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SEQUENCE LISTING

<110> KURA ONCOLOGY, INC.
THE REGENTS OF THE UNIVERSITY OF MICHIGAN

<120> METHODS AND COMPOSITIONS FOR INHIBITING THE INTERACTION OF MENIN
WITH MLL PROTEINS

<130> 47535-703.601

<150> 62/171,108
<151> 2015-06-04

<160> 3

<170> PatentIn version 3.5

<210> 1
<211> 615
<212> PRT
<213> Homo sapiens

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Met Gly Leu Lys Ala Ala Gln Lys Thr Leu Phe Pro Leu Arg Ser Ile
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Asp Asp Val Val Arg Leu Phe Ala Ala Glu Leu Gly Arg Glu Glu Pro
20 25 30

Asp Leu Val Leu Leu Ser Leu Val Leu Gly Phe Val Glu His Phe Leu
35 40 45

Ala Val Asn Arg Val Ile Pro Thr Asn Val Pro Glu Leu Thr Phe Gln
50 55 60

Pro Ser Pro Ala Pro Asp Pro Pro Gly Gly Leu Thr Tyr Phe Pro Val
65 70 75 80

Ala Asp Leu Ser Ile Ile Ala Ala Leu Tyr Ala Arg Phe Thr Ala Gln
85 90 95

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Ile Arg Gly Ala Val Asp Leu Ser Leu Tyr Pro Arg Glu Gly Gly Val
100 105 110

Ser Ser Arg Glu Leu Val Lys Lys Val Ser Asp Val Ile Trp Asn Ser
115 120 125

Leu Ser Arg Ser Tyr Phe Lys Asp Arg Ala His Ile Gln Ser Leu Phe
130 135 140

Ser Phe Ile Thr Gly Trp Ser Pro Val Gly Thr Lys Leu Asp Ser Ser
145 150 155 160

Gly Val Ala Phe Ala Val Val Gly Ala Cys Gln Ala Leu Gly Leu Arg
165 170 175

Asp Val His Leu Ala Leu Ser Glu Asp His Ala Trp Val Val Phe Gly
180 185 190

Pro Asn Gly Glu Gln Thr Ala Glu Val Thr Trp His Gly Lys Gly Asn
195 200 205

Glu Asp Arg Arg Gly Gln Thr Val Asn Ala Gly Val Ala Glu Arg Ser
210 215 220

Trp Leu Tyr Leu Lys Gly Ser Tyr Met Arg Cys Asp Arg Lys Met Glu
225 230 235 240

Val Ala Phe Met Val Cys Ala Ile Asn Pro Ser Ile Asp Leu His Thr
245 250 255

Asp Ser Leu Glu Leu Leu Gln Leu Gln Gln Lys Leu Leu Trp Leu Leu
260 265 270

Tyr Asp Leu Gly His Leu Glu Arg Tyr Pro Met Ala Leu Gly Asn Leu
275 280 285

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Ala Asp Leu Glu Glu Leu Glu Pro Thr Pro Gly Arg Pro Asp Pro Leu
290 295 300

