Sequential vs MPI(Column) vs OpenMP (in Seconds)						
Allocate Points						
	Seq	MPI (min) MPI (max) OpenMP				
10000	0	0	0	0		
50000	0	0	0	0		
90000	0	0	0	0		

1 —				
_				Seq
1 +				• • • • MPI (min)
				MPI (max)
$\mid_0 \downarrow$				OpenMP
	10000	50000	90000	—— Openivir

Allocate and Calculate Distance					
Seq MPI (min) MPI (max) OpenMP					
10000	12	4	7	1	
50000	271	98	143	44	
90000	883	382	466	97	

1000 —				
				Seq
500				• • • • MPI (min)
		2.50		MPI (max)
0 +				OpenMP
	10000	50000	90000	

Get Minimum Distance Per Row						
	Seq	MPI (min) MPI (max) OpenMF				
10000	1	1	1	0		
50000	7	145	191	4		
90000	38	612	790	15		

1000				
1000				Seq
500 -				• • • • MPI (min)
		m. 44		MPI (max)
0 -		1		OpenMP
	10000	50000	90000	·

Clustering					
	Seq	MPI (min) MPI (max) OpenMF			
10000	21	9	9	11	
50000	1435	118	118	1154	
90000	4368	345	345	2702	

6000 —				
				Seq
4000				• • • • MPI (min)
2000				MPI (max)
0	- 11			, ,
	10000	50000	90000	OpenMP

Total					
Seq MPI (min) MPI (max) OpenMF				OpenMP	
10000	34	17	17	12	
50000	1713	452	452	1202	
90000	5289	1602	1602	2814	

