

SEQUENCE LISTING

<110> NIHON MEDI-PHYSICS CO., LTD.

<120> Radioconjugates of anti-EGFR antibody, and radiopharmaceuticals

<130> 093238

<150> JP2021-062104
<151> 2021-03-31

<150> JP2021-179348
<151> 2021-11-02

<150> JP2022-021670
<151> 2022-02-15

<160> 19

<170> PatentIn version 3.5

<210> 1
<211> 214
<212> PRT
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<220>
<223> Cetuximab Light chain amino acid sequence

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Asp Ile Leu Leu Thr Gln Ser Pro Val Ile Leu Ser Val Ser Pro Gly
1 5 10 15

Glu Arg Val Ser Phe Ser Cys Arg Ala Ser Gln Ser Ile Gly Thr Asn
20 25 30

Ile His Trp Tyr Gln Gln Arg Thr Asn Gly Ser Pro Arg Leu Leu Ile
35 40 45

Lys Tyr Ala Ser Glu Ser Ile Ser Gly Ile Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Ser Ile Asn Ser Val Glu Ser
65 70 75 80

Glu Asp Ile Ala Asp Tyr Tyr Cys Gln Gln Asn Asn Asn Trp Pro Thr
85 90 95

Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg Thr Val Ala Ala
100 105 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
115 120 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
130 135 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145 150 155 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
165 170 175

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
180 185 190

Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser
195 200 205

Phe Asn Arg Gly Glu Cys
210

<210> 2
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<212> PRT
<213> Artificial Sequence

<220>
<223> Cetuximab Heavy chain amino acid sequence

<400> 2

Gln Val Gln Leu Lys Gln Ser Gly Pro Gly Leu Val Gln Pro Ser Gln

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Ser	Leu	Ser	Ile	Thr	Cys	Thr	Val	Ser	Gly	Phe	Ser	Leu	Thr	Asn	Tyr
			20					25					30		
Gly	Val	His	Trp	Val	Arg	Gln	Ser	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Leu
		35					40					45			
Gly	Val	Ile	Trp	Ser	Gly	Gly	Asn	Thr	Asp	Tyr	Asn	Thr	Pro	Phe	Thr
	50					55					60				
Ser	Arg	Leu	Ser	Ile	Asn	Lys	Asp	Asn	Ser	Lys	Ser	Gln	Val	Phe	Phe
65					70					75					80
Lys	Met	Asn	Ser	Leu	Gln	Ser	Asn	Asp	Thr	Ala	Ile	Tyr	Tyr	Cys	Ala
				85					90					95	
Arg	Ala	Leu	Thr	Tyr	Tyr	Asp	Tyr	Glu	Phe	Ala	Tyr	Trp	Gly	Gln	Gly
			100					105					110		
Thr	Leu	Val	Thr	Val	Ser	Ala	Ala	Ser	Thr	Lys	Gly	Pro	Ser	Val	Phe
		115					120					125			
Pro	Leu	Ala	Pro	Ser	Ser	Lys	Ser	Thr	Ser	Gly	Gly	Thr	Ala	Ala	Leu
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Gly	Cys	Leu	Val	Lys	Asp	Tyr	Phe	Pro	Glu	Pro	Val	Thr	Val	Ser	Trp
145					150					155					160
Asn	Ser	Gly	Ala	Leu	Thr	Ser	Gly	Val	His	Thr	Phe	Pro	Ala	Val	Leu
				165					170					175	
Gln	Ser	Ser	Gly	Leu	Tyr	Ser	Leu	Ser	Ser	Val	Val	Thr	Val	Pro	Ser
			180					185					190		
Ser	Ser	Leu	Gly	Thr	Gln	Thr	Tyr	Ile	Cys	Asn	Val	Asn	His	Lys	Pro
		195					200					205			

