

Supplementary Material

Supplementary datasets, figures and tables.

Supplementary Data Files

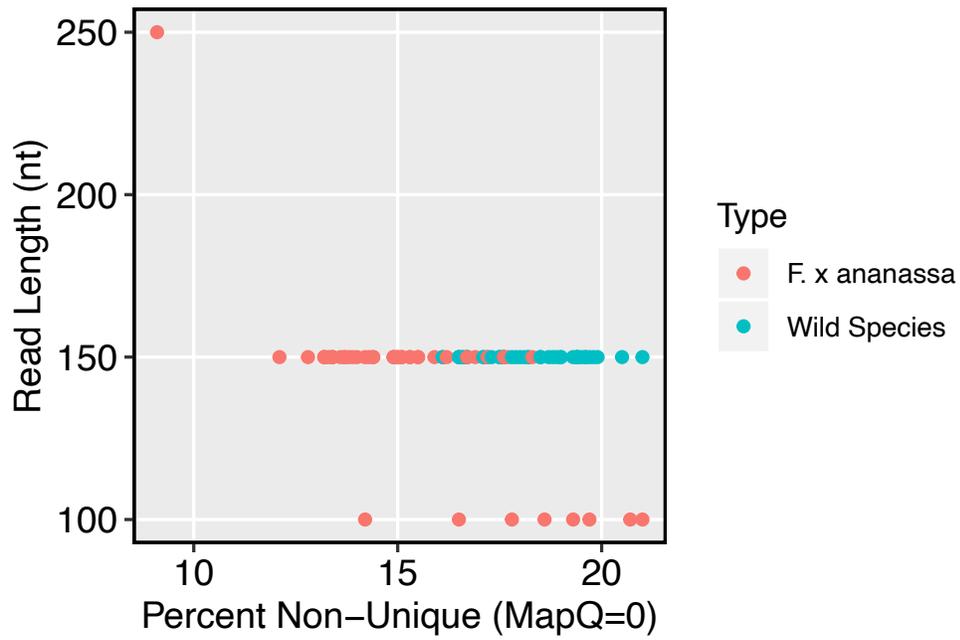
Supplementary Dataset 1. Summary of octoploid genetic maps generated by WGS sequencing, 50K SNP array, and DNA capture datasets.

Supplementary Dataset 2. 850K screening array diversity panel of octoploid strawberry cultivars and wild accessions.

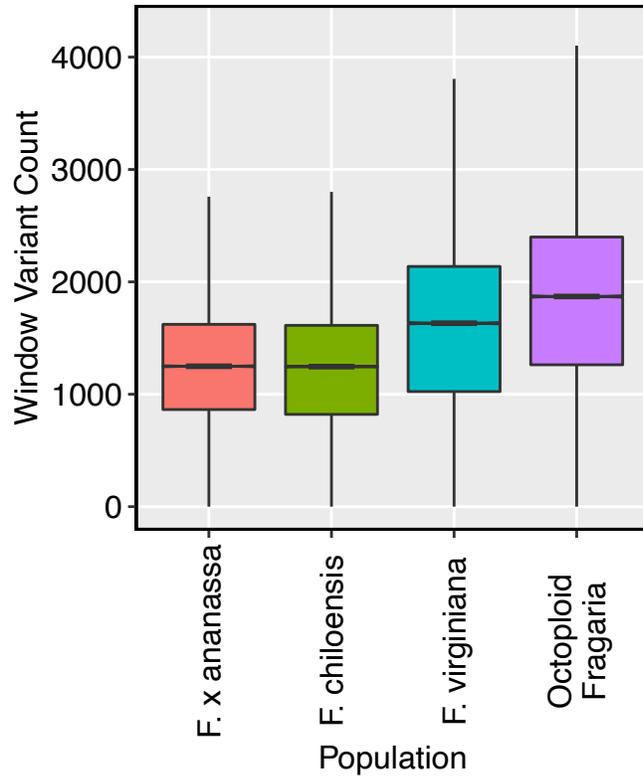
Supplementary Dataset 3. Panel of 446,644 validated marker probes from the 850K SNP screening array.

Supplementary Dataset 4. Panel of 49,483 marker probes selected for populating the 50K SNP production array.

