

## SEQUENCE LISTING

&lt;110&gt; AKZO Nobel NV

&lt;120&gt; Babesia vaccines

&lt;130&gt;

&lt;160&gt; 19

&lt;170&gt; PatentIn version 3.2

&lt;210&gt; 1

&lt;211&gt; 852

&lt;212&gt; DNA

&lt;213&gt; Babesia canis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (50)..(820)

&lt;400&gt; 1

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agtcgataacc tccgagaata gtcttggtatt aatcctgtcg ctattcaca atg aag ggt      58
                                   Met Lys Gly
                                   1

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```

ttc ttc gga att att ttg tcc att att ttt gtt cgt gcc gtt agc tgc      106
Phe Phe Gly Ile Ile Leu Ser Ile Ile Phe Val Arg Ala Val Ser Cys
   5                               10                               15

```

```

act gag gat gag aaa agg gat agt gtc gtc gag ggc gct acg tcc gtt      154
Thr Glu Asp Glu Lys Arg Asp Ser Val Val Glu Gly Ala Thr Ser Val
  20                               25                               30                               35

```

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gaa gcc agc tta aag gag cag atc gac tgg ctc gct gaa cgt tat tcc      202
Glu Ala Ser Leu Lys Glu Gln Ile Asp Trp Leu Ala Glu Arg Tyr Ser
                40                               45                               50

```

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gct gac ttg act aac aaa gac act tca aaa tgg aat acc gac gag aag      250
Ala Asp Leu Thr Asn Lys Asp Thr Ser Lys Trp Asn Thr Asp Glu Lys
                55                               60                               65

```

```

gtg aag gag ctg ttg aat gag aag gct gtt ggc ata gag tct cgc ctt      298
Val Lys Glu Leu Leu Asn Glu Lys Ala Val Gly Ile Glu Ser Arg Leu
   70                               75                               80

```

```

ctt gcc att gct aag gaa ttc cac aaa ttg aag tcc gtt ctg tgc acc      346
Leu Ala Ile Ala Lys Glu Phe His Lys Leu Lys Ser Val Leu Cys Thr
   85                               90                               95

```

```

ggc gtc aac gaa act ccc gct cat gtc gct aac agg gtg tca ccc gga      394
Gly Val Asn Glu Thr Pro Ala His Val Ala Asn Arg Val Ser Pro Gly
  100                               105                               110                               115

```

```

gac gcc atc tcc atg ctc tac gtg ctt tct atc act cac agg gaa ttg      442
Asp Ala Ile Ser Met Leu Tyr Val Leu Ser Ile Thr His Arg Glu Leu
                120                               125                               130

```

