determined by the Meso Scale SECTOR Imager. By inserting the numerical value in the formula "Predictor" above, a predictor value is obtained, which is compared to the cutoff and/or threshold value.

Table 1: 25 peptides model

25 Peptides MODEL		
Peptide identification (SEQ ID NO)	**Peptide identification (internal)**	**Coefficient**
	(Intercept)	-15.0948
11	#16	1.878155
8	#117	-49.108
1	#286	-16.4289
3	#493	24.11767
16	#523	-3.74674
2	#720	39.89181
18	#117/635	3.49733
9	#5	-3.21744
7	#349	-13.1504
12	#453	-19.78
24	#A21/635	10.3537
4	#68/524	27.37549
15	#15	-12.5612
17	#109	-7.82582
6	#139	15.05732
5	#140	11.3804
22	#188	4.024697
19	#368	-8.8073
25	RING	0.246625
21	EX4..1.	-0.23952
13	EX4..2.	-5.00989
23	LINK	-0.17352
20	BRCT.1.	0.726563
14	BRCT.2.	1.645815
10	#-4	3.05931

Various cutoffs were estimated and might be used to distinguish between positive or negative. The choice of each cutoffs affect the specificity and/or sensitivity of the model. For a Maximum Specificity and Sensitivity, Cutoffs = 0.08131021.

The cutoff value represents the threshold value for the outcome of the diagnostic test. If the

CLAIMS:

1. An *in vitro* and/or *ex vivo* method for diagnosing lung cancer in a mammalian subject, the method comprising the steps of:

a) determining, on the basis of a blood or serum sample taken from the subject, parameters related to the reactivity of antibodies specifically binding to a combination of at least 11 different peptides comprising a stretch of the amino acid sequence of human BARD1 and/or of an isoform thereof

b) diagnosing, on the basis of the parameters obtained in the previous step, whether said subject suffers or not from lung cancer;

wherein the combination of at least 11 different peptides is selected from a group of forty-one peptides, wherein each peptide of said group of forty-one peptides comprises and/or consists essentially of, respectively, one of the forty-one amino acid sequences of the group consisting of SEQ ID NO: 1 to 41.

2. Use of a combination of at least 11 different peptides comprising a stretch of the amino acid sequence of human BARD1 and/or of an isoform thereof in an *in vitro* and/or *ex vivo* method for lung cancer screening, monitoring, diagnosis, and prognosis;

wherein the combination of at least 11 different peptides is selected from a group of forty-one peptides, wherein each peptide of said group of forty-one peptides comprises and/or consists essentially of, respectively, one of the forty-one amino acid sequences of the group consisting of SEQ ID NO: l to 41.

3. The method of any one of the preceding claims, wherein a parameter related to the reactivity of antibodies is determined separately for each peptide, so as to obtain a plurality of said parameters in which each individual parameter is related to the reactivity of antibodies binding to one specific peptide of said different peptides.

4. The method of any one of the preceding claims, wherein step b) comprises the step of calculating a test value for the subject on the basis of said parameters and from a statistically determined coefficient specific to each peptide.

5. The method of claim 4, further comprising the step of diagnosing, by comparing said test value with a threshold value, whether said subject suffers or not from lung cancer.

6. The method of any one of the preceding claims, wherein said peptides have, independently, a length of 4 to 300, or 8 to 250 amino acids.

7. The method of any one of the preceding claims, wherein said different peptides consist of 11 to 35, or 11 to 30, or 17 to 28 different peptides.

8. The method of any one of the preceding claims, wherein said different peptides comprise several groups of peptides, a group A of peptides, a group B of peptides, a group C of peptides, a group D of peptides and a group E of peptides, wherein said group A comprises one or more peptides comprising or consisting of amino acid sequences selected from the group consisting of: SEQ ID NO: l; SEQ ID NO: 2; SEQ ID NO: 3; SEQ ID NO: 4; SEQ ID NO: 5; SEQ ID NO: 6; SEQ ID NO: 7; and SEQ ID NO: 8; SEQ ID NO: 9; and SEQ ID NO: 10, said group B comprises one or more peptides comprising amino acid sequences selected from the group consisting of: SEQ ID NO: 11; SEQ ID NO: 12; SEQ ID NO: 13; SEQ ID NO: 14 and SEQ ID NO: 15; SEQ ID NO: 16; and SEQ ID NO: 17, said group C comprises one or more peptides comprising amino acid sequences selected from the group consisting of: SEQ ID NO: 18; SEQ ID NO: 19; SEQ ID NO: 20; SEQ ID NO: 21; SEQ ID NO: 22 and SEQ ID NO: 23; SEQ ID NO: 24; and SEQ ID NO: 25, said group D comprises one or more peptides comprising amino acid sequences selected from the group consisting of: SEQ ID NO: 26; SEQ ID NO: 27; SEQ ID NO: 28; SEQ ID NO: 29 and SEQ ID NO: 30; SEQ ID NO: 31; SEQ ID NO: 32; SEQ ID NO: 33 and SEQ ID NO: 34, said group E comprises one or more peptides comprising amino acid 30 sequences selected from the group consisting of: SEQ ID NO: 35; SEQ ID NO: 36; SEQ ID NO: 37; SEQ ID NO: 38; SEQ ID NO: 39; SEQ ID NO: 40 and SEQ ID NO: 41, said combination of peptides comprises one or more peptides selected from said group A and one or more peptides selected from said any one of said groups B, C, D, and/or E.

9. The method of claim 8, wherein said different peptides comprise five or more peptides selected from said group A; two or more peptides selected from group B, and two or more peptides selected from group C.

10. The method of any one of claims 1 to 7, wherein said at least 11 different peptides comprise peptides comprising amino acid sequences of selected from the group consisting of: SEQ ID NO: 1-5; 11-13; and 18-20.

11. An *in vitro* and/or *ex vivo* method of claim 1 for diagnosing lung cancer in a female human subject, the method comprising the steps of:

a) determining, on the basis of a blood or serum sample taken from the female subject, parameters related to the reactivity of antibodies specifically binding to at least 19 different peptides, wherein said peptides are peptides comprising the amino acid sequences SEQ ID NO: l to SEQ ID NO: 6; SEQ ID NO: 11 to SEQ ID NO: 14; SEQ ID NO: 18 to SEQ ID NO: 21; SEQ ID NO: 26 to SEQ ID NO: 30, respectively;

b) diagnosing, on the basis of the parameters obtained in the previous step, whether said female subject suffers or not from lung cancer.

12. An *in vitro* and/or *ex vivo* method of claim 1 for diagnosing lung cancer in a male human subject, the method comprising the steps of:

a) determining, on the basis of a blood or serum sample taken from the female subject, parameters related to the reactivity of antibodies specifically binding to at least 22 different peptides, wherein said peptides are peptides comprising the amino acid sequences SEQ ID NO: l to SEQ ID NO: 5; SEQ ID NO: 7; SEQ ID NO: 8; SEQ ID NO: 11 to SEQ ID NO: 13; SEQ ID NO: 15; SEQ ID NO: 18 to SEQ ID NO: 20; SEQ ID NO: 22; SEQ ID NO: 23; SEQ ID NO: 31 to 26; SEQ ID NO: 27; and SEQ ID NO: 31 to SEQ ID NO: 34, respectively;

b) diagnosing, on the basis of the parameters obtained in the previous step, whether said male subject suffers or not from lung cancer.