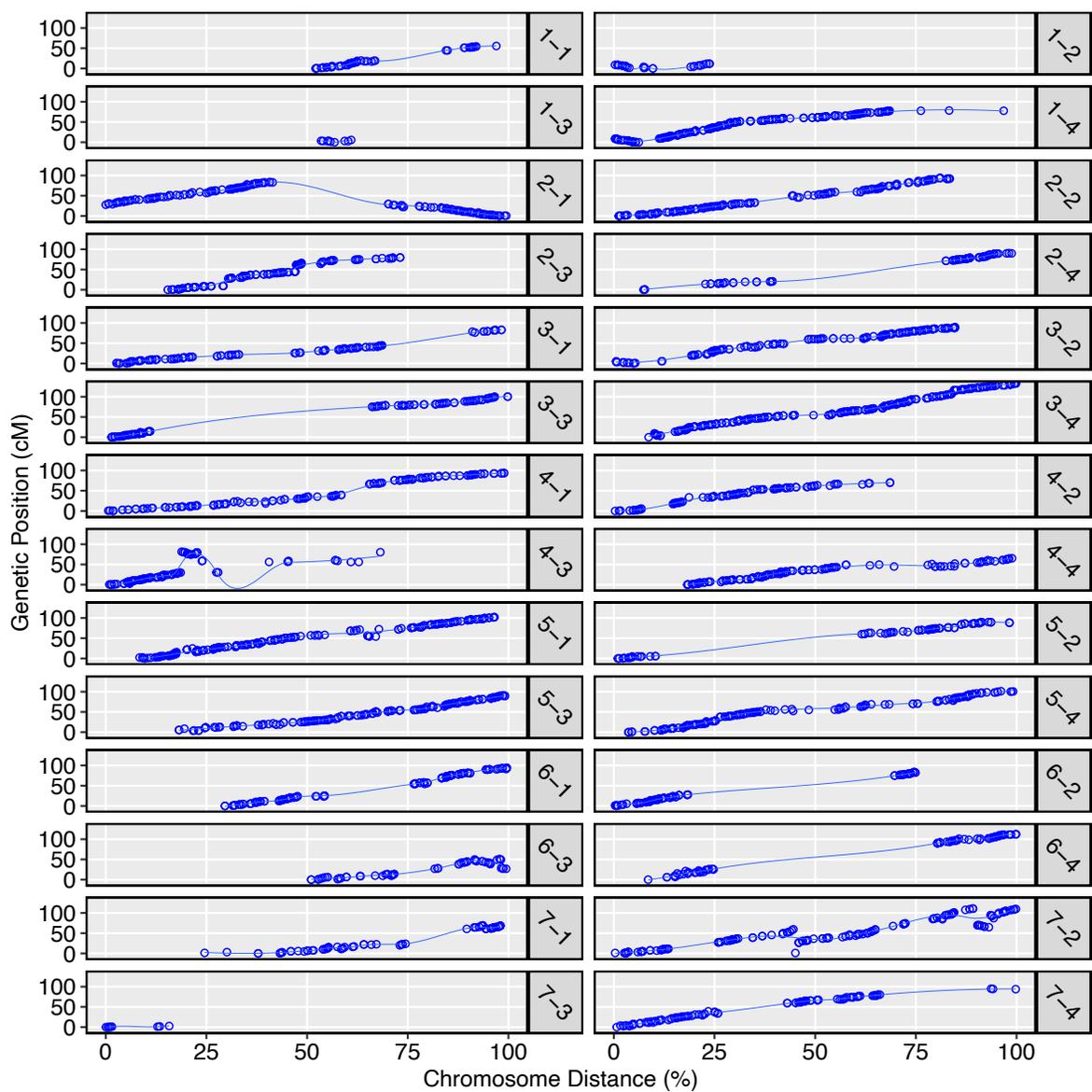
All supplementary data files are available in the DRYAD database (dryad.org), DOI <https://doi.org/10.25338/B8R31Q>



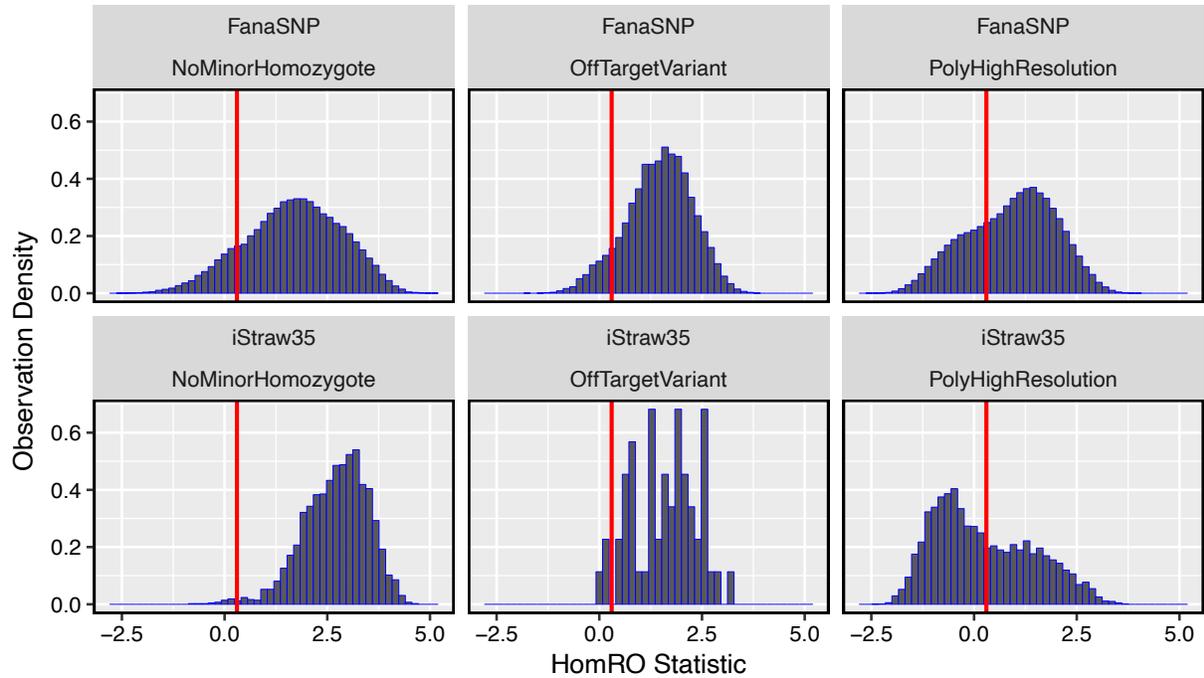
Supplementary Figure 1. Frequency of non-unique short-read alignments from diversity panel WGS libraries aligned to the Camarosa v1.0 genome assembly.



