SEQUENCE LISTING

<110> Spermosens AB

<120> Biosensor for Male Infertility

<130> P4957PC00

<150> EP 18190720.5
<151> 2018-08-24

<160> 5

<170> PatentIn version 3.5

<210> 1
<211> 250
<212> PRT
<213> Homo sapiens

<400> 1

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Met Ala Cys Trp Trp Pro Leu Leu Leu Glu Leu Trp Thr Val Met Pro
1               5                  10                  15


Thr Trp Ala Gly Asp Glu Leu Leu Asn Ile Cys Met Asn Ala Lys His
            20                  25                  30


His Lys Arg Val Pro Ser Pro Glu Asp Lys Leu Tyr Glu Glu Cys Ile
        35                  40                  45


Pro Trp Lys Asp Asn Ala Cys Cys Thr Leu Thr Thr Ser Trp Glu Ala
    50                  55                  60


His Leu Asp Val Ser Pro Leu Tyr Asn Phe Ser Leu Phe His Cys Gly
65                  70                  75                  80


Leu Leu Met Pro Gly Cys Arg Lys His Phe Ile Gln Ala Ile Cys Phe
                85                  90                  95


Tyr Glu Cys Ser Pro Asn Leu Gly Pro Trp Ile Gln Pro Val Gly Ser
            100                 105                 110


Leu Gly Trp Glu Val Ala Pro Ser Gly Gln Gly Glu Arg Val Val Asn
        115                 120                 125
```

```
Val Pro Leu Cys Gln Glu Asp Cys Glu Glu Trp Trp Glu Asp Cys Arg
    130                 135                 140

Met Ser Tyr Thr Cys Lys Ser Asn Trp Arg Gly Gly Trp Asp Trp Ser
145                 150                 155                 160

Gln Gly Lys Asn Arg Cys Pro Lys Gly Ala Gln Cys Leu Pro Phe Ser
                165                 170                 175

His Tyr Phe Pro Thr Pro Ala Asp Leu Cys Glu Lys Thr Trp Ser Asn
            180                 185                 190

Ser Phe Lys Ala Ser Pro Glu Arg Arg Asn Ser Gly Arg Cys Leu Gln
        195                 200                 205

Lys Trp Phe Glu Pro Ala Gln Gly Asn Pro Asn Val Ala Val Ala Arg
    210                 215                 220

Leu Phe Ala Ser Ser Ala Pro Ser Trp Glu Leu Ser Tyr Thr Ile Met
225                 230                 235                 240

Val Cys Ser Leu Phe Leu Pro Phe Leu Ser
                245                 250
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<210> 2
<211> 638
<212> PRT
<213> Homo sapiens