Ser Asn Thr Lys Val Asp Lys Arg Val Glu Pro Lys Ser Cys Asp Lys
210 215 220

Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro
225 230 235 240

Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
245 250 255

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
260 265 270

Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
275 280 285

Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val
290 295 300

Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu
305 310 315 320

Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys
325 330 335

Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr
340 345 350

Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr
355 360 365

Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
370 375 380

Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu
385 390 395 400

Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
405 410 415

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
420 425 430

Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
435 440 445

Lys

<210> 3

<211> 214

<212> PRT

<213> Artificial Sequence

<220>

<223> Panitumumab light chain amino acid sequence

<400> 3

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Gln Ala Ser Gln Asp Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Tyr Asp Ala Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Phe Cys Gln His Phe Asp His Leu Pro Leu
85 90 95

Ala Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala
100 105 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
115 120 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
130 135 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145 150 155 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
165 170 175

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
180 185 190

Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser
195 200 205

Phe Asn Arg Gly Glu Cys
210

<210> 4
<211> 445
<212> PRT
<213> Artificial Sequence

<220>
<223> Panitumumab heavy chain amino acid sequence

<400> 4

Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
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Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Val Ser Ser Gly

20

25

30

Asp Tyr Tyr Trp Thr Trp Ile Arg Gln Ser Pro Gly Lys Gly Leu Glu
 35 40 45

Trp Ile Gly His Ile Tyr Tyr Ser Gly Asn Thr Asn Tyr Asn Pro Ser
 50 55 60

Leu Lys Ser Arg Leu Thr Ile Ser Ile Asp Thr Ser Lys Thr Gln Phe
 65 70 75 80

Ser Leu Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Ile Tyr Tyr
 85 90 95

Cys Val Arg Asp Arg Val Thr Gly Ala Phe Asp Ile Trp Gly Gln Gly
 100 105 110

Thr Met Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe
 115 120 125

Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu
 130 135 140

Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp
 145 150 155 160

Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu
 165 170 175

Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser
 180 185 190

Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys Pro
 195 200 205

Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val Glu
 210 215 220

Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu
225 230 235 240

Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu
245 250 255

Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Gln
260 265 270

Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys
275 280 285

Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val Leu
290 295 300

Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys
305 310 315 320

Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys
325 330 335

Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser
340 345 350

Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys
355 360 365

Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
370 375 380

Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp Gly
385 390 395 400

Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln
405 410 415

Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
420 425 430

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
435 440 445

<210> 5
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Peptide for modifying antibody

<220>
<221> SITE
<222> (6)..(6)
<223> Xaa is a lysine residue, a cysteine residue, an aspartic acid
residue, a glutamic acid residue, a 2-aminosuberic acid or
diaminopropionic acid.

<400> 5

Asp Cys Ala Tyr His Xaa Gly Glu Leu Val Trp Cys Thr
1 5 10

<210> 6
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<220>
<223> Peptide for modifying antibody

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<222> (8)..(8)
<223> Xaa is a lysine residue, a cysteine residue, an aspartic acid
residue, a glutamic acid residue, a 2-aminosuberic acid or
diaminopropionic acid.

<400> 6

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His

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<220>
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<220>
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 <222> (6)..(6)
 <223> Xaa is a lysine residue, a cysteine residue, an aspartic acid residue, a glutamic acid residue, a 2-aminosuberic acid or diaminopropionic acid.

<400> 7

Arg	Cys	Ala	Tyr	His	Xaa	Gly	Glu	Leu	Val	Trp	Cys	Ser
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<210> 8
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<220>
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<220>
 <221> SITE
 <222> (8)..(8)
 <223> Xaa is a lysine residue, a cysteine residue, an aspartic acid residue, a glutamic acid residue, a 2-aminosuberic acid or diaminopropionic acid.

<400> 8

Gly	Pro	Arg	Cys	Ala	Tyr	His	Xaa	Gly	Glu	Leu	Val	Trp	Cys	Ser	Phe
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1 5 10 15

His

<210> 9
<211> 17
<212> PRT
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<220>
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<223> Xaa is a lysine residue, a cysteine residue, an aspartic acid residue, a glutamic acid residue, a 2-aminosuberic acid or diaminopropionic acid.