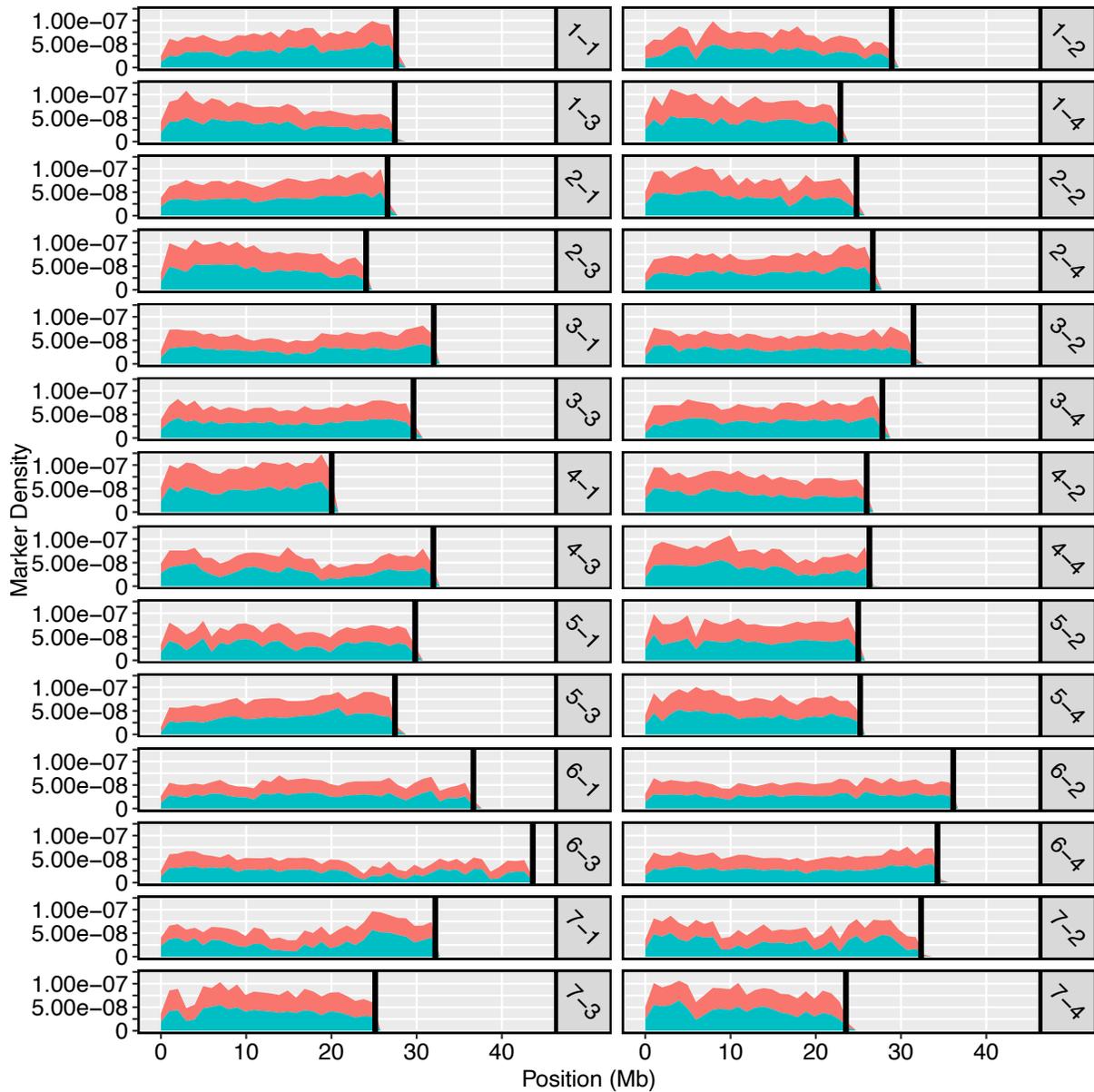
Supplementary Figure 2. Distribution of total subgenome-specific variant calls in 50 kb physical windows spanning the Camarosa v1.0 genome assembly, including domesticated samples (*F. x ananassa*), both wild progenitor species (*F. chiloensis*, *F. virginiana*), and all octoploid samples (Octoploid *Fragaria*)