<400> 2

```
Met Ala Gly Gly Ser Ala Thr Thr Trp Gly Tyr Pro Val Ala Leu Leu
1               5                   10                  15

Leu Leu Val Ala Thr Leu Gly Leu Gly Arg Trp Leu Gln Pro Asp Pro
            20                  25                  30

Gly Leu Pro Gly Leu Arg His Ser Tyr Asp Cys Gly Ile Lys Gly Met
        35                  40                  45

Gln Leu Leu Val Phe Pro Arg Pro Gly Gln Thr Leu Arg Phe Lys Val
    50                  55                  60
```

```
Val Asp Glu Phe Gly Asn Arg Phe Asp Val Asn Asn Cys Ser Ile Cys
65                  70                  75                  80

Tyr His Trp Val Thr Ser Arg Pro Gln Glu Pro Ala Val Phe Ser Ala
                85                  90                  95

Asp Tyr Arg Gly Cys His Val Leu Glu Lys Asp Gly Arg Phe His Leu
            100                 105                 110

Arg Val Phe Met Glu Ala Val Leu Pro Asn Gly Arg Val Asp Val Ala
        115                 120                 125

Gln Asp Ala Thr Leu Ile Cys Pro Lys Pro Asp Pro Ser Arg Thr Leu
    130                 135                 140

Asp Ser Gln Leu Ala Pro Pro Ala Met Phe Ser Val Ser Thr Pro Gln
145                 150                 155                 160

Thr Leu Ser Phe Leu Pro Thr Ser Gly His Thr Ser Gln Gly Ser Gly
                165                 170                 175

His Ala Phe Pro Ser Pro Leu Asp Pro Gly His Ser Ser Val His Pro
            180                 185                 190

Thr Pro Ala Leu Pro Ser Pro Gly Pro Gly Pro Thr Leu Ala Thr Leu
        195                 200                 205

Ala Gln Pro His Trp Gly Thr Leu Glu His Trp Asp Val Asn Lys Arg
    210                 215                 220

Asp Tyr Ile Gly Thr His Leu Ser Gln Glu Gln Cys Gln Val Ala Ser
225                 230                 235                 240

Gly His Leu Pro Cys Ile Val Arg Arg Thr Ser Lys Glu Ala Cys Gln
                245                 250                 255

Gln Ala Gly Cys Cys Tyr Asp Asn Thr Arg Glu Val Pro Cys Tyr Tyr
            260                 265                 270

Gly Asn Thr Ala Thr Val Gln Cys Phe Arg Asp Gly Tyr Phe Val Leu
```

```
        275                 280                 285

Val Val Ser Gln Glu Met Ala Leu Thr His Arg Ile Thr Leu Ala Asn
    290                 295                 300

Ile His Leu Ala Tyr Ala Pro Thr Ser Cys Ser Pro Thr Gln His Thr
305                 310                 315                 320

Glu Ala Phe Val Val Phe Tyr Phe Pro Leu Thr His Cys Gly Thr Thr
                325                 330                 335

Met Gln Val Ala Gly Asp Gln Leu Ile Tyr Glu Asn Trp Leu Val Ser
            340                 345                 350

Gly Ile His Ile Gln Lys Gly Pro Gln Gly Ser Ile Thr Arg Asp Ser
        355                 360                 365

Thr Phe Gln Leu His Val Arg Cys Val Phe Asn Ala Ser Asp Phe Leu
    370                 375                 380

Pro Ile Gln Ala Ser Ile Phe Pro Pro Pro Ser Pro Ala Pro Met Thr
385                 390                 395                 400

Gln Pro Gly Pro Leu Arg Leu Glu Leu Arg Ile Ala Lys Asp Glu Thr
                405                 410                 415

Phe Ser Ser Tyr Tyr Gly Glu Asp Asp Tyr Pro Ile Val Arg Leu Leu
            420                 425                 430

Arg Glu Pro Val His Val Glu Val Arg Leu Leu Gln Arg Thr Asp Pro
        435                 440                 445

Asn Leu Val Leu Leu Leu His Gln Cys Trp Gly Ala Pro Ser Ala Asn
    450                 455                 460

Pro Phe Gln Gln Pro Gln Trp Pro Ile Leu Ser Asp Gly Cys Pro Phe
465                 470                 475                 480

Lys Gly Asp Ser Tyr Arg Thr Gln Met Val Ala Leu Asp Gly Ala Thr
                485                 490                 495
```

