

Supplementary Table 2. Binning summary for contigs larger than 8 Kb and larger than 10 reads. The numbers of bins generated by each method, the corresponding number of contigs and average and standard deviation of specificity and sensitivity values for each combination of assembly / binning method used are rerorted.

Dataset	Bin method	Assembler	Number of bins	Binned contigs	Binned sequence (bp)	Specificity (average)	Sensitivity (std deviation)	Specificity (average)	Sensitivity (std deviation)
Contigs ≥ 8 Kb									
simMC	kmer (7mer)	Arachne	2	301	4095911	0	0	0	0
simMC	kmer (7mer)	JAZZ	11	106	4812668	0	0	0	0
simMC	kmer (7mer)	Phrap	3	400	4821064	0	0	0	0
simMC	kmer (8mer)	Arachne	6	299	4079262	0	0	0	0
simMC	kmer (8mer)	JAZZ	5	187	5818024	0	0	0	0
simMC	kmer (8mer)	Phrap	8	401	4830758	0	0	0	0
simMC	gen PhyloPythia (p:0.5)	Arachne	5	301	4095911	0.99	0	0.52	0.26
simMC	gen PhyloPythia (p:0.5)	JAZZ	4	189	6374176	0.94	0.11	0.71	0.45
simMC	gen PhyloPythia (p:0.5)	Phrap	4	399	4809606	1	0	0.5	0.38
simMC	gen PhyloPythia (p:0.85)	Arachne	7	299	4071575	1	0	0.28	0.34
simMC	gen PhyloPythia (p:0.85)	JAZZ	7	166	6006127	0.97	0.06	0.35	0.42
simMC	gen PhyloPythia (p:0.85)	Phrap	8	393	4732465	1	0	0.24	0.26
simMC	ssp PhyloPythia (p:0.5)	Arachne	2	301	4095911	1	0	1	0
simMC	ssp PhyloPythia (p:0.5)	JAZZ	2	84	2557665	1	0	0.61	0
simMC	ssp PhyloPythia (p:0.5)	Phrap	2	399	4809606	1	0	0.99	0
simMC	ssp PhyloPythia (p:0.85)	Arachne	5	301	4095911	1	0	0.39	0.42
simMC	ssp PhyloPythia (p:0.85)	JAZZ	4	82	2540978	1	0	0.28	0.44
simMC	ssp PhyloPythia (p:0.85)	Phrap	6	401	4830758	1	0	0.32	0.38
simMC	BLAST distr 1	Arachne	3	263	3609443	0.59	0.52	0.53	0.47
simMC	BLAST distr 1	JAZZ	3	165	5118293	0.57	0.51	0.51	0.45
simMC	BLAST distr 1	Phrap	3	337	4074262	0.57	0.51	0.51	0.45
simMC	BLAST distr 2	Arachne	3	283	3838263	0.57	0.51	0.54	0.49
simMC	BLAST distr 2	JAZZ	3	186	6139934	0.57	0.51	0.58	0.51
simMC	BLAST distr 2	Phrap	4	379	4534815	0.42	0.5	0.41	0.48
simLC	kmer (7mer)	Arachne	3	202	4593193	0	0	0	0
simLC	kmer (7mer)	JAZZ	2	5	4532132	0	0	0	0
simLC	kmer (7mer)	Phrap	2	229	4693257	0	0	0	0
simLC	kmer (8mer)	Arachne	9	200	4498207	0	0	0	0
simLC	kmer (8mer)	JAZZ	2	6	700002	0	0	0	0
simLC	kmer (8mer)	Phrap	5	225	4532759	0	0	0	0
simLC	gen PhyloPythia (p:0.5)	Arachne	2	201	4584828	1	0	0.49	0
simLC	gen PhyloPythia (p:0.5)	JAZZ	1	10	4599929	0.8	0	1	0
simLC	gen PhyloPythia (p:0.5)	Phrap	2	227	4675877	1	0	0.5	0
simLC	gen PhyloPythia (p:0.85)	Arachne	5	202	4593193	1	0	0.19	0.25
simLC	gen PhyloPythia (p:0.85)	JAZZ	2	9	4586966	1	0	0.53	0
simLC	gen PhyloPythia (p:0.85)	Phrap	4	227	4669347	1	0	0.24	0.36
simLC	ssp PhyloPythia (p:0.5)	Arachne	1	201	4584828	1	0	0.99	0
simLC	ssp PhyloPythia (p:0.5)	JAZZ	1	8	3356926	1	0	0.8	0
simLC	ssp PhyloPythia (p:0.5)	Phrap	1	227	4675877	1	0	0.99	0
simLC	ssp PhyloPythia (p:0.85)	Arachne	4	202	4593193	1	0	0.24	0.39
simLC	ssp PhyloPythia (p:0.85)	JAZZ	1	7	3348171	1	0	0.7	0
simLC	ssp PhyloPythia (p:0.85)	Phrap	3	227	4669347	1	0	0.32	0.41
simLC	BLAST distr 1	Arachne	3	176	4117374	0.33	0.57	0.24	0.42

