H-scan imaging and quantitative measurement to distinguish melanoma metastasis

Jihye Baek
Department of Electrical and Computer Engineering
University of Rochester
Rochester ! " U#$
%&aek' (ur)rochester)edu

#huyang #) *in
Department of +icro&iology ,
-mmunology University of Rochester
#chool of +edicine , Dentistry
University of Rochester Rochester
! " U#$
#huyang.*in (UR+C)Rochester)edu

/eter $) /rieto
Department of #urgery University of Rochester +edical Center
University of Rochester Rochester
! " U#$
/eter./rieto (UR+C)Rochester)edu

0evin J) /arker

fraction or percentage of higher frequency scattering encoded as &lue color 2hich is kno2n as percent &lue 5< &lue63

$$\%\ \text{blue} \quad \text{———————} \quad 100. \qquad (1)$$

H-scan analysis results in color levels for all piEels of input RK data) 1he color levels range from @ to 7;J ?BA9 levels @-@7: are considered red in color 2hile levels @7B-7;J are considered &lue in color) 1hus the num&er of piEels having color level &et2een @7B and 7;J is the numerator of 5@6) Utili4ing the color levels o&tained &y H-scan analysis 2e calculated the signal-to-noise ratio 5# ! R6 of the color levels3

$$\text{H-scan } \#\,!\,R \qquad / \qquad (2)$$

2here and are the mean and standard deviation of the color levels respectively) -n addition to the # ! R of the H-scan 2e also measured the # ! R of the B-scan envelope data3

$$\text{B-scan } \#\,!\,R \qquad {}_{!} / {}_{!}$$

-8) C> ! CGU#-> !

1he H-scan analysis is capa&le of distinguishing &et2een the "U++ and "U++ER su&types of melanoma) H-scan parameters can differentiate the su&types 2ith lo2 p-value 5OC)C;6 and high classification accuracy 5::);<6 and H-scan imaging also sho2s a color difference &et2een the t2o) 1his difference is not noticea&le in B-scan parameters and imaging) Piven that "U++ER melanoma tumors contain more immune cells 2ithin their 1+E than "U++ melanoma tumors H-scan may detect the immune cell num&er difference ?@; @JA) 1he potential for H-scan analysis to predict melanoma treatment response requires further investigations)

1herefore the H-scan approach 2ith the parameters is promising for the clinical differentiation of immunologically distinct melanoma 1+Es) =e anticipate clinical use of H-scan parameters for melanoma diagnosis as 2ell as the monitoring of treatment response in heterogenous metastatic disease)

$C0!>=GEDP+E!1

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?@FA J)Baek and 0)J)/arker QH-scan tra%ectories indicate the

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