H
CLTC	ENST00000269122	C/A	aCc/aAc	T109N
CLTC	ENST00000269122	G/C	Gca/Cca	A81P
CLTC	ENST00000269122	G/A	Gca/Aca	A68T
CNOT1	ENST00000317147	T/C	Aca/Gca	T818A
CNOT1	ENST00000317147	T/A	gAt/gTt	D2179V
CNOT1	ENST00000317147	C/T	gGc/gAc	G404D
CNOT1	ENST00000317147	C/T	gGa/gAa	G690E
CNOT1	ENST00000317147	G/A	cCa/cTa	P1628L
CNOT1	ENST00000317147	G/A	aCt/aTt	T927I
EP400	ENST00000333577	C/T	Cgg/Tgg	R1437W
EP400	ENST00000333577	A/C	Atg/Ctg	M546L
EP400	ENST00000333577	C/T	gCg/gTg	A707V
EP400	ENST00000333577	C/T	Cag/Tag	Q28*
EP400	ENST00000333577	C/T	tCg/tTg	S49L
EP400	ENST00000333577	A/G	cAt/cGt	H1322R

Gene	Transcript	Allele	Codon change	AA change
EP400	ENST00000333577	G/A	aGg/aAg	R1958K
EP400	ENST00000333577	C/T	cCg/cTg	P48L
KDM2B	ENST00000377071	C/T	Gat/Aat	D122N
KDM2B	ENST00000377071	C/T	Gcc/Acc	A818T
KDM2B	ENST00000377071	G/A	Cgg/Tgg	R1025W
KDM2B	ENST00000377071	T/A	Aca/Tca	T602S
MYBBP1A	ENST00000381556	G/C	Ctg/Gtg	L1323V
MYBBP1A	ENST00000381556	G/A	Cgt/Tgt	R885C
MYBBP1A	ENST00000381556	G/C	cCg/cGg	P500R
MYBBP1A	ENST00000381556	C/A	Gac/Tac	D749Y
NACA	ENST00000454682	A/G	Tcc/Ccc	S1190P
NACA	ENST00000454682	A/G	Tcc/Ccc	S1190P
NACA	ENST00000454682	C/G	aGc/aCc	S394T
NACA	ENST00000454682	A/G	Tcc/Ccc	S1190P
NBPF1	ENST00000430580	C/A	gGt/gTt	G916V
NBPF1	ENST00000430580	G/A	cCg/cTg	P675L
NBPF1	ENST00000430580	T/A	cAg/cTg	Q1132L
NBPF1	ENST00000430580	T/A	cAg/cTg	Q1132L
NBPF1	ENST00000430580	T/A	aAg/aTg	K623M
NBPF1	ENST00000430580	T/C	Agc/Ggc	S853G
NBPF1	ENST00000430580	C/G	caG/caC	Q650H
NBPF1	ENST00000430580	C/T	tGc/tAc	C663Y
NBPF1	ENST00000430580	A/G	Tgt/Cgt	C251R
NBPF1	ENST00000430580	T/A	Agg/Tgg	R364W
NBPF1	ENST00000430580	T/C	gAa/gGa	E1011G
NBPF1	ENST00000430580	G/T	gaC/gaA	D905E
NBPF1	ENST00000430580	T/A	gAt/gTt	D896V
NBPF1	ENST00000430580	C/T	Gag/Aag	E448K
NBPF1	ENST00000430580	C/T	Ggc/Agc	G6S
NBPF1	ENST00000430580	T/G	Aag/Cag	K59Q
NBPF1	ENST00000430580	T/A	aAg/aTg	K623M
NBPF1	ENST00000430580	T/A	cAg/cTg	Q1132L
NBPF1	ENST00000430580	C/G	caG/caC	Q650H
NBPF1	ENST00000430580	C/A	Gtt/Ttt	V174F
NBPF1	ENST00000430580	C/A	Gtg/Ttg	V1100L
NBPF1	ENST00000430580	G/A	tCt/tTt	S611F
NBPF1	ENST00000430580	C/T	Gaa/Aaa	E439K
NBPF1	ENST00000430580	T/A	aAg/aTg	K623M
NBPF1	ENST00000430580	G/C	Cct/Gct	P1070A
NBPF1	ENST00000430580	C/T	Ggc/Agc	G1062S
NBPF1	ENST00000430580	C/G	caG/caC	Q650H