```

tct agc ctt aag aat aag atc gat gaa tgg aag aag gtc aag gca tct      490
Ser Ser Leu Lys Asn Lys Ile Asp Glu Trp Lys Lys Val Lys Ala Ser

```

	135	140	145	
	gaa gat ggc acc aaa gtg atc caa aat atc aag gac gac agg act aac			538
	Glu Asp Gly Thr Lys Val Ile Gln Asn Ile Lys Asp Asp Arg Thr Asn			
	150	155	160	
	acc tgg ttc gtt gcc cat gga ttc aag gta gct gag ctc aac gat gtc			586
	Thr Trp Phe Val Ala His Gly Phe Lys Val Ala Glu Leu Asn Asp Val			
	165	170	175	
	acc ctt gag aaa ctt gca aca gtg gtt aac gaa ttg gtg tcc cac aaa			634
	Thr Leu Glu Lys Leu Ala Thr Val Val Asn Glu Leu Val Ser His Lys			
	180	185	190	195
	gat atg att tac att aac gac gct atg aag caa aac gtt gat aaa tgg			682
	Asp Met Ile Tyr Ile Asn Asp Ala Met Lys Gln Asn Val Asp Lys Trp			
	200	205	210	
	acc aag gag gag tct gaa aga ttg gcc atg atg gct gaa cag ggt ata			730
	Thr Lys Glu Glu Ser Glu Arg Leu Ala Met Met Ala Glu Gln Gly Ile			
	215	220	225	
	tct gga gcc aag ggt aag aag gat gga ttc tca ttc gcc ggt ctt agt			778
	Ser Gly Ala Lys Gly Lys Lys Asp Gly Phe Ser Phe Ala Gly Leu Ser			
	230	235	240	
	gtc atc agc ctt ctt gtt gcc gcc gtc gcg gtt gtg gtc taa			820
	Val Ile Ser Leu Leu Val Ala Ala Val Ala Val Val Val			
	245	250	255	
	gagggttaagg atgactatgtt gtgggcgtaa tg			852

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 <212> PRT  
 <213> Babesia canis

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Met Lys Gly Phe Phe Gly Ile Ile Leu Ser Ile Ile Phe Val Arg Ala	
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Thr Ser Val Glu Ala Ser Leu Lys Glu Gln Ile Asp Trp Leu Ala Glu	
35 40 45	
Arg Tyr Ser Ala Asp Leu Thr Asn Lys Asp Thr Ser Lys Trp Asn Thr	
50 55 60	
Asp Glu Lys Val Lys Glu Leu Leu Asn Glu Lys Ala Val Gly Ile Glu	
65 70 75 80	

Ser Arg Leu Leu Ala Ile Ala Lys Glu Phe His Lys Leu Lys Ser Val  
                             85                            90                            95

Leu Cys Thr Gly Val Asn Glu Thr Pro Ala His Val Ala Asn Arg Val  
                             100                            105                            110

Ser Pro Gly Asp Ala Ile Ser Met Leu Tyr Val Leu Ser Ile Thr His  
                             115                            120                            125

Arg Glu Leu Ser Ser Leu Lys Asn Lys Ile Asp Glu Trp Lys Lys Val  
                             130                            135                            140

Lys Ala Ser Glu Asp Gly Thr Lys Val Ile Gln Asn Ile Lys Asp Asp  
 145                            150                            155                            160

Arg Thr Asn Thr Trp Phe Val Ala His Gly Phe Lys Val Ala Glu Leu  
                             165                            170                            175

Asn Asp Val Thr Leu Glu Lys Leu Ala Thr Val Val Asn Glu Leu Val  
                             180                            185                            190

Ser His Lys Asp Met Ile Tyr Ile Asn Asp Ala Met Lys Gln Asn Val  
                             195                            200                            205

Asp Lys Trp Thr Lys Glu Glu Ser Glu Arg Leu Ala Met Met Ala Glu  
                             210                            215                            220

Gln Gly Ile Ser Gly Ala Lys Gly Lys Lys Asp Gly Phe Ser Phe Ala  
 225                            230                            235                            240

Gly Leu Ser Val Ile Ser Leu Leu Val Ala Ala Val Ala Val Val Val  
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<220>  
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 <222> (2)..(784)

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   Val Asp Thr Ser Glu Asn Ser Leu Val Leu Ile Leu Ser Leu Phe Thr  