Pro Phe Gln Ser His Tyr Gln Arg Phe Thr Val Ala Thr Phe Ala Leu
500 505 510

Leu Asp Ser Gly Ser Gln Arg Ala Leu Arg Gly Leu Val Tyr Leu Phe
515 520 525

Cys Ser Thr Ser Ala Cys His Thr Ser Gly Leu Glu Thr Cys Ser Thr
530 535 540

Ala Cys Ser Thr Gly Thr Thr Arg Gln Arg Arg Ser Ser Gly His Arg
545 550 555 560

Asn Asp Thr Ala Arg Pro Gln Asp Ile Val Ser Ser Pro Gly Pro Val
565 570 575

Gly Phe Glu Asp Ser Tyr Gly Gln Glu Pro Thr Leu Gly Pro Thr Asp
580 585 590

Ser Asn Gly Asn Ser Ser Leu Arg Pro Leu Leu Trp Ala Val Leu Leu
595 600 605

Leu Pro Ala Val Ala Leu Val Leu Gly Phe Gly Val Phe Val Gly Leu
610 615 620

Ser Gln Thr Trp Ala Gln Lys Leu Trp Glu Ser Asn Arg Gln
625 630 635

<210> 3
<211> 745
<212> PRT
<213> Homo sapiens

<400> 3

Met Ala Cys Arg Gln Arg Gly Gly Ser Trp Ser Pro Ser Gly Trp Phe
1 5 10 15

Asn Ala Gly Trp Ser Thr Tyr Arg Ser Ile Ser Leu Phe Phe Ala Leu
20 25 30

Val Thr Ser Gly Asn Ser Ile Asp Val Ser Gln Leu Val Asn Pro Ala
35 40 45

```
Phe Pro Gly Thr Val Thr Cys Asp Glu Arg Glu Ile Thr Val Glu Phe
    50                  55                  60

Pro Ser Ser Pro Gly Thr Lys Lys Trp His Ala Ser Val Val Asp Pro
65                  70                  75                  80

Leu Gly Leu Asp Met Pro Asn Cys Thr Tyr Ile Leu Asp Pro Glu Lys
                85                  90                  95

Leu Thr Leu Arg Ala Thr Tyr Asp Asn Cys Thr Arg Arg Val His Gly
            100                 105                 110

Gly His Gln Met Thr Ile Arg Val Met Asn Asn Ser Ala Ala Leu Arg
        115                 120                 125

His Gly Ala Val Met Tyr Gln Phe Phe Cys Pro Ala Met Gln Val Glu
    130                 135                 140

Glu Thr Gln Gly Leu Ser Ala Ser Thr Ile Cys Gln Lys Asp Phe Met
145                 150                 155                 160

Ser Phe Ser Leu Pro Arg Val Phe Ser Gly Leu Ala Asp Asp Ser Lys
                165                 170                 175

Gly Thr Lys Val Gln Met Gly Trp Ser Ile Glu Val Gly Asp Gly Ala
            180                 185                 190

Arg Ala Lys Thr Leu Thr Leu Pro Glu Ala Met Lys Glu Gly Phe Ser
        195                 200                 205

Leu Leu Ile Asp Asn His Arg Met Thr Phe His Val Pro Phe Asn Ala
    210                 215                 220

Thr Gly Val Thr His Tyr Val Gln Gly Asn Ser His Leu Tyr Met Val
225                 230                 235                 240

Ser Leu Lys Leu Thr Phe Ile Ser Pro Gly Gln Lys Val Ile Phe Ser
                245                 250                 255
```

```
Ser Gln Ala Ile Cys Ala Pro Asp Pro Val Thr Cys Asn Ala Thr His
            260                 265                 270

Met Thr Leu Thr Ile Pro Glu Phe Pro Gly Lys Leu Lys Ser Val Ser
        275                 280                 285

Phe Glu Asn Gln Asn Ile Asp Val Ser Gln Leu His Asp Asn Gly Ile
    290                 295                 300

Asp Leu Glu Ala Thr Asn Gly Met Lys Leu His Phe Ser Lys Thr Leu
305                 310                 315                 320

Leu Lys Thr Lys Leu Ser Glu Lys Cys Leu Leu His Gln Phe Tyr Leu
                325                 330                 335

Ala Ser Leu Lys Leu Thr Phe Leu Leu Arg Pro Glu Thr Val Ser Met
            340                 345                 350

Val Ile Tyr Pro Glu Cys Leu Cys Glu Ser Pro Val Ser Ile Val Thr
        355                 360                 365

Gly Glu Leu Cys Thr Gln Asp Gly Phe Met Asp Val Glu Val Tyr Ser
    370                 375                 380

Tyr Gln Thr Gln Pro Ala Leu Asp Leu Gly Thr Leu Arg Val Gly Asn
385                 390                 395                 400

Ser Ser Cys Gln Pro Val Phe Glu Ala Gln Ser Gln Gly Leu Val Arg
                405                 410                 415

Phe His Ile Pro Leu Asn Gly Cys Gly Thr Arg Tyr Lys Phe Glu Asp
            420                 425                 430

Asp Lys Val Val Tyr Glu Asn Glu Ile His Ala Leu Trp Thr Asp Phe
        435                 440                 445

Pro Pro Ser Lys Ile Ser Arg Asp Ser Glu Phe Arg Met Thr Val Lys
    450                 455                 460

Cys Ser Tyr Ser Arg Asn Asp Met Leu Leu Asn Ile Asn Val Glu Ser
465                 470                 475                 480
```

```
Leu Thr Pro Pro Val Ala Ser Val Lys Leu Gly Pro Phe Thr Leu Ile
                485                 490                 495

Leu Gln Ser Tyr Pro Asp Asn Ser Tyr Gln Gln Pro Tyr Gly Glu Asn
            500                 505                 510

Glu Tyr Pro Leu Val Arg Phe Leu Arg Gln Pro Ile Tyr Met Glu Val
        515                 520                 525

Arg Val Leu Asn Arg Asp Asp Pro Asn Ile Lys Leu Val Leu Asp Asp
    530                 535                 540

Cys Trp Ala Thr Ser Thr Met Asp Pro Asp Ser Phe Pro Gln Trp Asn
545                 550                 555                 560

Val Val Val Asp Gly Cys Ala Tyr Asp Leu Asp Asn Tyr Gln Thr Thr
                565                 570                 575

Phe His Pro Val Gly Ser Ser Val Thr His Pro Asp His Tyr Gln Arg
            580                 585                 590

Phe Asp Met Lys Ala Phe Ala Phe Val Ser Glu Ala His Val Leu Ser
        595                 600                 605

Ser Leu Val Tyr Phe His Cys Ser Ala Leu Ile Cys Asn Arg Leu Ser
    610                 615                 620

Pro Asp Ser Pro Leu Cys Ser Val Thr Cys Pro Val Ser Ser Arg His
625                 630                 635                 640

Arg Arg Ala Thr Gly Ala Thr Glu Ala Glu Lys Met Thr Val Ser Leu
                645                 650                 655

Pro Gly Pro Ile Leu Leu Leu Ser Asp Asp Ser Ser Phe Arg Gly Val
            660                 665                 670

Gly Ser Ser Asp Leu Lys Ala Ser Gly Ser Ser Gly Glu Lys Ser Arg
        675                 680                 685
```

```
Ser Glu Thr Gly Glu Glu Val Gly Ser Arg Gly Ala Met Asp Thr Lys
    690                 695                 700

Gly His Lys Thr Ala Gly Asp Val Gly Ser Lys Ala Val Ala Ala Val
705                 710                 715                 720

Ala Ala Phe Ala Gly Val Val Ala Thr Leu Gly Phe Ile Tyr Tyr Leu
                725                 730                 735

Tyr Glu Lys Arg Thr Val Ser Asn His
            740                 745
```

