

STFD_212PCT_ST25
SEQUENCE LISTING

<110> The Board of Trustess of the Leland Stanford Junior
University
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Karl, Deisseroth

<120> SYSTEMS, METHODS AND COMPOSITIONS FOR OPTICAL STIMULATION OF
TARGET CELLS

<130> STFD.212PCT

<150> US 61/046149

<151> 2008-04-18

<160> 3

<170> PatentIn version 3.5

<210> 1

<211> 294

<212> PRT

<213> Artificial Sequence

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<223> ChR1 Protein

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Ala Ala Gly Ser Ala Gly Ala Ser Thr Gly Ser Asp Ala Thr Val Pro
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Val Ala Thr Gln Asp Gly Pro Asp Tyr Val Phe His Arg Ala His Glu
35 40 45

Arg Met Leu Ser Ala Leu Cys Leu Met Phe Tyr Gly Tyr Gln Thr Trp
50 55 60

Lys Ser Thr Cys Gly Trp Glu Glu Ile Tyr Val Ala Thr Ile Glu Met
65 70 75 80

Ile Lys Phe Ile Ile Glu Tyr Phe His Glu Phe Asp Glu Pro Ala Val
85 90 95

Ile Tyr Ser Ser Asn Gly Asn Lys Thr Val Trp Leu Arg Tyr Ala Glu
100 105 110

Trp Leu Leu Thr Cys Arg Val Ile Leu Ile His Leu Ser Asn Leu Thr
115 120 125

Gly Leu Ala Asn Asp Tyr Asn Lys Arg Thr Met Gly Leu Leu Val Ser
130 135 140

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

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Tyr Val Arg Val Ile Phe Phe Leu Met Gly Leu Cys Tyr Gly Ile Tyr
 165 170 175

Thr Phe Phe Asn Ala Ala Lys Val Tyr Ile Glu Ala Tyr His Thr Val
 180 185 190

Pro Lys Gly Ile Cys Arg Asp Leu Val Arg Tyr Leu Ala Trp Leu Tyr
 195 200 205

Phe Cys Ser Trp Ala Met Phe Pro Val Leu Phe Leu Leu Gly Pro Glu
 210 215 220

Gly Phe Gly His Ile Asn Gln Phe Asn Ser Ala Ile Ala His Ala Ile
 225 230 235 240

Leu Asp Leu Ala Ser Lys Asn Ala Trp Ser Met Met Gly His Phe Leu
 245 250 255

Arg Val Lys Ile His Glu His Ile Leu Leu Tyr Gly Asp Ile Arg Lys
 260 265 270

Lys Gln Lys Val Asn Val Ala Gly Gln Glu Met Glu Val Glu Thr Met
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Val His Glu Glu Asp Asp
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 20 25 30

Gln Cys Tyr Cys Ala Gly Trp Ile Glu Ser Arg Gly Thr Asn Gly Ala
 35 40 45

Gln Thr Ala Ser Asn Val Leu Gln Trp Leu Ala Ala Gly Phe Ser Ile
 50 55 60

Leu Leu Leu Met Phe Tyr Ala Tyr Gln Thr Trp Lys Ser Thr Cys Gly
 65 70 75 80

Trp Glu Glu Ile Tyr Val Cys Ala Ile Glu Met Val Lys Val Ile Leu
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85

90

95

Glu Phe Phe Phe Glu Phe Lys Asn Pro Ser Met Leu Tyr Leu Ala Thr
 100 105 110

Gly His Arg Val Gln Trp Leu Arg Tyr Ala Glu Trp Leu Leu Thr Cys
 115 120 125

Pro Val Ile Leu Ile His Leu Ser Asn Leu Thr Gly Leu Ser Asn Asp
 130 135 140

Tyr Ser Arg Arg Thr Met Gly Leu Leu Val Ser Asp Ile Gly Thr Ile
 145 150 155 160

Val Trp Gly Ala Thr Ser Ala Met Ala Thr Gly Tyr Val Lys Val Ile
 165 170 175

Phe Phe Cys Leu Gly Leu Cys Tyr Gly Ala Asn Thr Phe Phe His Ala
 180 185 190

Ala Lys Ala Tyr Ile Glu Gly Tyr His Thr Val Pro Lys Gly Arg Cys
 195 200 205

Arg Gln Val Val Thr Gly Met Ala Trp Leu Phe Phe Val Ser Trp Gly
 210 215 220

Met Phe Pro Ile Leu Phe Ile Leu Gly Pro Glu Gly Phe Gly Val Leu
 225 230 235 240

Ser Val Tyr Gly Ser Thr Val Gly His Thr Ile Ile Asp Leu Met Ser
 245 250 255

Lys Asn Cys Trp Gly Leu Leu Gly His Tyr Leu Arg Val Leu Ile His
 260 265 270

Glu His Ile Leu Ile His Gly Asp Ile Arg Lys Thr Thr Lys Leu Asn
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Ile Gly Gly Thr Glu Ile Glu Val Glu Thr Leu Val Glu Asp Glu Ala
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Glu
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 Leu Gly Asn Gly Thr Val Cys Met Pro Arg Gly Gln Cys Tyr Cys Glu
 20 25 30
 Gly Trp Leu Arg Ser Arg Gly Thr Ser Ile Glu Lys Thr Ile Ala Ile
 35 40 45
 Thr Leu Gln Trp Val Val Phe Ala Leu Ser Val Ala Cys Leu Gly Trp
 50 55 60
 Tyr Ala Tyr Gln Ala Trp Arg Ala Thr Cys Gly Trp Glu Glu Val Tyr
 65 70 75 80
 Val Ala Leu Ile Glu Met Met Lys Ser Ile Ile Glu Ala Phe His Glu
 85 90 95
 Phe Asp Ser Pro Ala Thr Leu Trp Leu Ser Ser Gly Asn Gly Val Val
 100 105 110
 Trp Met Arg Tyr Gly Glu Trp Leu Leu Thr Cys Pro Val Leu Leu Ile
 115 120 125
 His Leu Ser Asn Leu Thr Gly Leu Lys Asp Asp Tyr Ser Lys Arg Thr
 130 135 140
 Met Gly Leu Leu Val Ser Asp Val Gly Cys Ile Val Trp Gly Ala Thr
 145 150 155 160
 Ser Ala Met Cys Thr Gly Trp Thr Lys Ile Leu Phe Phe Leu Ile Ser
 165 170 175
 Leu Ser Tyr Gly Met Tyr Thr Tyr Phe His Ala Ala Lys Val Tyr Ile
 180 185 190
 Glu Ala Phe His Thr Val Pro Lys Gly Ile Cys Arg Glu Leu Val Arg
 195 200 205
 Val Met Ala Trp Thr Phe Phe Val Ala Trp Gly Met Phe Pro Val Leu
 210 215 220
 Phe Leu Leu Gly Thr Glu Gly Phe Gly His Ile Ser Pro Tyr Gly Ser
 225 230 235 240
 Ala Ile Gly His Ser Ile Leu Asp Leu Ile Ala Lys Asn Met Trp Gly
 245 250 255
 Val Leu Gly Asn Tyr Leu Arg Val Lys Ile His Glu His Ile Leu Leu
 260 265 270

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Tyr Gly Asp Ile Arg Lys Lys Gln Lys Ile Thr Ile Ala Gly Gln Glu
275 280 285

Met Glu Val Glu Thr Leu Val Ala Glu Glu Glu Asp
290 295 300