

# Supplementary Information

## Identification of differentially expressed genes related to aphid resistance in cucumber (*Cucumis sativus* L.)

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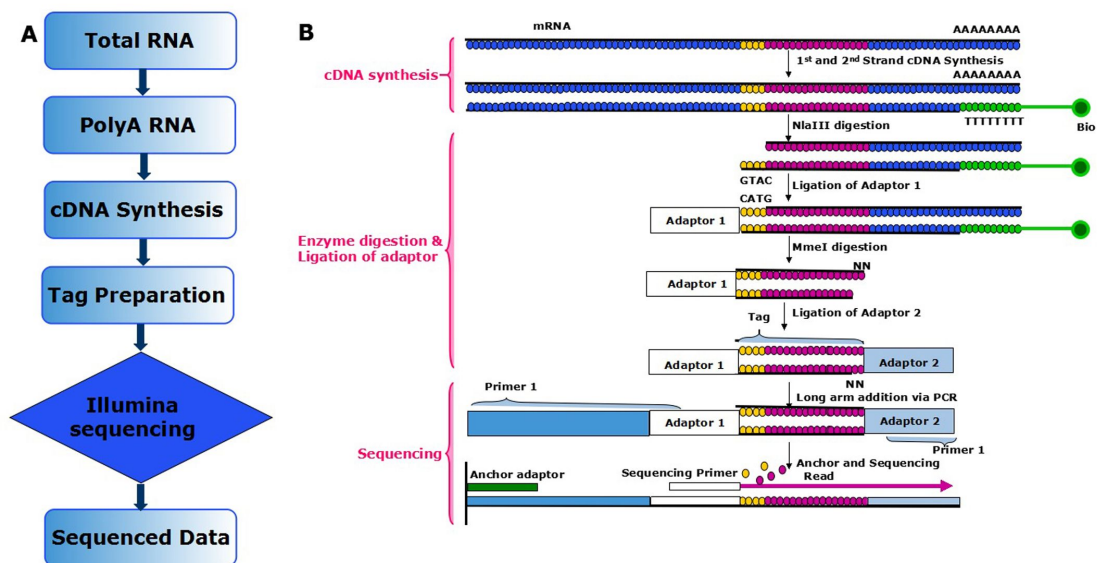
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## Supplementary Contents:

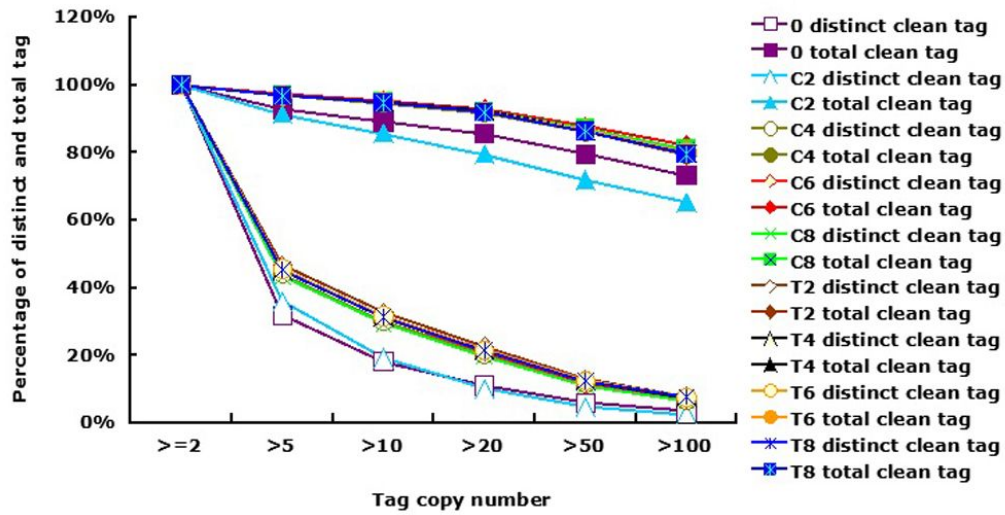
Supplementary Fig. S1

A, Experimental process of digital gene expression profile. B, Principle and procedure of Tag preparation. Beads of Oligo (dT) are used to enrich mRNA from the total RNA, and then are transferred into double-stranded cDNA through reverse transcription. Four base recognition enzyme NlaIII is used to digest this cDNA, and Illumina adaptor 1 is ligated. MmeI is used to digest at 17 bp downstream of CATG site; Illumina adaptor 2 is ligated at 3' end. Primer GX1 and Primer GX2 are added for PCR. Then, regain 85 bp strips through 6% PAGE Gel electrophoresis. The qualified library followed by Illumina sequencing.