<210> 4
<211> 424
<212> PRT
<213> Homo sapiens

<400> 4

```
Met Glu Leu Ser Tyr Arg Leu Phe Ile Cys Leu Leu Leu Trp Gly Ser
1               5                   10                  15

Thr Glu Leu Cys Tyr Pro Gln Pro Leu Trp Leu Leu Gln Gly Gly Ala
            20                  25                  30

Ser His Pro Glu Thr Ser Val Gln Pro Val Leu Val Glu Cys Gln Glu
        35                  40                  45

Ala Thr Leu Met Val Met Val Ser Lys Asp Leu Phe Gly Thr Gly Lys
    50                  55                  60

Leu Ile Arg Ala Ala Asp Leu Thr Leu Gly Pro Glu Ala Cys Glu Pro
65                  70                  75                  80

Leu Val Ser Met Asp Thr Glu Asp Val Val Arg Phe Glu Val Gly Leu
                85                  90                  95

His Glu Cys Gly Asn Ser Met Gln Val Thr Asp Asp Ala Leu Val Tyr
            100                 105                 110

Ser Thr Phe Leu Leu His Asp Pro Arg Pro Val Gly Asn Leu Ser Ile
        115                 120                 125
```

```
Val Arg Thr Asn Arg Ala Glu Ile Pro Ile Glu Cys Arg Tyr Pro Arg
    130                 135                 140

Gln Gly Asn Val Ser Ser Gln Ala Ile Leu Pro Thr Trp Leu Pro Phe
145                 150                 155                 160

Arg Thr Thr Val Phe Ser Glu Glu Lys Leu Thr Phe Ser Leu Arg Leu
                165                 170                 175

Met Glu Glu Asn Trp Asn Ala Glu Lys Arg Ser Pro Thr Phe His Leu
            180                 185                 190

Gly Asp Ala Ala His Leu Gln Ala Glu Ile His Thr Gly Ser His Val
        195                 200                 205

Pro Leu Arg Leu Phe Val Asp His Cys Val Ala Thr Pro Thr Pro Asp
    210                 215                 220

Gln Asn Ala Ser Pro Tyr His Thr Ile Val Asp Phe His Gly Cys Leu
225                 230                 235                 240

Val Asp Gly Leu Thr Asp Ala Ser Ser Ala Phe Lys Val Pro Arg Pro
                245                 250                 255

Gly Pro Asp Thr Leu Gln Phe Thr Val Asp Val Phe His Phe Ala Asn
            260                 265                 270

Asp Ser Arg Asn Met Ile Tyr Ile Thr Cys His Leu Lys Val Thr Leu
        275                 280                 285

Ala Glu Gln Asp Pro Asp Glu Leu Asn Lys Ala Cys Ser Phe Ser Lys
    290                 295                 300

Pro Ser Asn Ser Trp Phe Pro Val Glu Gly Ser Ala Asp Ile Cys Gln
305                 310                 315                 320

Cys Cys Asn Lys Gly Asp Cys Gly Thr Pro Ser His Ser Arg Arg Gln
                325                 330                 335

Pro His Val Met Ser Gln Trp Ser Arg Ser Ala Ser Arg Asn Arg Arg
```

```
            340                 345                 350

His Val Thr Glu Glu Ala Asp Val Thr Val Gly Pro Leu Ile Phe Leu
        355                 360                 365

Asp Arg Arg Gly Asp His Glu Val Glu Gln Trp Ala Leu Pro Ser Asp
    370                 375                 380

Thr Ser Val Val Leu Leu Gly Val Gly Leu Ala Val Val Val Ser Leu
385                 390                 395                 400

Thr Leu Thr Ala Val Ile Leu Val Leu Thr Arg Arg Cys Arg Thr Ala
                405                 410                 415

Ser His Pro Val Ser Ala Ser Glu
            420
```

