Supplement to
Non-Randomness of the Anatomical Distribution of Tumors

Parameter Sensitivity

In this supplement, we show the sensitivity of our results to the parameters used. Figure S1 shows that the dependence on the radius of the sampling circles is weak.

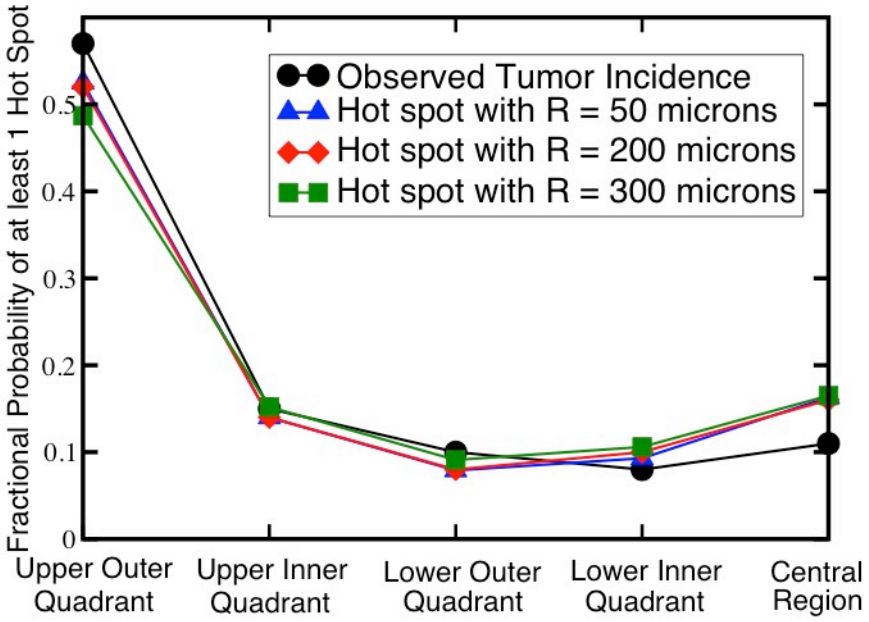

Figure S1: Dependence on the radius of the sampling circle. Comparison of the observed distribution of breast tumor locations from (1) with the fractional probability of at least one hot spot in the different regions of the breast assuming a Poisson distribution of microvessels in 2D. In our simulation, the sampling circles had varying radii as indicated in the legend. A hot spot was defined as a sampling circle with at least 5 microvessels. The 2D mean microvessel density was set to 1 microvessel/mm^2 (2). The rest of the parameters are the same as in Figure 4 in the main text.

The dependence on the definition of the minimum number of microvessels in a microvascular hot spot is shown in Figure S2. A hot spot is defined as a sampling circle with at least *n* microvessels. In Figure S2 the radius of the circle is 200 microns which is comparable to the oxygen diffusion length (3-7). If n ≤ 3 microvessels, then the definition of a hot spot is easily satisfied and there is a good chance that every region of the breast will have at least one hot spot. For $n \geq 4$, then the fractional probability that there is at least one hot spot in a region of the breast is similar to that of $n = 5$ which matches well with the observed tumor incidence.

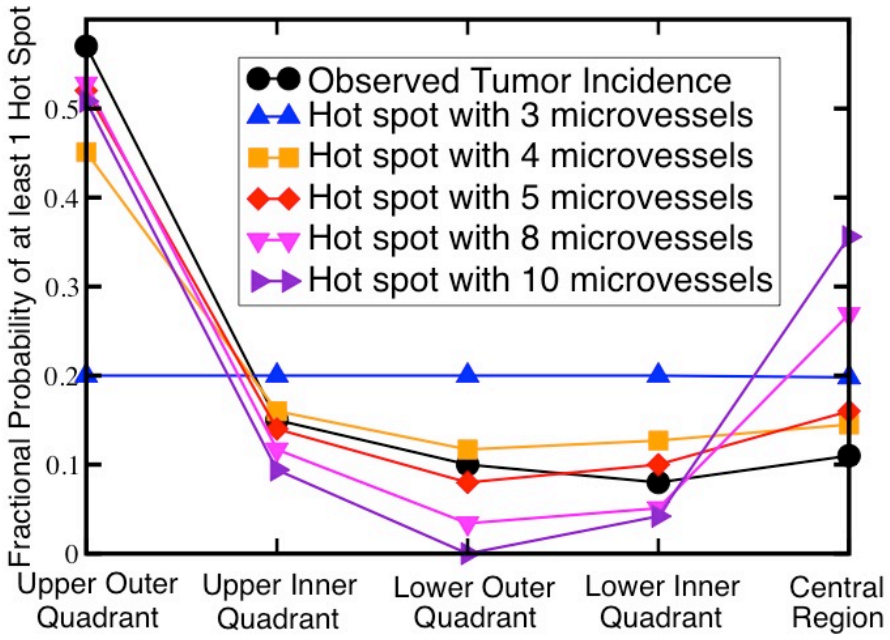

Figure S2: Dependence on minimum number of microvessels in a microvascular hot spot. Comparison of the observed distribution of breast tumor locations from (1) with the fractional probability of at least one hot spot in the different regions of the breast assuming a Poisson distribution of microvessels in 2D. In our simulation, the sampling circles had a radius of 200 microns. A hot spot was defined as a sampling circle with at least n microvessels where the value of n is shown in the legend. The 2D mean microvessel density was set to 1 microvessel/mm^2 (2). The rest of the parameters are the same as in Figure 4 in the main text.

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