Supplementary Fig. S2

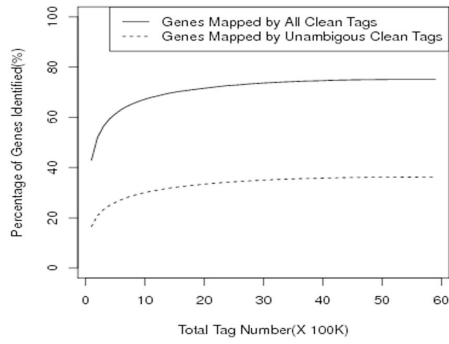
Distribution of total clean tag and distinct clean tag copy numbers from the nine libraries.



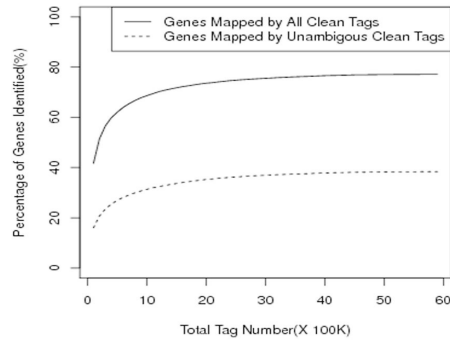
Supplementary Fig. S3

Sequencing saturation analysis of the nine libraries of 0, T2, T4, T6, T8, C2, C4, C6 and C8. The number of detected genes was saturated after the sequencing counts reached 2 million tags or higher.