Gene	Transcript	Allele	Codon change	AA change
NBPF1	ENST00000430580	C/G	caG/caC	Q650H
NBPF1	ENST00000430580	T/A	aAg/aTg	K623M
NBPF1	ENST00000430580	C/T	atG/atA	M1133I
NBPF1	ENST00000430580	T/A	aAg/aTg	K623M
NBPF1	ENST00000430580	T/A	Agg/Tgg	R364W
NBPF1	ENST00000430580	C/G	caG/caC	Q650H
NBPF10	ENST00000342960	G/C	aaG/aaC	K56N
NBPF10	ENST00000342960	C/T	Ccc/Tcc	P1180S
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	A/G	gAg/gGg	E1171G
NBPF10	ENST00000342960	G/T	Ggg/Tgg	G387W
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/A	tgC/tgA	C1179*
NBPF10	ENST00000342960	A/T	cAg/cTg	Q3488L
NBPF10	ENST00000342960	A/G	gAc/gGc	D65G
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/A	aaC/aaA	N308K
NBPF10	ENST00000342960	C/T	Cga/Tga	R104*
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Cga/Tga	R375*
NBPF10	ENST00000342960	A/T	gaA/gaT	E3455D
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	G/A	cGc/cAc	R25H
NBPF10	ENST00000342960	G/T	Gcc/Tcc	A48S
NBPF10	ENST00000342960	G/C	caG/caC	Q142H
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NCOA4	ENST00000452682	A/C	gaA/gaC	E54D
NCOA4	ENST00000431200	G/A	Gca/Aca	A7T
NCOA4	ENST00000431200	G/A	Gca/Aca	A7T
NCOA4	ENST00000431200	T/G	cTa/cGa	L9R
NCOA4	ENST00000452682	G/A	cGg/cAg	R52Q
NCOA4	ENST00000431200	G/A	Gca/Aca	A7T
NEDD4L	ENST00000400345	G/A	Gag/Aag	E271K
NEDD4L	ENST00000400345	C/T	Cag/Tag	Q305*

Gene	Transcript	Allele	Codon change	AA change
PRDM16	ENST00000270722	C/T	Ccc/Tcc	P112S
PRDM16	ENST00000270722	G/A	Gtg/Atg	V48M
PRDM16	ENST00000270722	C/A	cCa/cAa	P50Q
PRDM16	ENST00000270722	C/T	aCc/aTc	T609I
PRDM16	ENST00000270722	A/G	Aat/Gat	N161D
SOCS1	ENST00000332029	G/T	agC/agA	S125R
SOCS1	ENST00000332029	T/C	gAc/gGc	D105G
SOCS1	ENST00000332029	A/T	Tga/Aga	212R**
SOCS1	ENST00000332029	G/C	Ctg/Gtg	L74V
SOCS1	ENST00000332029	C/T	Gga/Aga	G122R
SOCS1	ENST00000332029	G/C	Ctg/Gtg	L150V
TBL1XR1	ENST00000430069	G/A	Caa/Taa	Q442*
TBL1XR1	ENST00000430069	A/C	gTc/gGc	V228G
TBL1XR1	ENST00000430069	G/A	tCt/tTt	S461F
TBL1XR1	ENST00000430069	C/T	gGa/gAa	G285E
TBL1XR1	ENST00000430069	C/T	gGa/gAa	G285E
TBL1XR1	ENST00000430069	A/T	gTa/gAa	V466E

wherein * means Stop codon gained; and ** means Stop codon lost.

2. The compound for use of claim 1, wherein the therapeutically effective amount of ibrutinib comprises from about 420 mg to about 840 mg.

3. The compound for use of claim 2, wherein the therapeutically effective amount of ibrutinib comprises 560 mg.

4. The compound for use of any one of the previous claims, wherein the FL is relapsed/refractory (R/R) FL.

5. The compound for use of any one of the previous claims, wherein, prior to the administering, the subject had a diagnosis of grade 1, 2, or 3a nontransformed FL.

6. The compound for use of claim 5, wherein, prior to the administering, the subject had been treated with ≥ 2 prior lines of therapy.

7. The compound for use of claim 6, wherein, prior to the administering, the subject was R/R to a last prior line of therapy with an anti-CD20 monoclonal antibody-containing chemoimmunotherapy regimen.

8. The compound for use of any one of the previous claims, wherein the subject has a partial response or a complete response.