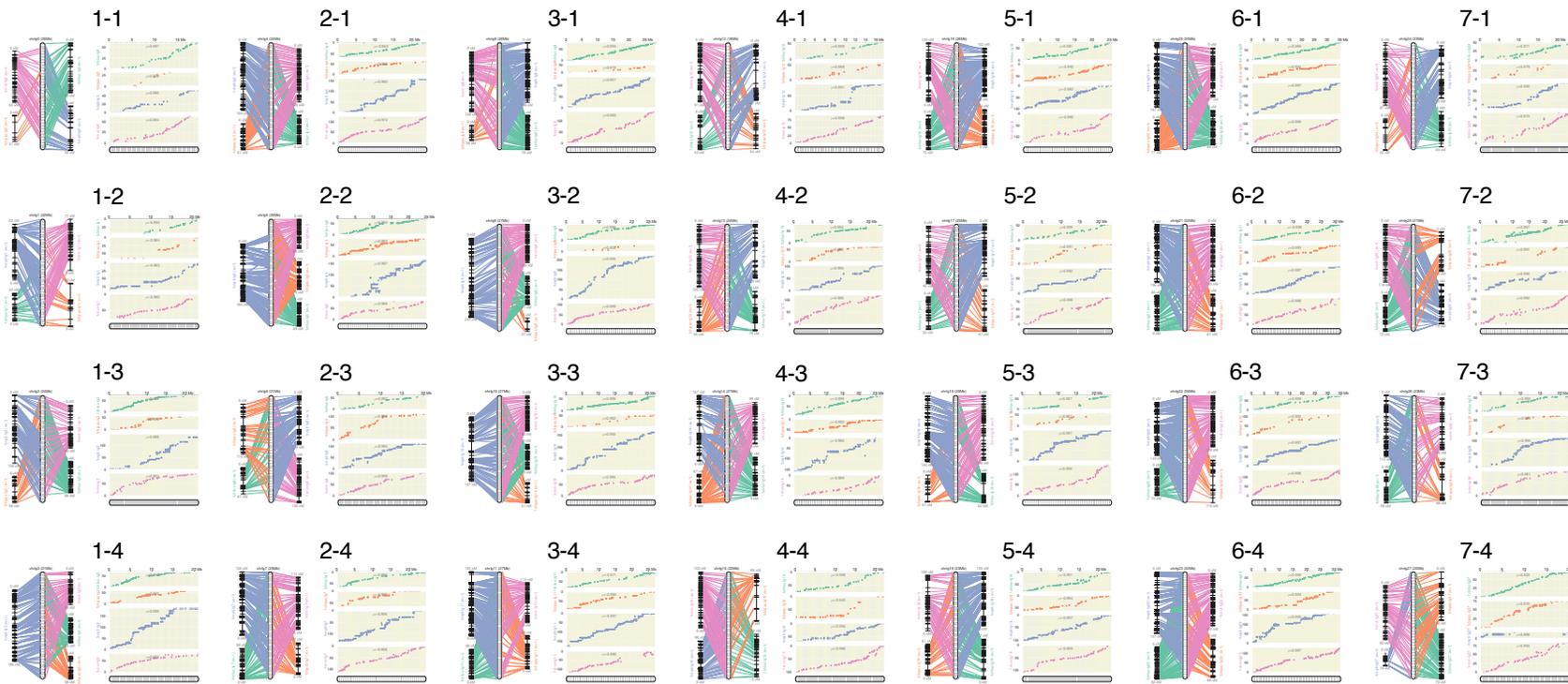
Supplementary Figure 3. Haplotype map of commercial *F. × ananassa* cultivar Camarosa plotted against the Camarosa v1.0 physical genome.



Supplementary Figure 4. Distribution of HomRO statistic for 446,644 validated marker probes. Distributions are compared between probes designed in the current study (FanaSNP), and legacy probes retained from the iStraw35 SNP array, in three polymorphic marker classes: PolyHighResolution, NoMinorHomozygote, and OffTargetVariant. Vertical red line indicates threshold for copy-specific probe binding.



Supplementary Figure 5. Chromosome-wide marker density showing the distributions of total 850K array markers (blue) and total 50K array markers (red) in the Camarosa v1.0 genome.



Supplementary Figure 6. Comparative mapping of four wild octoploid subspecies (*F. chiloensis* subsp. *lucida*, *F. chiloensis* subsp. *pacifica*, *F. virginiana* subsp. *platypetala*, *F. virginiana* subsp. *virginiana*) across the 28 octoploid strawberry chromosomes.