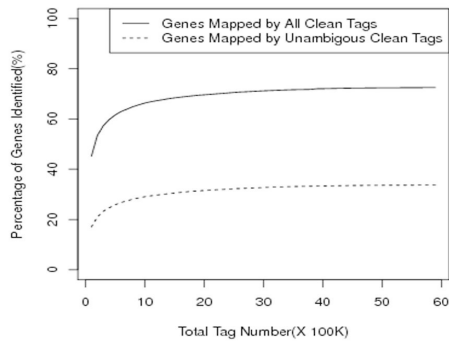
**Saturation Analysis of 0**



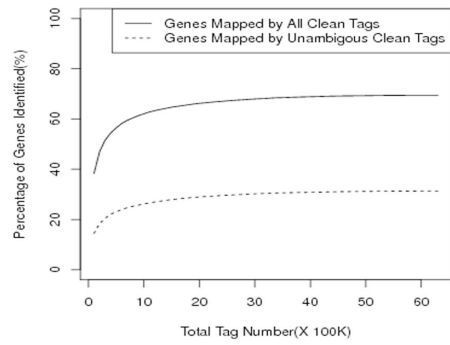
**Saturation Analysis of C2**



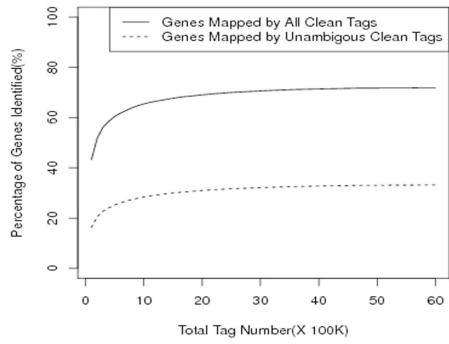
**Saturation Analysis of C4**



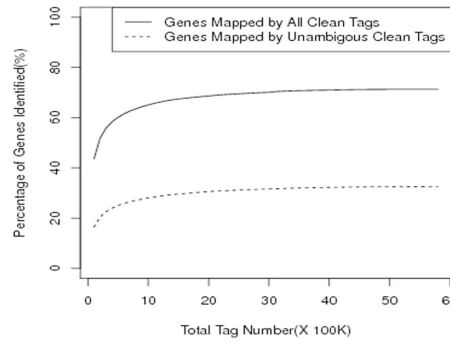
**Saturation Analysis of C6**



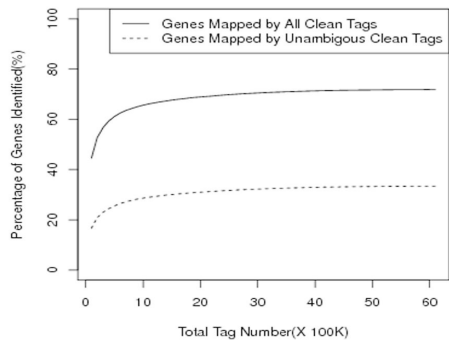
**Saturation Analysis of C8**



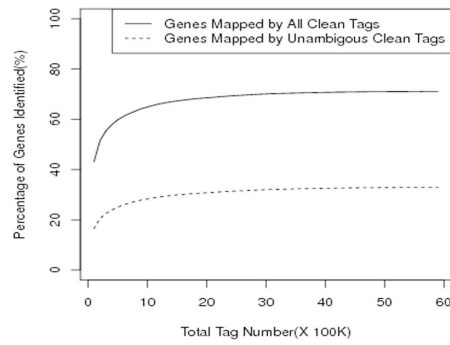
**Saturation Analysis of T2**



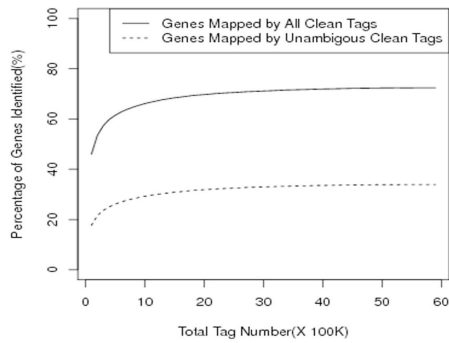
**Saturation Analysis of T4**



**Saturation Analysis of T6**



**Saturation Analysis of T8**



## Supplementary Table S1

Categorisation and abundance of tags. Clean tags are tags that remained after filtering out low quality tags from the raw data. Distinct tags are different types of tags. Unambiguous tags are clean tags that remained after the removal of tags mapped to the reference sequences of multiple genes.

Summary		0	C2	C4	C6	C8
Raw Data	Total	5808271	5883119	5824273	6248148	5938708
	Distinct Tag	417850	469353	244068	236052	230243
Clean Tag	Total number	5582943	5665356	5683185	6103662	5805545
	Distinct Tag number	202333	260081	113440	103722	108680
All Tag Mapping to Gene	Total number	3896797	3432730	4364832	4430137	4533808
	Total % of clean tag	69.80%	60.59%	76.80%	72.58%	78.09%
	Distinct Tag number	63859	65767	63348	55671	60728
	Distinct Tag % of clean tag	31.56%	25.29%	55.84%	53.67%	55.88%
Unambiguous Tag Mapping to Gene	Total number	2677373	2228487	2845283	3107254	3062177
	Total % of clean tag	47.96%	39.34%	50.06%	50.91%	52.75%
	Distinct Tag number	40570	42354	39080	34887	37848
	Distinct Tag % of clean tag	20.05%	16.28%	34.45%	33.64%	34.83%
All Tag-mapped Genes	number	24599	25509	23066	22199	22801
	% of ref genes	81.01%	84.01%	75.96%	73.11%	75.09%
Unambiguous Tag-mapped Genes	number	12806	13775	11276	10508	11024
	% of ref genes	42.17%	45.37%	37.14%	34.61%	36.31%
Mapping to Genome	Total number	1273678	1751864	1011306	1171255	931490
	Total % of clean tag	22.81%	30.92%	17.79%	19.19%	16.04%
	Distinct Tag number	112798	162467	38122	33617	35062
	Distinct Tag % of clean tag	55.75%	62.47%	33.61%	32.41%	32.26%
Unknown Tag	Total number	412468	480762	307047	502270	340247
	Total % of clean tag	7.39%	8.49%	5.40%	8.23%	5.86%
	Distinct Tag number	25676	31847	11970	14434	12890
	Distinct Tag % of clean tag	12.69%	12.25%	10.55%	13.92%	11.86%