Thr Leu Tyr His Lys Gly Ile Ala Ser Ala Lys Thr Tyr Tyr Arg Asp
305 310 315 320

Glu His Ile Tyr Pro Tyr Met Tyr Leu Ala Gly Tyr His Cys Arg Asn
325 330 335

Arg Asn Val Arg Glu Ala Leu Gln Ala Trp Ala Asp Thr Ala Thr Val
340 345 350

Ile Gln Asp Tyr Asn Tyr Cys Arg Glu Asp Glu Glu Ile Tyr Lys Glu
355 360 365

Phe Phe Glu Val Ala Asn Asp Val Ile Pro Asn Leu Leu Lys Glu Ala
370 375 380

Ala Ser Leu Leu Glu Ala Gly Glu Glu Arg Pro Gly Glu Gln Ser Gln
385 390 395 400

Gly Thr Gln Ser Gln Gly Ser Ala Leu Gln Asp Pro Glu Cys Phe Ala
405 410 415

His Leu Leu Arg Phe Tyr Asp Gly Ile Cys Lys Trp Glu Glu Gly Ser
420 425 430

Pro Thr Pro Val Leu His Val Gly Trp Ala Thr Phe Leu Val Gln Ser
435 440 445

Leu Gly Arg Phe Glu Gly Gln Val Arg Gln Lys Val Arg Ile Val Ser
450 455 460

Arg Glu Ala Glu Ala Ala Glu Ala Glu Glu Pro Trp Gly Glu Glu Ala
465 470 475 480

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Arg Glu Gly Arg Arg Arg Gly Pro Arg Arg Glu Ser Lys Pro Glu Glu
485 490 495

Pro Pro Pro Pro Lys Lys Pro Ala Leu Asp Lys Gly Leu Gly Thr Gly
500 505 510

Gln Gly Ala Val Ser Gly Pro Pro Arg Lys Pro Pro Gly Thr Val Ala
515 520 525

Gly Thr Ala Arg Gly Pro Glu Gly Gly Ser Thr Ala Gln Val Pro Ala
530 535 540

Pro Thr Ala Ser Pro Pro Pro Glu Gly Pro Val Leu Thr Phe Gln Ser
545 550 555 560

Glu Lys Met Lys Gly Met Lys Glu Leu Leu Val Ala Thr Lys Ile Asn
565 570 575

Ser Ser Ala Ile Lys Leu Gln Leu Thr Ala Gln Ser Gln Val Gln Met
580 585 590

Lys Lys Gln Lys Val Ser Thr Pro Ser Asp Tyr Thr Leu Ser Phe Leu
595 600 605

Lys Arg Gln Arg Lys Gly Leu
610 615

<210> 2
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<212> PRT
<213> Homo sapiens

<400> 2

Met Gly Leu Lys Ala Ala Gln Lys Thr Leu Phe Pro Leu Arg Ser Ile
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Asp Asp Val Val Arg Leu Phe Ala Ala Glu Leu Gly Arg Glu Glu Pro

20

25

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Asp Leu Val Leu Leu Ser Leu Val Leu Gly Phe Val Glu His Phe Leu
 35 40 45