Supplementary Table 1. Summary of WGS diversity panel of octoploid strawberry cultivars and wild accessions, including Illumina PE150 sequence data statistics.

Biological ID	UCD ID/Accession	Taxa	Cleaned Pairs	Cleaned Unpaired	Cleaned Nts	Coverage
Palomar	00C259P002	F. × ananassa	28211490	2022257	8360926347	10.3
Monterey	01C132P003	F. × ananassa	51375883	1447114	15506308037	18.2
San Andreas	01C139P002	F. × ananassa	47148413	1255460	14227491681	16.7
Portola	01C206P005	F. × ananassa	30221774	2226728	8961248228	11.1
04C018P004	04C018P004	F. × ananassa	70954471	1995488	21413902167	25.2
04C041P006	04C041P006	F. × ananassa	73077572	1968592	22041027729	25.9
04C041P007	04C041P007	F. × ananassa	43756812	1161073	13201011853	15.5
04C076P004	04C076P004	F. × ananassa	27043962	1906471	8017497472	9.9
05C107P002	05C107P002	F. × ananassa	61669973	1650489	18604969273	21.9
05C108P007	05C108P007	F. × ananassa	49520936	1346721	14956519909	17.6
05C197P002	05C197P002	F. × ananassa	47399910	1314780	14306999279	16.8
05C206P005	05C206P005	F. × ananassa	69872310	1750498	21081616124	24.8
06C204P001	06C204P001	F. × ananassa	48242462	1282942	14556461676	17.1
07C092P003	07C092P003	F. × ananassa	55237951	1437810	16661803410	19.6
07C148P001	07C148P001	F. × ananassa	70176085	2053159	21176199682	24.9
08C013P605	08C013P605	F. × ananassa	66188970	1778837	19971237172	23.5
08C017P005	08C017P005	F. × ananassa	70765854	1912683	21352019150	25.1
Petaluma	08C020P602	F. × ananassa	52206559	1413549	15753194181	18.5
Grenada	08C055P002	F. × ananassa	46103823	1332120	13922724003	16.4
08C123P001	08C123P001	F. × ananassa	30821355	805102	9062298044	11.2
08C124P001	08C124P001	F. × ananassa	87692270	2287737	26457997372	31.1
08C128P002	08C128P002	F. × ananassa	53700634	1504232	16209019418	19.1
08C129P004	08C129P004	F. × ananassa	42183465	1116325	12726608428	15.0
08C131P003	08C131P003	F. × ananassa	39057440	1105867	11790238092	13.9
Fronteras	08C132P608	F. × ananassa	25477264	1927272	7555043714	9.3
08C138P003	08C138P003	F. × ananassa	38960567	1051688	11752931481	13.8
Cabrillo	08C181P001	F. × ananassa	68343916	1758984	20619169517	24.3
09C032P605	09C032P605	F. × ananassa	55853576	1552866	16853267528	19.8
09C061P602	09C061P602	F. × ananassa	46259778	1253586	13963533641	16.4
09C103P002	09C103P002	F. × ananassa	38809102	1035258	11709075149	13.8
09C132P003	09C132P003	F. × ananassa	53954662	1621061	16303041701	19.2
09C141P001	09C141P001	F. × ananassa	37466059	1079832	11307253074	13.3
09C180P001	09C180P001	F. × ananassa	43723506	1112898	13184460828	15.5
10C017P001	10C017P001	F. × ananassa	50664421	1406868	15293654501	18.0
10C017P002	10C017P002	F. × ananassa	53429507	1579513	16137475503	19.0