<210> 5
<211> 350
<212> PRT
<213> Homo sapiens

<400> 5

```
Met Gly Pro His Phe Thr Leu Leu Cys Ala Ala Leu Ala Gly Cys Leu
1               5                   10                  15

Leu Pro Ala Glu Gly Cys Val Ile Cys Asp Pro Ser Val Val Leu Ala
            20                  25                  30

Leu Lys Ser Leu Glu Lys Asp Tyr Leu Pro Gly His Leu Asp Ala Lys
        35                  40                  45

His His Lys Ala Met Met Glu Arg Val Glu Asn Ala Val Lys Asp Phe
    50                  55                  60

Gln Glu Leu Ser Leu Asn Glu Asp Ala Tyr Met Gly Val Val Asp Glu
65                  70                  75                  80

Ala Thr Leu Gln Lys Gly Ser Trp Ser Leu Leu Lys Asp Leu Lys Arg
                85                  90                  95
```

```
Ile Thr Asp Ser Asp Val Lys Gly Asp Leu Phe Val Lys Glu Leu Phe
            100                 105                 110

Trp Met Leu His Leu Gln Lys Glu Thr Phe Ala Thr Tyr Val Ala Arg
        115                 120                 125

Phe Gln Lys Glu Ala Tyr Cys Pro Asn Lys Cys Gly Val Met Leu Gln
    130                 135                 140

Thr Leu Ile Trp Cys Lys Asn Cys Lys Lys Glu Val His Ala Cys Arg
145                 150                 155                 160

Lys Ser Tyr Asp Cys Gly Glu Arg Asn Val Glu Val Pro Gln Met Glu
                165                 170                 175

Asp Met Ile Leu Asp Cys Glu Leu Asn Trp His Gln Ala Ser Glu Gly
            180                 185                 190

Leu Thr Asp Tyr Ser Phe Tyr Arg Val Trp Gly Asn Asn Thr Glu Thr
        195                 200                 205

Leu Val Ser Lys Gly Lys Glu Ala Thr Leu Thr Lys Pro Met Val Gly
    210                 215                 220

Pro Glu Asp Ala Gly Ser Tyr Arg Cys Glu Leu Gly Ser Val Asn Ser
225                 230                 235                 240

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

Ile Lys Glu Glu Lys Pro Ser Pro Asn Ile Val Thr Pro Gly Glu Ala
            260                 265                 270

Thr Thr Glu Ser Ser Ile Ser Leu Gln Pro Leu Gln Pro Glu Lys Met
        275                 280                 285

Leu Ala Ser Arg Leu Leu Gly Leu Leu Ile Cys Gly Ser Leu Ala Leu
    290                 295                 300

Ile Thr Gly Leu Thr Phe Ala Ile Phe Arg Arg Arg Lys Val Ile Asp
305                 310                 315                 320
```

```
Phe Ile Lys Ser Ser Leu Phe Gly Leu Gly Ser Gly Ala Ala Glu Gln
                325                 330                 335


Thr Gln Val Pro Lys Glu Lys Ala Thr Asp Ser Arg Gln Gln
            340                 345                 350
```