Ala Val Asn Arg Val Ile Pro Thr Asn Val Pro Glu Leu Thr Phe Gln
 50 55 60

Pro Ser Pro Ala Pro Asp Pro Pro Gly Gly Leu Thr Tyr Phe Pro Val
 65 70 75 80

Ala Asp Leu Ser Ile Ile Ala Ala Leu Tyr Ala Arg Phe Thr Ala Gln
 85 90 95

Ile Arg Gly Ala Val Asp Leu Ser Leu Tyr Pro Arg Glu Gly Gly Val
 100 105 110

Ser Ser Arg Glu Leu Val Lys Lys Val Ser Asp Val Ile Trp Asn Ser
 115 120 125

Leu Ser Arg Ser Tyr Phe Lys Asp Arg Ala His Ile Gln Ser Leu Phe
 130 135 140

Ser Phe Ile Thr Gly Thr Lys Leu Asp Ser Ser Gly Val Ala Phe Ala
 145 150 155 160

Val Val Gly Ala Cys Gln Ala Leu Gly Leu Arg Asp Val His Leu Ala
 165 170 175

Leu Ser Glu Asp His Ala Trp Val Val Phe Gly Pro Asn Gly Glu Gln
 180 185 190

Thr Ala Glu Val Thr Trp His Gly Lys Gly Asn Glu Asp Arg Arg Gly
 195 200 205

Gln Thr Val Asn Ala Gly Val Ala Glu Arg Ser Trp Leu Tyr Leu Lys

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210

215

220

Gly Ser Tyr Met Arg Cys Asp Arg Lys Met Glu Val Ala Phe Met Val
 225 230 235 240

Cys Ala Ile Asn Pro Ser Ile Asp Leu His Thr Asp Ser Leu Glu Leu
 245 250 255

Leu Gln Leu Gln Gln Lys Leu Leu Trp Leu Leu Tyr Asp Leu Gly His
 260 265 270

Leu Glu Arg Tyr Pro Met Ala Leu Gly Asn Leu Ala Asp Leu Glu Glu
 275 280 285

Leu Glu Pro Thr Pro Gly Arg Pro Asp Pro Leu Thr Leu Tyr His Lys
 290 295 300

Gly Ile Ala Ser Ala Lys Thr Tyr Tyr Arg Asp Glu His Ile Tyr Pro
 305 310 315 320

Tyr Met Tyr Leu Ala Gly Tyr His Cys Arg Asn Arg Asn Val Arg Glu
 325 330 335

Ala Leu Gln Ala Trp Ala Asp Thr Ala Thr Val Ile Gln Asp Tyr Asn
 340 345 350

Tyr Cys Arg Glu Asp Glu Glu Ile Tyr Lys Glu Phe Phe Glu Val Ala
 355 360 365

Asn Asp Val Ile Pro Asn Leu Leu Lys Glu Ala Ala Ser Leu Leu Glu
 370 375 380

Ala Gly Glu Glu Arg Pro Gly Glu Gln Ser Gln Gly Thr Gln Ser Gln
 385 390 395 400

Gly Ser Ala Leu Gln Asp Pro Glu Cys Phe Ala His Leu Leu Arg Phe

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405

410

415

Tyr Asp Gly Ile Cys Lys Trp Glu Glu Gly Ser Pro Thr Pro Val Leu
 420 425 430

His Val Gly Trp Ala Thr Phe Leu Val Gln Ser Leu Gly Arg Phe Glu
 435 440 445

Gly Gln Val Arg Gln Lys Val Arg Ile Val Ser Arg Glu Ala Glu Ala
 450 455 460

Ala Glu Ala Glu Glu Pro Trp Gly Glu Glu Ala Arg Glu Gly Arg Arg
 465 470 475 480

Arg Gly Pro Arg Arg Glu Ser Lys Pro Glu Glu Pro Pro Pro Pro Lys
 485 490 495

Lys Pro Ala Leu Asp Lys Gly Leu Gly Thr Gly Gln Gly Ala Val Ser
 500 505 510

Gly Pro Pro Arg Lys Pro Pro Gly Thr Val Ala Gly Thr Ala Arg Gly
 515 520 525

Pro Glu Gly Gly Ser Thr Ala Gln Val Pro Ala Pro Thr Ala Ser Pro
 530 535 540

Pro Pro Glu Gly Pro Val Leu Thr Phe Gln Ser Glu Lys Met Lys Gly
 545 550 555 560

Met Lys Glu Leu Leu Val Ala Thr Lys Ile Asn Ser Ser Ala Ile Lys
 565 570 575

Leu Gln Leu Thr Ala Gln Ser Gln Val Gln Met Lys Lys Gln Lys Val
 580 585 590

Ser Thr Pro Ser Asp Tyr Thr Leu Ser Phe Leu Lys Arg Gln Arg Lys

595

600

605

Gly Leu
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<210> 3
<211> 575
<212> PRT
<213> Homo sapiens

<400> 3

Met Gly Leu Lys Ala Ala Gln Lys Thr Leu Phe Pro Leu Arg Ser Ile
1 5 10 15

Asp Asp Val Val Arg Leu Phe Ala Ala Glu Leu Gly Arg Glu Glu Pro
20 25 30

Asp Leu Val Leu Leu Ser Leu Val Leu Gly Phe Val Glu His Phe Leu
35 40 45

Ala Val Asn Arg Val Ile Pro Thr Asn Val Pro Glu Leu Thr Phe Gln
50 55 60

Pro Ser Pro Ala Pro Asp Pro Pro Gly Gly Leu Thr Tyr Phe Pro Val
65 70 75 80

Ala Asp Leu Ser Ile Ile Ala Ala Leu Tyr Ala Arg Phe Thr Ala Gln
85 90 95

Ile Arg Gly Ala Val Asp Leu Ser Leu Tyr Pro Arg Glu Gly Gly Val
100 105 110

Ser Ser Arg Glu Leu Val Lys Lys Val Ser Asp Val Ile Trp Asn Ser
115 120 125

Leu Ser Arg Ser Tyr Phe Lys Asp Arg Ala His Ile Gln Ser Leu Phe
130 135 140

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Ser Phe Ile Thr Gly Thr Lys Leu Asp Ser Ser Gly Val Ala Phe Ala
145 150 155 160