simLC	BLAST distr 1	JAZZ	1	8	4571693	1	0	0.8	0
simLC	BLAST distr 1	Phrap	3	193	4115220	0.33	0.57	0.23	0.4
simLC	BLAST distr 2	Arachne	3	197	4503351	0.33	0.57	0.26	0.45
simLC	BLAST distr 2	JAZZ	1	8	4571693	1	0	0.8	0
simLC	BLAST distr 2	Phrap	3	221	4586553	0.33	0.57	0.26	0.45
simHC	kmer (7mer)	Arachne	0	0	0	0	0	0	0
simHC	kmer (7mer)	JAZZ	0	0	0	0	0	0	0
simHC	kmer (7mer)	Phrap	0	0	0	0	0	0	0
simHC	kmer (8mer)	Arachne	0	0	0	0	0	0	0
simHC	kmer (8mer)	JAZZ	0	0	0	0	0	0	0
simHC	kmer (8mer)	Phrap	0	0	0	0	0	0	0
simHC	gen PhyloPythia (p:0.5)	Arachne	0	0	0	0	0	0	0
simHC	gen PhyloPythia (p:0.5)	JAZZ	0	0	0	0	0	0	0
simHC	gen PhyloPythia (p:0.5)	Phrap	0	0	0	0	0	0	0
simHC	gen PhyloPythia (p:0.85)	Arachne	0	0	0	0	0	0	0
simHC	gen PhyloPythia (p:0.85)	JAZZ	0	0	0	0	0	0	0
simHC	gen PhyloPythia (p:0.85)	Phrap	0	0	0	0	0	0	0
simHC	ssp PhyloPythia (p:0.5)	Arachne	0	0	0	0	0	0	0
simHC	ssp PhyloPythia (p:0.5)	JAZZ	0	0	0	0	0	0	0
simHC	ssp PhyloPythia (p:0.5)	Phrap	0	0	0	0	0	0	0
simHC	ssp PhyloPythia (p:0.85)	Arachne	0	0	0	0	0	0	0
simHC	ssp PhyloPythia (p:0.85)	JAZZ	0	0	0	0	0	0	0
simHC	ssp PhyloPythia (p:0.85)	Phrap	0	0	0	0	0	0	0
simHC	BLAST distr 1	Arachne	0	0	0	0	0	0	0
simHC	BLAST distr 1	JAZZ	0	0	0	0	0	0	0
simHC	BLAST distr 1	Phrap	0	0	0	0	0	0	0
simHC	BLAST distr 2	Arachne	0	0	0	0	0	0	0
simHC	BLAST distr 2	JAZZ	0	0	0	0	0	0	0
simHC	BLAST distr 2	Phrap	0	0	0	0	0	0	0