Supplementary Table S2

Summary		0	T2	T4	T6	T8
Raw Data	Total	5808271	5762257	6039725	5815223	5887217
	Distinct Tag	417850	248439	248882	241685	240808
Clean Tag	Total number	5582943	5610525	5890728	5669976	5747924
	Distinct Tag number	202333	106688	111307	106969	113211
All Tag Mapping to Gene	Total number	3896797	4014390	4351359	4123969	4274435
	Total % of clean tag	69.80%	71.55%	73.87%	72.73%	74.36%
	Distinct Tag number	63859	58541	60271	58163	59889
	Distinct Tag % of clean tag	31.56%	54.87%	54.15%	54.37%	52.90%
Unambiguous Tag Mapping to Gene	Total number	2677373	2617936	2894726	2719612	2721606
	Total % of clean tag	47.96%	46.66%	49.14%	47.97%	47.35%
	Distinct Tag number	40570	36343	37474	36111	37223
	Distinct Tag % of clean tag	20.05%	34.06%	33.67%	33.76%	32.88%
All Tag-mapped Genes	number	24599	22688	22830	22645	23101
	% of ref genes	81.01%	74.72%	75.19%	74.58%	76.08%
Unambiguous Tag-mapped Genes	number	12806	10853	11110	10921	11368
	% of ref genes	42.17%	35.74%	36.59%	35.97%	37.44%
Mapping to Genome	Total number	1273678	1121714	1144816	1220420	1138112
	Total % of clean tag	22.81%	19.99%	19.43%	21.52%	19.80%
	Distinct Tag number	112798	33290	36706	35868	39689
	Distinct Tag % of clean tag	55.75%	31.20%	32.98%	33.53%	35.06%
Unknown Tag	Total number	412468	474421	394553	325587	335377
	Total % of clean tag	7.39%	8.46%	6.70%	5.74%	5.83%
	Distinct Tag number	25676	14857	14330	12938	13633
	Distinct Tag % of clean tag	12.69%	13.93%	12.87%	12.10%	12.04%

## Supplementary Table S3

### Distribution of tag numbers from the nine libraries

		Distinct Tag		Total Tag Number		Number of Gene	
0	All Tag Mapping to Sense Gene	35659	17.62%	3409389	61.07%	22803	75.10%
	Unambiguous Tag Mapping to Sense Gene	22845	11.29%	2342316	41.95%	10995	36.21%
	All Tag Mapping to Anti-Sense Gene	28200	13.94%	487408	8.73%	20353	67.03%
	Unambiguous Tag Mapping to Anti-Sense Gene	17725	8.76%	335057	6.00%	9488	31.25%
	All Tag Mapping to Gene (Sense & Anti-Sense)	63859	31.56%	3896797	69.80%	24599	81.01%
	Unambiguous Tag Mapping to Gene (Sense & Anti-Sense)	40570	20.05%	2677373	47.96%	12806	42.17%
C2	All Tag Mapping to Sense Gene	35740	13.74%	2946328	52.01%	23420	77.13%
	Unambiguous Tag Mapping to Sense Gene	23252	8.94%	1915134	33.80%	11643	38.34%
	All Tag Mapping to Anti-Sense Gene	30027	11.55%	486402	8.59%	21291	70.12%
	Unambiguous Tag Mapping to Anti-Sense Gene	19102	7.34%	313353	5.53%	10299	33.92%
	All Tag Mapping to Gene (Sense & Anti-Sense)	65767	25.29%	3432730	60.59%	25509	84.01%
	Unambiguous Tag Mapping to Gene (Sense & Anti-Sense)	42354	16.28%	2228487	39.34%	13775	45.37%
C4	All Tag Mapping to Sense Gene	35793	31.55%	3792384	66.73%	22011	72.49%
	Unambiguous Tag Mapping to Sense Gene	22368	19.72%	2468918	43.44%	10224	33.67%
	All Tag Mapping to Anti-Sense Gene	27555	24.29%	572448	10.07%	18898	62.24%
	Unambiguous Tag Mapping to Anti-Sense Gene	16712	14.73%	376365	6.62%	8132	26.78%
	All Tag Mapping to Gene (Sense & Anti-Sense)	63348	55.84%	4364832	76.80%	23066	75.96%
	Unambiguous Tag Mapping to Gene (Sense & Anti-Sense)	39080	34.45%	2845283	50.06%	11276	37.14%
C6	All Tag Mapping to Sense Gene	31788	30.65%	3885784	63.66%	21084	69.44%
	Unambiguous Tag Mapping to Sense Gene	20240	19.51%	2722464	44.60%	9507	31.31%
	All Tag Mapping to Anti-Sense Gene	23883	23.03%	544353	8.92%	17296	56.96%
	Unambiguous Tag Mapping to Anti-Sense Gene	14647	14.12%	384790	6.30%	7361	24.24%
	All Tag Mapping to Gene (Sense & Anti-Sense)	55671	53.67%	4430137	72.58%	22199	73.11%