10C024P002	10C024P002	F. × ananassa	57163714	1479811	17247932497	20.3
10C037P604	10C037P604	F. × ananassa	93304940	2796102	28098505710	33.1
10C122P003	10C122P003	F. × ananassa	48521463	1292619	14639214023	17.2
10C122P006	10C122P006	F. × ananassa	40399182	1080963	12191243542	14.3
10C124P002	10C124P002	F. × ananassa	50903328	1469179	15351879415	18.1
10C127P001	10C127P001	F. × ananassa	41808433	1098763	12618876130	14.8
10C144P002	10C144P002	F. × ananassa	35719687	1153273	10521342807	13.0
10C187P004	10C187P004	F. × ananassa	42500583	1199491	12822533468	15.1
11C032P002	11C032P002	F. × ananassa	58102815	1588196	17528283251	20.6
11C036P601	11C036P601	F. × ananassa	27842210	645474	8166021025	10.1
11C049P006	11C049P006	F. × ananassa	67989178	2233421	20478041328	24.1
11C055P004	11C055P004	F. × ananassa	60860731	1780818	18344053448	21.6
11C057P001	11C057P001	F. × ananassa	42315215	1197399	12768525741	15.0
11C067P001	11C067P001	F. × ananassa	50366591	1351120	15183338786	17.9
11C103P001	11C103P001	F. × ananassa	63288863	1666700	19096732620	22.5
11C113P006	11C113P006	F. × ananassa	71136528	2055417	21465637249	25.3
11C115P003	11C115P003	F. × ananassa	83142346	2445842	25069737401	29.5
11C141P001	11C141P001	F. × ananassa	36683980	1269682	10802235404	13.3
11C145P001	11C145P001	F. × ananassa	33514099	902212	10118268740	11.9
11C151P008	11C151P008	F. × ananassa	52084307	1444166	15705906425	18.5
11C153P002	11C153P002	F. × ananassa	12425183 3	3335659	37427799343	44.0
11C153P003	11C153P003	F. × ananassa	34060109	913302	10006946479	12.4
11C157P001	11C157P001	F. × ananassa	97732706	2689367	29465841221	34.7
11C179P003	11C179P003	F. × ananassa	46444697	1256245	14010896174	16.5
11C180P001	11C180P001	F. × ananassa	53499687	1466972	16118896285	19.0
11C181P002	11C181P002	F. × ananassa	66256251	1765119	19984442561	23.5
11C195P003	11C195P003	F. × ananassa	95425144	2772048	28774645098	33.9
Mara De Bois	17Z001P001	F. × ananassa	28197639	657080	8286242975	10.2
Wiltguard	52C016P007	F. × ananassa	43778039	6416	12457205428	15.4
Tioga	53C009P002	F. × ananassa	35386823	1096615	10399723932	12.8
65C065P601	65C065P601	F. × ananassa	29246324	2222619	8674769700	10.7
Douglas	70C003P108	F. × ananassa	29001151	2253683	8606806748	10.6
71C098P605	71C098P605	F. × ananassa	21196820	1509244	6277629551	7.8
Seascape	83C049P001	F. × ananassa	21588838	1750504	6412653382	7.9
Camarosa	88C029P603	F. × ananassa	28145425	0	8285901149	10.2
Diamante	91C248P006	F. × ananassa	33821619	860358	9941994414	12.3
94C016P001	94C016P001	F. × ananassa	23248252	1761128	6893146460	8.5
Albion	97C117P003	F. × ananassa	41945351	1510337	12292433078	15.2

Florida Elyana	NA	F. × ananassa	12831469 7	16043796	36607523713	45.2
Fenella	NA	F. × ananassa	18971191 7	0	35908373428	44.3
Winter Dawn	NA	F. × ananassa	19059448 7	0	37257963025	46.0
Florida127	NA	F. × ananassa	71944741	0	19223714327	23.7
FL_14.100.59	NA	F. × ananassa	13642707 0	16419334	38974807942	48.1
Dover x Cam F2-34	NA	F. × ananassa	37580551	0	10068720145	12.4
FL_13.55.195	NA	F. × ananassa	14220741 0	24842283	41905177394	51.7
FL_13.26.134	NA	F. × ananassa	15548627 6	19483147	44174197647	54.5
Senga Sengana	PI264680	F. × ananassa	30918948	2205264	9168052073	11.3
Kaiser's Samling	PI270471	F. × ananassa	24267534	1866912	7198935826	8.9
Earliglow	PI551394	F. × ananassa	27896584	1891324	8260138792	10.2
Guardian	PI551407	F. × ananassa	33823229	2476754	10028516949	12.4
Gorella	PI551483	F. × ananassa	21079681	1627547	6260772663	7.7
Hood	PI551502	F. × ananassa	39377553	2758433	11663382455	14.4
Korona	PI551581	F. × ananassa	92140215	0	17532223598	21.6
Howard 17	PI551593	F. × ananassa	51186469	1253254	14974215618	18.5
Jucunda	PI551623	F. × ananassa	38489620	1251374	11236411599	13.9
Aberdeen	PI551630	F. × ananassa	20825977	1555068	6175820172	7.6
Holiday	PI551653	F. × ananassa	39468486	2939392	11707257025	14.5
White Carolina	PI551681	F. × ananassa	33801572	2466940	10015879877	12.4
Ettersburg121	PI551904	F. × ananassa	33321944	2388747	9877068150	12.2
Reikou	PI616627	F. × ananassa	31094180	2351488	9220327389	11.4
Emily	PI616854	F. × ananassa	19291556 1	0	37607891615	46.4
Pelican	PI637960	F. × ananassa	21238032	1541086	6295027859	7.8
Sweet Charlie	PI664317	F. × ananassa	19525404 2	0	37745551495	46.6
Puget Reliance	PI664321	F. × ananassa	21847995	2372736	6530567885	8.1
Ambato peru	PI551736	F. chiloensis subsp. chiloensis forma chiloensis	28907494	2783600	8588344366	10.6
Isle of Lemuy 02A White	PI552038	F. chiloensis subsp. chiloensis forma chiloensis	40796272	1820828	11867645617	14.7
2 Futalefu 6A introgressed	PI616554	F. chiloensis subsp. chiloensis forma chiloensis	36224762	10977	10293971677	12.7