Contigs \geq 10 reads

simMC	kmer (7mer)	Arachne	5	1370	8980208	0	0	0	0
simMC	kmer (7mer)	JAZZ	12	180	5119994	0.02	0.09	0	0
simMC	kmer (7mer)	Phrap	6	1979	12120490	0	0	0	0
simMC	kmer (8mer)	Arachne	9	1370	8973285	0	0	0	0
simMC	kmer (8mer)	JAZZ	6	275	6284303	0.1	0.24	0	0.01
simMC	kmer (8mer)	Phrap	9	1980	12125109	0	0	0	0
simMC	gen PhyloPythia (p:0.5)	Arachne	14	1362	8952723	0.72	0.41	0.27	0.32
simMC	gen PhyloPythia (p:0.5)	JAZZ	8	455	7573326	0.84	0.34	0.47	0.44
simMC	gen PhyloPythia (p:0.5)	Phrap	20	1975	12108429	0.49	0.47	0.13	0.2
simMC	gen PhyloPythia (p:0.85)	Arachne	10	1341	8860872	0.89	0.31	0.18	0.14
simMC	gen PhyloPythia (p:0.85)	JAZZ	10	402	7037119	0.88	0.31	0.24	0.32
simMC	gen PhyloPythia (p:0.85)	Phrap	11	1920	11858567	0.89	0.3	0.17	0.12
simMC	ssp PhyloPythia (p:0.5)	Arachne	13	1364	8960567	0.55	0.47	0.26	0.37
simMC	ssp PhyloPythia (p:0.5)	JAZZ	7	191	2992441	0.85	0.37	0.3	0.43
simMC	ssp PhyloPythia (p:0.5)	Phrap	17	1975	12108429	0.41	0.47	0.15	0.26
simMC	ssp PhyloPythia (p:0.85)	Arachne	7	1356	8939585	0.85	0.37	0.23	0.19
simMC	ssp PhyloPythia (p:0.85)	JAZZ	8	188	2987393	0.75	0.46	0.11	0.21
simMC	ssp PhyloPythia (p:0.85)	Phrap	8	1939	12009353	0.87	0.35	0.24	0.16

