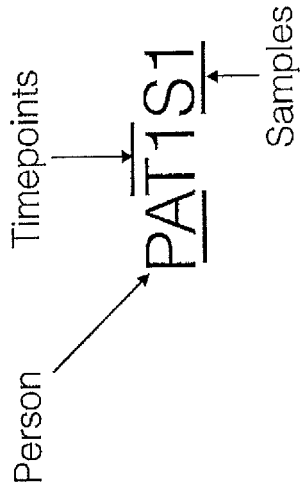


FIG 1

Sample: PAT1S1 ; Total reads: 3974309 ; Unique CDR3s: 449654 ; top 1000 CDR3s: 20.43%
Sample: PAT1S1 ; Total reads: 3974309 ; Unique CDR3s: 449654 ; top 1000 CDR3s: 20.43%
Sample: PAT1S2 ; Total reads: 4052780 ; Unique CDR3s: 455230 ; top 1000 CDR3s: 19.97%
Sample: PAT1S3 ; Total reads: 4303142 ; Unique CDR3s: 461171 ; top 1000 CDR3s: 20.10%
Sample: PAT2S1 ; Total reads: 5118708 ; Unique CDR3s: 342145 ; top 1000 CDR3s: 21.60%
Sample: PAT2S2 ; Total reads: 5533076 ; Unique CDR3s: 346387 ; top 1000 CDR3s: 21.24%
Sample: PAT2S3 ; Total reads: 5801681 ; Unique CDR3s: 344977 ; top 1000 CDR3s: 21.59%
Sample: PAT3S1 ; Total reads: 901356 ; Unique CDR3s: 221187 ; top 1000 CDR3s: 32.59%
Sample: PAT3S2 ; Total reads: 922392 ; Unique CDR3s: 220299 ; top 1000 CDR3s: 32.55%
Sample: PBT1S1 ; Total reads: 3758122 ; Unique CDR3s: 84737 ; top 1000 CDR3s: 37.02%



Obtain a fraction

[illegible]

multiply each CDR3s reads by
2.516 (=10,000,000.00/3,974,309)

E Sort based on Delta

[illegible][illegible]

Then, sort the CDR3s based on the ranking of Delta value. Those CDR3s with the most dramatic change will be ranked on top. They are the most dynamic clones.

Process data from sample PAT1S2 the same way as PAT1S1, and obtain the difference between the two frequencies. Take the absolute values, as some delta may be positive, and some negative.

FIG 4

Signal optimization

	H	I	J
	Top 100 CDR3s	Top 1000 CDR3s	Top 10000 CDR3s
	PAT1S1: 7.45% PAT1S2: 7.09% Average: 7.27% DeltaIndex: 6.53%	PAT1S1: 15.76% PAT1S2: 15.22% Average: 15.49% DeltaIndex: 9.60%	PAT1S1: 27.77% PAT1S2: 27.21% Average: 27.47% DeltaIndex: 18.65%
	PAT1S1: 9.00% PAT2S1: 9.89% Average: 9.45% DeltaIndex: 30.71%	PAT1S1: 17.72% PAT2S1: 19.04% Average: 18.38% DeltaIndex: 30.39%	PAT1S1: 29.48% PAT2S1: 33.52% Average: 31.50% DeltaIndex: 36.12%
	<div>Signal:Noise 30.71/6.53=4.7</div>	<div>Signal:Noise 30.39/9.60=3.15</div>	<div>Signal:Noise 36.12/18.65=1.94</div>

What the Delta Index really means is this: If we consider the 7.27% impact range (percent of repertoire contributed by the top 100 clones) as a new "sampled repertoire" (and now it is 100%), within this "sample repertoire", 6.53% has changed between samples PAT1S1 and PAT1S2.

A general description of Delta index can be: It is a measurement of repertoire turn over rate caused by the most dynamic clones.

How many top clones should we include in calculating Delta Index? The more top clones we include, the more "noise" (experimental variables, observed as the Delta index between the two samples of the same person at the same time point (PAT1S1 and PAT1S2)). On the other hand, more top clones included may not increase signal (Delta index between the same individuals two samples of different time points, such as PAT1S1 and PAT2S1). Therefore, the best signal to noise ratio is obtained by selecting the top 100 CDR3s.

FIG 5

Results of Delta Index