   1                            5                            10                            15

atg aag ggt ttc ttc gga att att ttg tct att att ttc gtt cgt gcc 97  
 Met Lys Gly Phe Phe Gly Ile Ile Leu Ser Ile Ile Phe Val Arg Ala

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gtt agc tgc act gag gat gag aac agg gat agt gtc gtc gag ggc gct				145
Val Ser Cys Thr Glu Asp Glu Asn Arg Asp Ser Val Val Glu Gly Ala				
	35	40	45	
acg tcc gtt gaa gcc agc tta aag gag cag atc gac tgg ctc gct gaa				193
Thr Ser Val Glu Ala Ser Leu Lys Glu Gln Ile Asp Trp Leu Ala Glu				
	50	55	60	
cgt tat tcc gct gac ttg act aac aaa gac act tca aaa tgg aat acc				241
Arg Tyr Ser Ala Asp Leu Thr Asn Lys Asp Thr Ser Lys Trp Asn Thr				
	65	70	75	80
gaa gag cag gtg aag gag ctg ttg aat gag aag gct gtt ggc ata gag				289
Glu Glu Gln Val Lys Glu Leu Leu Asn Glu Lys Ala Val Gly Ile Glu				
	85	90	95	
tct cgc ctt ctt gcc att gct aag gag ttc cac aaa ttg aag tcc gtt				337
Ser Arg Leu Leu Ala Ile Ala Lys Glu Phe His Lys Leu Lys Ser Val				
	100	105	110	
ctg tgc acc ggc gtc aac gaa act ccc gct cat gtc gct aac agg gtg				385
Leu Cys Thr Gly Val Asn Glu Thr Pro Ala His Val Ala Asn Arg Val				
	115	120	125	
tca ccc gga gac gcc atc tcc atg ctt tac gtg ctt cct aac act cac				433
Ser Pro Gly Asp Ala Ile Ser Met Leu Tyr Val Leu Pro Asn Thr His				
	130	135	140	
agg gaa ttg tct agc ctt aag aat aag atc gat gaa tgg aag aag gtc				481
Arg Glu Leu Ser Ser Leu Lys Asn Lys Ile Asp Glu Trp Lys Lys Val				
	145	150	155	160
aag gca tct gac aat ggc acc aat gtg atc aaa aat atc aag gac gac				529
Lys Ala Ser Asp Asn Gly Thr Asn Val Ile Lys Asn Ile Lys Asp Asp				
	165	170	175	
agg act aac acc tgg ttc gtt gcc cat gga ttc aag gta gct gag ctc				577
Arg Thr Asn Thr Trp Phe Val Ala His Gly Phe Lys Val Ala Glu Leu				
	180	185	190	
aac gat gta acc ctt gag aaa ctt gca aca gtg gtt aaa aaa ttg gtg				625
Asn Asp Val Thr Leu Glu Lys Leu Ala Thr Val Val Lys Lys Leu Val				
	195	200	205	
tcc cac aaa gat atg aaa tac att aac aaa gtt atg aaa aaa tat ttt				673
Ser His Lys Asp Met Lys Tyr Ile Asn Lys Val Met Lys Lys Tyr Phe				
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gac agg cag aaa aag gag gct gaa aga ttg acc aaa aag gcc gag aag				721
Asp Arg Gln Lys Lys Glu Ala Glu Arg Leu Thr Lys Lys Ala Glu Lys				
	225	230	235	240
ggg atg tct gga ggt aag tat aag gtg aaa ggt tat gca gcc ccc tct				769
Gly Met Ser Gly Gly Lys Tyr Lys Val Lys Gly Tyr Ala Ala Pro Ser				
	245	250	255	
act tgg atg cta tga ccatgcatac aagttgcaac taacaattaa cattttgaag				824
Thr Trp Met Leu				
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Met Lys Gly Phe Phe Gly Ile Ile Leu Ser Ile Ile Phe Val Arg Ala  
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Val Ser Cys Thr Glu Asp Glu Asn Arg Asp Ser Val Val Glu Gly Ala  
 35 40 45

Thr Ser Val Glu Ala Ser Leu Lys Glu Gln Ile Asp Trp Leu Ala Glu  
 50 55 60

Arg Tyr Ser Ala Asp Leu Thr Asn Lys Asp Thr Ser Lys Trp Asn Thr  
 65 70 75 80

Glu Glu Gln Val Lys Glu Leu Leu Asn Glu Lys Ala Val Gly Ile Glu  
 85 90 95

Ser Arg Leu Leu Ala Ile Ala Lys Glu Phe His Lys Leu Lys Ser Val  
 100 105 110

Leu Cys Thr Gly Val Asn Glu Thr Pro Ala His Val Ala Asn Arg Val  
 115 120 125

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

Arg Glu Leu Ser Ser Leu Lys Asn Lys Ile Asp Glu Trp Lys Lys Val  
 145 150 155 160

Lys Ala Ser Asp Asn Gly Thr Asn Val Ile Lys Asn Ile Lys Asp Asp  
 165 170 175

Arg Thr Asn Thr Trp Phe Val Ala His Gly Phe Lys Val Ala Glu Leu  
 180 185 190

Asn Asp Val Thr Leu Glu Lys Leu Ala Thr Val Val Lys Lys Leu Val  
 195 200 205

Ser His Lys Asp Met Lys Tyr Ile Asn Lys Val Met Lys Lys Tyr Phe  
 210 215 220

Asp Arg Gln Lys Lys Glu Ala Glu Arg Leu Thr Lys Lys Ala Glu Lys  
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