simMC	BLAST distr 1	Arachne	12	1046	7268264	0.13	0.32	0.1	0.25
simMC	BLAST distr 1	JAZZ	5	364	6015063	0.33	0.47	0.27	0.38
simMC	BLAST distr 1	Phrap	11	1492	9546305	0.15	0.35	0.14	0.26
simMC	BLAST distr 2	Arachne	13	1249	8332463	0.12	0.31	0.11	0.27
simMC	BLAST distr 2	JAZZ	6	438	7276557	0.27	0.43	0.26	0.4
simMC	BLAST distr 2	Phrap	14	1795	11223276	0.15	0.32	0.2	0.35
simLC	kmer (7mer)	Arachne	4	367	5335933	0	0	0	0
simLC	kmer (7mer)	JAZZ	4	21	4602690	0	0	0	0
simLC	kmer (7mer)	Phrap	5	476	5793374	0	0	0	0
simLC	kmer (8mer)	Arachne	12	365	5245412	0	0	0	0
simLC	kmer (8mer)	JAZZ	5	40	825822	0.02	0.04	0.2	0.44
simLC	kmer (8mer)	Phrap	14	480	5805508	0	0	0	0
simLC	gen PhyloPythia (p:0.5)	Arachne	9	365	5329161	0.78	0.34	0.37	0.35
simLC	gen PhyloPythia (p:0.5)	JAZZ	3	59	4808896	0.81	0.31	0.88	0.19
simLC	gen PhyloPythia (p:0.5)	Phrap	10	468	5763480	0.77	0.34	0.34	0.38
simLC	gen PhyloPythia (p:0.85)	Arachne	9	365	5329161	0.78	0.35	0.23	0.17
simLC	gen PhyloPythia (p:0.85)	JAZZ	2	41	4721876	0.81	0	0.49	0
simLC	gen PhyloPythia (p:0.85)	Phrap	10	446	5677021	0.89	0.31	0.31	0.29
simLC	ssp PhyloPythia (p:0.5)	Arachne	9	366	5332615	0.84	0.31	0.41	0.36
simLC	ssp PhyloPythia (p:0.5)	JAZZ	4	26	3422121	1	0	0.5	0.4
simLC	ssp PhyloPythia (p:0.5)	Phrap	9	470	5769303	0.76	0.33	0.37	0.39
simLC	ssp PhyloPythia (p:0.85)	Arachne	8	365	5329161	0.81	0.37	0.25	0.21
simLC	ssp PhyloPythia (p:0.85)	JAZZ	4	23	3412668	1	0	0.09	0.06
simLC	ssp PhyloPythia (p:0.85)	Phrap	9	447	5679501	0.88	0.33	0.34	0.29
simLC	BLAST distr 1	Arachne	4	284	4617888	0.28	0.47	0.33	0.39
simLC	BLAST distr 1	JAZZ	4	43	4715696	0.32	0.47	0.37	0.47
simLC	BLAST distr 1	Phrap	6	349	4816881	0.21	0.4	0.21	0.34
simLC	BLAST distr 2	Arachne	7	338	5184157	0.15	0.37	0.2	0.34
simLC	BLAST distr 2	JAZZ	5	54	4776187	0.24	0.43	0.32	0.46
simLC	BLAST distr 2	Phrap	10	429	5539910	0.17	0.33	0.24	0.4
simHC	kmer (7mer)	Arachne	1	19	58241	0	0	0	0
simHC	kmer (7mer)	JAZZ	1	9	23975	0.11	0	1	0
simHC	kmer (7mer)	Phrap	6	84	290705	0	0	0	0
simHC	kmer (8mer)	Arachne	2	20	64194	0	0	0	0
simHC	kmer (8mer)	JAZZ	3	16	60293	0.04	0.06	0.33	0.57
simHC	kmer (8mer)	Phrap	10	82	286224	0	0	0	0
simHC	gen PhyloPythia (p:0.5)	Arachne	0	0	0	0	0	0	0
simHC	gen PhyloPythia (p:0.5)	JAZZ	0	0	0	0	0	0	0
simHC	gen PhyloPythia (p:0.5)	Phrap	0	0	0	0	0	0	0
simHC	gen PhyloPythia (p:0.85)	Arachne	0	0	0	0	0	0	0
simHC	gen PhyloPythia (p:0.85)	JAZZ	0	0	0	0	0	0	0
simHC	gen PhyloPythia (p:0.85)	Phrap	0	0	0	0	0	0	0
simHC	ssp PhyloPythia (p:0.5)	Arachne	6	16	54304	0.61	0.37	0.29	0.21
simHC	ssp PhyloPythia (p:0.5)	JAZZ	3	7	34152	0.83	0.28	0.35	0.16
simHC	ssp PhyloPythia (p:0.5)	Phrap	16	77	264885	0.67	0.36	0.33	0.32
simHC	ssp PhyloPythia (p:0.85)	Arachne	4	15	46716	0.93	0.12	0.3	0.1
simHC	ssp PhyloPythia (p:0.85)	JAZZ	3	9	38819	0.83	0.28	0.39	0.1
simHC	ssp PhyloPythia (p:0.85)	Phrap	14	72	256853	0.73	0.37	0.25	0.21
simHC	BLAST distr 1	Arachne	2	9	30224	0.4	0	0.28	0
simHC	BLAST distr 1	JAZZ	1	3	10733	0.66	0	0.4	0
simHC	BLAST distr 1	Phrap	6	33	112873	0.65	0.38	0.4	0.28

simHC	BLAST distr 2	Arachne	5	15	45008	0.16	0.35	0.11	0.25
simHC	BLAST distr 2	JAZZ	2	5	19354	0.33	0	0.2	0
simHC	BLAST distr 2	Phrap	9	49	163151	0.47	0.34	0.49	0.39