<400> 9

Ser	Pro	Asp	Cys	Ala	Tyr	His	Xaa	Gly	Glu	Leu	Val	Trp	Cys	Thr	Phe
1				5					10					15	

His

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<223> Xaa is a lysine residue, a cysteine residue, an aspartic acid residue, a glutamic acid residue, a 2-aminosuberic acid or diaminopropionic acid.

<400> 10

Gly Asp Asp Cys Ala Tyr His Xaa Gly Glu Leu Val Trp Cys Thr Phe
1 5 10 15

His

<210> 11

<211> 17

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<222> (8)..(8)

<223> Xaa is a lysine residue, a cysteine residue, an aspartic acid residue, a glutamic acid residue, a 2-aminosuberic acid or diaminopropionic acid.

<400> 11

Gly Pro Ser Cys Ala Tyr His Xaa Gly Glu Leu Val Trp Cys Thr Phe
1 5 10 15

His

<210> 12

<211> 17

<212> PRT

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<222> (8)..(8)

<223> Xaa is a lysine residue, a cysteine residue, an aspartic acid

residue, a glutamic acid residue, a 2-aminosuberic acid or diaminopropionic acid.

<400> 12

Gly	Pro	Asp	Cys	Ala	Tyr	His	Xaa	Gly	Glu	Leu	Val	Trp	Cys	Ser	Phe
1				5					10					15	

His

<210> 13

<211> 17

<212> PRT

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<223> Xaa is a lysine residue, a cysteine residue, an aspartic acid residue, a glutamic acid residue, a 2-aminosuberic acid or diaminopropionic acid.

<400> 13

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His

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Gly	Pro	Asp	Cys	Ala	Tyr	His	Xaa	Gly	Glu	Leu	Val	Trp	Cys	Thr	Phe
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Tyr

<210> 15
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<400> 15

Ser	Pro	Asp	Cys	Ala	Tyr	His	Xaa	Gly	Glu	Leu	Val	Trp	Cys	Thr	Phe
1				5				10					15		

Tyr

<210> 16
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<223> Xaa is a lysine residue, a cysteine residue, an aspartic acid residue, a glutamic acid residue, a 2-aminosuberic acid or diaminopropionic acid.

<400> 16

Ser	Asp	Asp	Cys	Ala	Tyr	His	Xaa	Gly	Glu	Leu	Val	Trp	Cys	Thr	Phe
1				5					10					15	

Tyr

<210> 17

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> Peptide for modifying antibody

<220>

<221> SITE

<222> (8)..(8)

<223> Xaa is a lysine residue, a cysteine residue, an aspartic acid residue, a glutamic acid residue, a 2-aminosuberic acid or diaminopropionic acid.

<400> 17

Arg	Gly	Asn	Cys	Ala	Tyr	His	Xaa	Gly	Gln	Leu	Val	Trp	Cys	Thr	Tyr
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His

<210> 18

<211> 17

<212> PRT

<213> Artificial Sequence

<220>
<223> Peptide for modifying antibody

<220>
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<222> (2)..(2)
<223> Xaa is a homosysteine residue.

<220>
<221> SITE
<222> (8)..(8)
<223> Xaa is a lysine residue, a cysteine residue, an aspartic acid residue, a glutamic acid residue, a 2-aminosuberic acid or diaminopropionic acid.

<220>
<221> SITE
<222> (16)..(16)
<223> Xaa is a homosysteine residue.

<400> 18

Gly	Xaa	Asp	Cys	Ala	Tyr	His	Xaa	Gly	Glu	Leu	Val	Trp	Cys	Thr	Xaa
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His

<210> 19
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<212> PRT
<213> Artificial Sequence

<220>
<223> Peptide for modifying antibody

<220>
<221> DISULFID
<222> (4)..(14)

<400> 19

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His