9. A method of predicting a likelihood of nonresponsiveness to ibrutinib in a subject having follicular lymphoma, the method comprising:

analyzing a sample from the subject for one or more mutations selected from:

Gene	Transcript	Allele	Codon change	AA change
AHNAK	ENST00000378024	A/T	gTt/gAt	V3640D
AHNAK	ENST00000378024	T/C	aAg/aGg	K2180R
AHNAK	ENST00000378024	C/T	Ggg/Agg	G799R
AHNAK	ENST00000378024	G/C	Caa/Gaa	Q3796E
AHNAK	ENST00000378024	T/C	gAt/gGt	D4045G
ARID1A	ENST00000324856	C/T	Cga/Tga	R693*
ARID1A	ENST00000324856	T/C	cTc/cCc	L2056P
ARID1A	ENST00000324856	G/A	Ggc/Agc	G1375S
ARID1A	ENST00000324856	A/G	Aat/Gat	N1997D
ARID1A	ENST00000324856	C/A	taC/taA	Y229*
ATP6AP1	ENST00000369762	T/C	aTg/aCg	M342T
ATP6AP1	ENST00000369762	T/A	gTc/gAc	V374D
ATP6AP1	ENST00000369762	T/C	cTg/cCg	L82P
ATP6AP1	ENST00000369762	C/G	aCa/aGa	T222R
ATP6AP1	ENST00000369762	G/A	Gcc/Acc	A415T
ATP6AP1	ENST00000369762	G/A	Ggg/Agg	G363R
ATP6AP1	ENST00000369762	G/A	Ggg/Agg	G363R
BCL9L	ENST00000334801	T/G	Aat/Cat	N627H
BCL9L	ENST00000334801	T/G	Aat/Cat	N627H
BCL9L	ENST00000334801	T/G	Aat/Cat	N627H
BCL9L	ENST00000334801	T/G	Aat/Cat	N627H
CLTC	ENST00000269122	C/A	aCc/aAc	T109N
CLTC	ENST00000269122	G/C	Gca/Cca	A81P
CLTC	ENST00000269122	G/A	Gca/Aca	A68T
CNOT1	ENST00000317147	T/C	Aca/Gca	T818A
CNOT1	ENST00000317147	T/A	gAt/gTt	D2179V
CNOT1	ENST00000317147	C/T	gGc/gAc	G404D
CNOT1	ENST00000317147	C/T	gGa/gAa	G690E

Gene	Transcript	Allele	Codon change	AA change
CNOT1	ENST00000317147	G/A	cCa/cTa	P1628L
CNOT1	ENST00000317147	G/A	aCt/aTt	T927I
EP400	ENST00000333577	C/T	Cgg/Tgg	R1437W
EP400	ENST00000333577	A/C	Atg/Ctg	M546L
EP400	ENST00000333577	C/T	gCg/gTg	A707V
EP400	ENST00000333577	C/T	Cag/Tag	Q28*
EP400	ENST00000333577	C/T	tCg/tTg	S49L
EP400	ENST00000333577	A/G	cAt/cGt	H1322R
EP400	ENST00000333577	G/A	aGg/aAg	R1958K
EP400	ENST00000333577	C/T	cCg/cTg	P48L
KDM2B	ENST00000377071	C/T	Gat/Aat	D122N
KDM2B	ENST00000377071	C/T	Gcc/Acc	A818T
KDM2B	ENST00000377071	G/A	Cgg/Tgg	R1025W
KDM2B	ENST00000377071	T/A	Aca/Tca	T602S
MYBBP1A	ENST00000381556	G/C	Ctg/Gtg	L1323V
MYBBP1A	ENST00000381556	G/A	Cgt/Tgt	R885C
MYBBP1A	ENST00000381556	G/C	cCg/cGg	P500R
MYBBP1A	ENST00000381556	C/A	Gac/Tac	D749Y
NACA	ENST00000454682	A/G	Tcc/Ccc	S1190P
NACA	ENST00000454682	A/G	Tcc/Ccc	S1190P
NACA	ENST00000454682	C/G	aGc/aCc	S394T
NACA	ENST00000454682	A/G	Tcc/Ccc	S1190P
NBPF1	ENST00000430580	C/A	gGt/gTt	G916V
NBPF1	ENST00000430580	G/A	cCg/cTg	P675L
NBPF1	ENST00000430580	T/A	cAg/cTg	Q1132L
NBPF1	ENST00000430580	T/A	cAg/cTg	Q1132L
NBPF1	ENST00000430580	T/A	aAg/aTg	K623M
NBPF1	ENST00000430580	T/C	Agc/Ggc	S853G
NBPF1	ENST00000430580	C/G	caG/caC	Q650H
NBPF1	ENST00000430580	C/T	tGc/tAc	C663Y
NBPF1	ENST00000430580	A/G	Tgt/Cgt	C251R
NBPF1	ENST00000430580	T/A	Agg/Tgg	R364W
NBPF1	ENST00000430580	T/C	gAa/gGa	E1011G
NBPF1	ENST00000430580	G/T	gaC/gaA	D905E
NBPF1	ENST00000430580	T/A	gAt/gTt	D896V
NBPF1	ENST00000430580	C/T	Gag/Aag	E448K
NBPF1	ENST00000430580	C/T	Ggc/Agc	G6S
NBPF1	ENST00000430580	T/G	Aag/Cag	K59Q
NBPF1	ENST00000430580	T/A	aAg/aTg	K623M
NBPF1	ENST00000430580	T/A	cAg/cTg	Q1132L
NBPF1	ENST00000430580	C/G	caG/caC	Q650H