Val Val Gly Ala Cys Gln Ala Leu Gly Leu Arg Asp Val His Leu Ala
165 170 175

Leu Ser Glu Asp His Ala Trp Ser Trp Leu Tyr Leu Lys Gly Ser Tyr
180 185 190

Met Arg Cys Asp Arg Lys Met Glu Val Ala Phe Met Val Cys Ala Ile
195 200 205

Asn Pro Ser Ile Asp Leu His Thr Asp Ser Leu Glu Leu Leu Gln Leu
210 215 220

Gln Gln Lys Leu Leu Trp Leu Leu Tyr Asp Leu Gly His Leu Glu Arg
225 230 235 240

Tyr Pro Met Ala Leu Gly Asn Leu Ala Asp Leu Glu Glu Leu Glu Pro
245 250 255

Thr Pro Gly Arg Pro Asp Pro Leu Thr Leu Tyr His Lys Gly Ile Ala
260 265 270

Ser Ala Lys Thr Tyr Tyr Arg Asp Glu His Ile Tyr Pro Tyr Met Tyr
275 280 285

Leu Ala Gly Tyr His Cys Arg Asn Arg Asn Val Arg Glu Ala Leu Gln
290 295 300

Ala Trp Ala Asp Thr Ala Thr Val Ile Gln Asp Tyr Asn Tyr Cys Arg
305 310 315 320

Glu Asp Glu Glu Ile Tyr Lys Glu Phe Phe Glu Val Ala Asn Asp Val
325 330 335

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Ile Pro Asn Leu Leu Lys Glu Ala Ala Ser Leu Leu Glu Ala Gly Glu
340 345 350

Glu Arg Pro Gly Glu Gln Ser Gln Gly Thr Gln Ser Gln Gly Ser Ala
355 360 365

Leu Gln Asp Pro Glu Cys Phe Ala His Leu Leu Arg Phe Tyr Asp Gly
370 375 380

Ile Cys Lys Trp Glu Glu Gly Ser Pro Thr Pro Val Leu His Val Gly
385 390 395 400

Trp Ala Thr Phe Leu Val Gln Ser Leu Gly Arg Phe Glu Gly Gln Val
405 410 415

Arg Gln Lys Val Arg Ile Val Ser Arg Glu Ala Glu Ala Ala Glu Ala
420 425 430

Glu Glu Pro Trp Gly Glu Glu Ala Arg Glu Gly Arg Arg Arg Gly Pro
435 440 445

Arg Arg Glu Ser Lys Pro Glu Glu Pro Pro Pro Pro Lys Lys Pro Ala
450 455 460

Leu Asp Lys Gly Leu Gly Thr Gly Gln Gly Ala Val Ser Gly Pro Pro
465 470 475 480

Arg Lys Pro Pro Gly Thr Val Ala Gly Thr Ala Arg Gly Pro Glu Gly
485 490 495

Gly Ser Thr Ala Gln Val Pro Ala Pro Thr Ala Ser Pro Pro Pro Glu
500 505 510

Gly Pro Val Leu Thr Phe Gln Ser Glu Lys Met Lys Gly Met Lys Glu
515 520 525

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Leu Leu Val Ala Thr Lys Ile Asn Ser Ser Ala Ile Lys Leu Gln Leu
530 535 540

Thr Ala Gln Ser Gln Val Gln Met Lys Lys Gln Lys Val Ser Thr Pro
545 550 555 560

Ser Asp Tyr Thr Leu Ser Phe Leu Lys Arg Gln Arg Lys Gly Leu
565 570 575