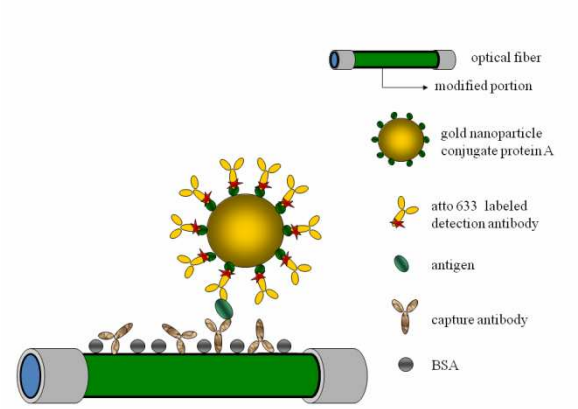

Figure S1. Immunocomplex on the modified portion of the fiber surface

The stages of breast cancer group are shown in Table S1. From this data, if we took the samples of stage III (B1, B6 and B8) away to analyze the expression levels of t-PSA in the clinical serum samples from eight healthy women and five women with breast cancer (stage I or stage II), lower levels of normalized fluorescence signals are shown in non-cancer group than that in breast cancer group without stage III. These results are illustrated in Fig. S2. The mean value and median of normalized fluorescence signals in the breast cancer group are 124.1 and 119.3 a.u. respectively. They are both higher than those in the non-cancer group at 46.6 and 37.1 a.u. respectively as shown in Table S2. To search for criteria providing optimal discrimination, we used the programs (kindly provided by John Eng ROC analysis, web-based calculator for ROC curve, Johns Hopkins University, Baltimore, MD, USA; http://www.jrocfit.org.) for calculating receiver operating characteristic (ROC) curve as shown in Fig. S3. For the

empirical ROC curve and the fitted ROC curve, the areas under the curve (AUC) were 0.8500 and 0.8667, respectively.

Based on the preliminary analysis given above, it is potentially helpful to differentiate healthy and breast cancer-bearing (only stage I and stage II) women by testing t-PSA levels in women serum using LSPCF-FOB. According to the American Cancer Society (ACS), the 5-year relative survival rate of breast cancer stage I and breast cancer stage II are 96% and 86%, respectively [1]. Thus, if we can distinguish stage I and stage II from breast cancer-bearing women, it is potentially helpful to treatment.

Table S1. Breast cancer stage of the samples

Sample No.	Stage	Normalized fluorescence signal (a.u.)	Sample No.	Stage	Normalized fluorescence signal (a.u.)
B1	3A (stage III)	298.17	N1	normal	4.01
B2	2 (stage II)	119.26	N2	normal	93.54
B3	2A (stage II)	174.18	N3	normal	4.95
B4	2A (stage II)	60.41	N4	normal	9.21
B5	1 (stage I)	172.18	N5	normal	1.05
B6	3 (stage III)	113.84	N6	normal	95.21
B7	2B (stage II)	94.28	N7	normal	100.06
B8	3A (stage III)	209.51	N8	normal	65.08

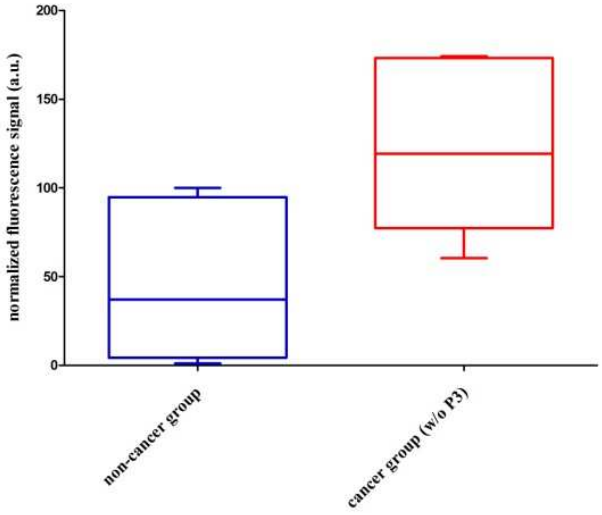

Fig. S2. Box and whisker plots of normalized fluorescence signal levels from non-cancer group and breast cancer group (without stage III). The median (middle line), 25th and 75th percentiles (lower and upper boundaries of the box, respectively), and lowest and highest data within lower and upper hatch lines are illustrated.

Table S2. Mean and median t-PSA expression based on breast cancer (without stage III) and a non-cancer group. N is the number of samples.

	N	t-PSA levels [normalized fluorescence signal (a.u.)]	
		Mean	Median
breast cancers (without stage III)	5	124.1	119.3
non-cancer group	8	46.6	37.1

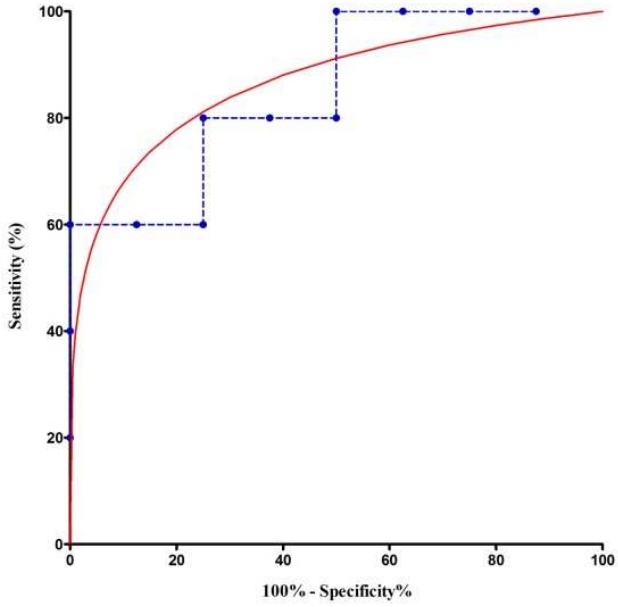

Fig. S3. Empirical (blue line) and fitted (red line) receiver operating characteristic (ROC) curves for total (t)-prostate-specific antigen (PSA) as described in the text.

References

1. Website of American Cancer Society: http://tinyurl.com/3s295jo