	Unambiguous Tag Mapping to Gene (Sense & Anti-Sense)	34887	33.64%	3107254	50.91%	10508	34.61%
C8	All Tag Mapping to Sense Gene	35432	32.60%	3994304	68.80%	21814	71.84%
	Unambiguous Tag Mapping to Sense Gene	22367	20.58%	2696080	46.44%	10061	33.13%
	All Tag Mapping to Anti-Sense Gene	25296	23.28%	539504	9.29%	18031	59.38%
	Unambiguous Tag Mapping to Anti-Sense Gene	15481	14.24%	366097	6.31%	7746	25.51%
	All Tag Mapping to Gene (Sense & Anti-Sense)	60728	55.88%	4533808	78.09%	22801	75.09%
	Unambiguous Tag Mapping to Gene (Sense & Anti-Sense)	37848	34.83%	3062177	52.75%	11024	36.31%
T2	All Tag Mapping to Sense Gene	32508	30.47%	3485173	62.12%	21653	71.31%
	Unambiguous Tag Mapping to Sense Gene	20469	19.19%	2263292	40.34%	9874	32.52%
	All Tag Mapping to Anti-Sense Gene	26033	24.40%	529217	9.43%	18199	59.94%
	Unambiguous Tag Mapping to Anti-Sense Gene	15874	14.88%	354644	6.32%	7779	25.62%
	All Tag Mapping to Gene (Sense & Anti-Sense)	58541	54.87%	4014390	71.55%	22688	74.72%
	Unambiguous Tag Mapping to Gene (Sense & Anti-Sense)	36343	34.06%	2617936	46.66%	10853	35.74%
T4	All Tag Mapping to Sense Gene	33773	30.34%	3849067	65.34%	21810	71.83%
	Unambiguous Tag Mapping to Sense Gene	21348	19.18%	2557205	43.41%	10132	33.37%
	All Tag Mapping to Anti-Sense Gene	26498	23.81%	502292	8.53%	18670	61.49%
	Unambiguous Tag Mapping to Anti-Sense Gene	16126	14.49%	337521	5.73%	8007	26.37%
	All Tag Mapping to Gene (Sense & Anti-Sense)	60271	54.15%	4351359	73.87%	22830	75.19%
	Unambiguous Tag Mapping to Gene (Sense & Anti-Sense)	37474	33.67%	2894726	49.14%	11110	36.59%
T6	All Tag Mapping to Sense Gene	32643	30.52%	3643596	64.26%	21577	71.06%
	Unambiguous Tag Mapping to Sense Gene	20625	19.28%	2405531	42.43%	9980	32.87%
	All Tag Mapping to Anti-Sense Gene	25520	23.86%	480373	8.47%	18149	59.77%
	Unambiguous Tag Mapping to Anti-Sense Gene	15486	14.48%	314081	5.54%	7788	25.65%
	All Tag Mapping to Gene (Sense & Anti-Sense)	58163	54.37%	4123969	72.73%	22645	74.58%
	Unambiguous Tag Mapping to Gene (Sense & Anti-Sense)	36111	33.76%	2719612	47.97%	10921	35.97%
T8	All Tag Mapping to Sense Gene	33460	29.56%	3792213	65.98%	21982	72.39%
	Unambiguous Tag Mapping to Sense Gene	21129	18.66%	2417062	42.05%	10287	33.88%



Gene						
All Tag Mapping to Anti-Sense Gene	26429	23.34%	482222	8.39%	18879	62.18%
Unambiguous Tag Mapping to Anti-Sense Gene	16094	14.22%	304544	5.30%	8248	27.16%
All Tag Mapping to Gene (Sense & Anti-Sense)	59889	52.90%	4274435	74.36%	23101	76.08%
Unambiguous Tag Mapping to Gene (Sense & Anti-Sense)	37223	32.88%	2721606	47.35%	11368	37.44%

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