Gene	Transcript	Allele	Codon change	AA change
NBPF1	ENST00000430580	C/A	Gtt/Ttt	V174F
NBPF1	ENST00000430580	C/A	Gtg/Ttg	V1100L
NBPF1	ENST00000430580	G/A	tCt/tTt	S611F
NBPF1	ENST00000430580	C/T	Gaa/Aaa	E439K
NBPF1	ENST00000430580	T/A	aAg/aTg	K623M
NBPF1	ENST00000430580	G/C	Cct/Gct	P1070A
NBPF1	ENST00000430580	C/T	Ggc/Agc	G1062S
NBPF1	ENST00000430580	C/G	caG/caC	Q650H
NBPF1	ENST00000430580	C/G	caG/caC	Q650H
NBPF1	ENST00000430580	T/A	aAg/aTg	K623M
NBPF1	ENST00000430580	C/T	atG/atA	M1133I
NBPF1	ENST00000430580	T/A	aAg/aTg	K623M
NBPF1	ENST00000430580	T/A	Agg/Tgg	R364W
NBPF1	ENST00000430580	C/G	caG/caC	Q650H
NBPF10	ENST00000342960	G/C	aaG/aaC	K56N
NBPF10	ENST00000342960	C/T	Ccc/Tcc	P1180S
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	A/G	gAg/gGg	E1171G
NBPF10	ENST00000342960	G/T	Ggg/Tgg	G387W
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/A	tgC/tgA	C1179*
NBPF10	ENST00000342960	A/T	cAg/cTg	Q3488L
NBPF10	ENST00000342960	A/G	gAc/gGc	D65G
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/A	aaC/aaA	N308K
NBPF10	ENST00000342960	C/T	Cga/Tga	R104*
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Cga/Tga	R375*
NBPF10	ENST00000342960	A/T	gaA/gaT	E3455D
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	G/A	cGc/cAc	R25H
NBPF10	ENST00000342960	G/T	Gcc/Tcc	A48S
NBPF10	ENST00000342960	G/C	caG/caC	Q142H
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F
NBPF10	ENST00000342960	C/T	Ctc/Ttc	L92F

Gene	Transcript	Allele	Codon change	AA change
NCOA4	ENST00000452682	A/C	gaA/gaC	E54D
NCOA4	ENST00000431200	G/A	Gca/Aca	A7T
NCOA4	ENST00000431200	G/A	Gca/Aca	A7T
NCOA4	ENST00000431200	T/G	cTa/cGa	L9R
NCOA4	ENST00000452682	G/A	cGg/cAg	R52Q
NCOA4	ENST00000431200	G/A	Gca/Aca	A7T
NEDD4L	ENST00000400345	G/A	Gag/Aag	E271K
NEDD4L	ENST00000400345	C/T	Cag/Tag	Q305*
PRDM16	ENST00000270722	C/T	Ccc/Tcc	P112S
PRDM16	ENST00000270722	G/A	Gtg/Atg	V48M
PRDM16	ENST00000270722	C/A	cCa/cAa	P50Q
PRDM16	ENST00000270722	C/T	aCc/aTc	T609I
PRDM16	ENST00000270722	A/G	Aat/Gat	N161D
SOCS1	ENST00000332029	G/T	agC/agA	S125R
SOCS1	ENST00000332029	T/C	gAc/gGc	D105G
SOCS1	ENST00000332029	A/T	Tga/Aga	212R**
SOCS1	ENST00000332029	G/C	Ctg/Gtg	L74V
SOCS1	ENST00000332029	C/T	Gga/Aga	G122R
SOCS1	ENST00000332029	G/C	Ctg/Gtg	L150V
TBL1XR1	ENST00000430069	G/A	Caa/Taa	Q442*
TBL1XR1	ENST00000430069	A/C	gTc/gGc	V228G
TBL1XR1	ENST00000430069	G/A	tCt/tTt	S461F
TBL1XR1	ENST00000430069	C/T	gGa/gAa	G285E
TBL1XR1	ENST00000430069	C/T	gGa/gAa	G285E
TBL1XR1	ENST00000430069	A/T	gTa/gAa	V466E

wherein * means Stop codon gained; and ** means Stop codon lost,

wherein the one or more mutations is indicative of nonresponsiveness to ibrutinib.

10. Ibrutinib for use in a method of treating FL, wherein the method comprises the method of claim 9, and further comprises administering a therapeutically effective amount of ibrutinib to thereby treat the FL if the subject does not have the one or more mutations in the one or more genes.