CFRA 1377	PI616683	F. chiloensis subsp. chiloensis forma chiloensis	9209217	623683	2663062126	3.3
Ambato ecuador	PI616766	F. chiloensis subsp. chiloensis forma chiloensis	34648975	11190	10120035928	12.5
PI552058	PI552058	F. chiloensis subsp. chiloensis forma patagonica	34373950	2906824	10187695468	12.6
PI552092	PI552092	F. chiloensis subsp. chiloensis forma patagonica	32236346	2984743	9560294294	11.8
San Martin	PI552295	F. chiloensis subsp. chiloensis forma patagonica	10477679	809915	3024874548	3.7
PI602569	PI602569	F. chiloensis subsp. chiloensis forma patagonica	40906716	18346	11868316087	14.7
2 TAP 4B	PI612317	F. chiloensis subsp. chiloensis forma patagonica	30757469	2792731	9139166865	11.3
CFRA 1064	PI616516	F. chiloensis subsp. chiloensis forma patagonica	9803876	661066	2904542652	3.6
CFRA 1065	PI616517	F. chiloensis subsp. chiloensis forma patagonica	9836360	764221	2918070111	3.6
PI616531	PI616531	F. chiloensis subsp. chiloensis forma patagonica	54327500	2004105	15976801861	19.7
LCM-10	PI551468	F. chiloensis subsp. lucida	38235334	2214244	11244078071	13.9
CA 1405	PI551731	F. chiloensis subsp. lucida	22694966	1975452	6728591670	8.3
Del Norte	PI551753	F. chiloensis subsp. lucida	46842928	1413358	13652034433	16.9
Honeyman Par	PI612489	F. chiloensis subsp. lucida	69281055	0	13554135257	16.7
LPB 2-01	PI551458	F. chiloensis subsp. pacifica	21711258	1955077	6443159434	8.0
BSP-03	PI551467	F. chiloensis subsp. pacifica	44164106	1959507	12891985650	15.9
CA 1499	PI551735	F. chiloensis subsp. pacifica	29951585	2748320	8880630101	11.0
Yaquina A	PI551765	F. chiloensis subsp. pacifica	42581667	1651789	12327621179	15.2
Scotts Creek	PI612490	F. chiloensis subsp. pacifica	59339515	2111258	17333547296	21.4
KH 94-06	PI616652	F. chiloensis subsp. pacifica	49419711	1805836	14504495625	17.9
Hartney Bay	PI616770	F. chiloensis subsp. pacifica	24929451	2450626	7408152623	9.1

CFRA 420	PI551775	F. virginiana subsp. glauca	11449671	792832	3307785679	4.1
LH 18-2	PI551876	F. virginiana subsp. glauca	42005011	1794258	12321288185	15.2
LH 20-1	PI551877	F. virginiana subsp. glauca	24123951	2124533	7152364023	8.8
CA 1226 Big Cottonwood	PI612491	F. virginiana subsp. glauca	24949703	2413995	7407635514	9.1
RH 43 Delta Junction	PI612496	F. virginiana subsp. glauca	26877054	2310454	7966432387	9.8
BC6	PI660767	F. virginiana subsp. glauca	50264238	0	9854411560	12.2
NC 95-19-1	PI612486	F. virginiana subsp. grayana	27133883	2379039	8045915218	9.9
JP 95-1-1 McLellan	PI612570	F. virginiana subsp. grayana	37702979	2630608	11152118621	13.8
Steven's Pass	15X001P001	F. virginiana subsp. platypetala	33263889	2408467	9860664274	12.2
IH-35	PI551470	F. virginiana subsp. platypetala	47681394	1539070	13993146191	17.3
Straw Mt	PI616601	F. virginiana subsp. platypetala	42353406	1811404	12365770337	15.3
UC-11	PI551495	F. virginiana subsp. virginiana	28592273	2426081	8474997451	10.5
Sheldon	PI551651	F. virginiana subsp. virginiana	43632117	1780670	12794509570	15.8
Hinesburg	PI552277	F. virginiana subsp. virginiana	29240806	2588223	8678143416	10.7
NC 96-5-3 Chadwick	PI612325	F. virginiana subsp. virginiana	31711331	2636357	9397400491	11.6
Frederick 9	PI612493	F. virginiana subsp. virginiana	41534993	1860587	12172373256	15.0
LH 50-4	PI612495	F. virginiana subsp. virginiana	31414750	3105605	9345220992	11.5
KY-08	PI616568	F. virginiana subsp. virginiana	34458326	3490346	10249692790	12.7
N-8	PI616676	F. virginiana subsp. virginiana	41734451	1624005	12239272104	15.1
NC 95-11-1	PI616691	F. virginiana subsp. virginiana	27672921	2569010	8208315955	10.1
NC 96-25-1	PI616800	F. virginiana subsp. virginiana	25295103	2393025	7512272273	9.3
CFRA 1927	PI657849	F. virginiana subsp. virginiana	8912114	646339	2591565305	3.2

Supplementary Table 2. Genome-wide summary of population-specific and overall octoploid strawberry nucleotide diversity (π) across the 28 ancestral diploid chromosomes.

Ancestral Subgenome	Diploid Chromosome	Octoploid Chromosome	<i>F. × ananassa</i>	<i>F. chiloensis</i>	<i>F. virginiana</i>	Octoploid <i>Fragaria</i>
<i>F. iinumae</i>	1	1-2	0.0051	0.0053	0.0055	0.0063
<i>F. iinumae</i>	2	2-4	0.0069	0.0075	0.0078	0.0087
<i>F. iinumae</i>	3	3-2	0.0079	0.0073	0.0077	0.0086
<i>F. iinumae</i>	4	4-4	0.0074	0.0076	0.0070	0.0085
<i>F. iinumae</i>	5	5-3	0.0078	0.0068	0.0072	0.0080
<i>F. iinumae</i>	6	6-3	0.0038	0.0054	0.0056	0.0061
<i>F. iinumae</i>	7	7-3	0.0063	0.0058	0.0064	0.0070
<i>F. nipponica</i>	1	1-3	0.0059	0.0058	0.0058	0.0068
<i>F. nipponica</i>	2	2-1	0.0079	0.0073	0.0075	0.0086
<i>F. nipponica</i>	3	3-3	0.0075	0.0066	0.0070	0.0079
<i>F. nipponica</i>	4	4-2	0.0077	0.0072	0.0073	0.0084
<i>F. nipponica</i>	5	5-4	0.0074	0.0066	0.0066	0.0076
<i>F. nipponica</i>	6	6-2	0.0053	0.0059	0.0058	0.0066
<i>F. nipponica</i>	7	7-1	0.0033	0.0036	0.0038	0.0038
<i>F. vesca</i>	1	1-4	0.0053	0.0053	0.0049	0.0056
<i>F. vesca</i>	2	2-2	0.0055	0.0055	0.0052	0.0059
<i>F. vesca</i>	3	3-4	0.0054	0.0056	0.0056	0.0061
<i>F. vesca</i>	4	4-3	0.0044	0.0047	0.0046	0.0051
<i>F. vesca</i>	5	5-1	0.0042	0.0047	0.0045	0.0049
<i>F. vesca</i>	6	6-1	0.0045	0.0046	0.0046	0.0050
<i>F. vesca</i>	7	7-2	0.0025	0.0027	0.0027	0.0028
<i>F. viridis</i>	1	1-1	0.0057	0.0053	0.0056	0.0069
<i>F. viridis</i>	2	2-3	0.0070	0.0069	0.0071	0.0081
<i>F. viridis</i>	3	3-1	0.0068	0.0065	0.0067	0.0077
<i>F. viridis</i>	4	4-1	0.0079	0.0071	0.0076	0.0086
<i>F. viridis</i>	5	5-2	0.0066	0.0061	0.0067	0.0074
<i>F. viridis</i>	6	6-4	0.0062	0.0069	0.0070	0.0080
<i>F. viridis</i>	7	7-4	0.0055	0.0051	0.0050	0.0057
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Supplementary Table 3. Summary of octoploid genetic mapping results based on 50K SNP array genotyping, including per-chromosome marker densities (SNP/Mb), numbers of unique and co-segregating variant sites, and map sizes (cM).

Chr.	Camarosa	Del Norte	PI552277	PI612493
1-1	7.07	1.67	7.65	5.80
1-2	2.18	1.42	6.88	6.99
1-3	0.80	3.57	3.94	4.99
1-4	25.17	4.28	5.99	6.82
2-1	17.19	2.82	9.59	8.80
2-2	20.58	4.76	5.45	6.70
2-3	14.71	1.99	7.23	8.64
2-4	6.14	2.55	7.53	7.94
3-1	10.84	4.06	7.34	6.72
3-2	10.55	2.96	9.47	7.22
3-3	6.48	4.15	7.73	7.09
3-4	22.73	2.80	9.06	7.08
4-1	17.62	1.60	7.64	8.39
4-2	12.74	2.93	7.31	7.47
4-3	9.23	2.41	4.98	4.22
4-4	18.75	2.21	7.00	7.26
5-1	20.62	2.65	6.84	5.90
5-2	7.61	1.96	10.21	9.81
5-3	20.47	2.70	7.21	6.67
5-4	17.06	3.33	6.39	5.87
6-1	10.37	3.79	8.24	7.91
6-2	5.87	3.46	4.57	6.62
6-3	4.36	2.18	5.04	6.03
6-4	6.27	3.76	7.24	7.09
7-1	5.90	1.99	5.06	4.66
7-2	13.04	2.50	4.98	5.29
7-3	1.75	2.35	9.51	6.84
7-4	12.36	3.70	5.86	7.27
Total SNP	9,062	2,325	5,575	5,464
Unique SNP	2,368	1,774	1,767	1,844
Map Size	1711.99	1958.87	3019.65	2995.37
Groups	30	28	28	28