

## **Evolution, heterogeneity and global dispersal of cosmopolitan genotype of Dengue virus type 2**

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### **Supplementary Tables**

#### **Supplementary Table S1. Details of newly generated sequences from human cases and mosquitoes**

NCBI accession number	Country	Year	Lineage of cosmopolitan genotype	Origin
MW510155	Singapore	2013	Indian sub-continent lineage	Mosquito
MW510957	Singapore	2012	Indian sub-continent lineage	Human
MW510958	Singapore	2013	Indian sub-continent lineage	Human
MW510959	Singapore	2013	Indian sub-continent lineage	Human
MW510960	Singapore	2013	Indian sub-continent lineage	Human
MW510961	Singapore	2013	Indian sub-continent lineage	Human
MW510962	Singapore	2013	Indian sub-continent lineage	Human
MW510963	Singapore	2013	Indian sub-continent lineage	Human
MW510964	Singapore	2013	Indian sub-continent lineage	Human
MW510965	Singapore	2013	Indian sub-continent lineage	Human
MW510966	Singapore	2013	Indian sub-continent lineage	Human

MW510967	Singapore	2013	Indian sub-continent lineage	Human
MW510968	Singapore	2013	Indian sub-continent lineage	Human
MW510969	Singapore	2013	Indian sub-continent lineage	Human
MW510970	Singapore	2013	Indian sub-continent lineage	Human
MW510971	Singapore	2013	Indian sub-continent lineage	Human
MW510972	Singapore	2014	Indian sub-continent lineage	Human
MW510973	Singapore	2014	Indian sub-continent lineage	Human
MW510974	Singapore	2014	Indian sub-continent lineage	Human
MW510975	Singapore	2014	Indian sub-continent lineage	Human
MW510976	Singapore	2014	Indian sub-continent lineage	Human
MW510977	Singapore	2014	Indian sub-continent lineage	Human
MW510978	Singapore	2014	Indian sub-continent lineage	Human
MW510979	Singapore	2014	Indian sub-continent lineage	Human
MW510980	Singapore	2014	Indian sub-continent lineage	Human
MW510981	Singapore	2014	Indian sub-continent lineage	Human
MW510982	Singapore	2014	Indian sub-continent lineage	Human
MW510983	Singapore	2014	Indian sub-continent lineage	Human
MW510984	Singapore	2014	Indian sub-continent lineage	Human
MW510985	Singapore	2014	Indian sub-continent lineage	Human
MW510986	Singapore	2015	Indian sub-continent lineage	Human
MW510987	Singapore	2015	Indian sub-continent lineage	Human
MW512362	Singapore	2011	Indian sub-continent lineage	Human
MW512370	Singapore	2012	Indian sub-continent lineage	Human

MW512371	Singapore	2012	Indian sub-continent lineage	Human
MW512372	Singapore	2012	Indian sub-continent lineage	Human
MW512391	Singapore	2013	Indian sub-continent lineage	Human
MW512410	Singapore	2014	Indian sub-continent lineage	Human
MW512411	Singapore	2014	Indian sub-continent lineage	Human
MW512412	Singapore	2014	Indian sub-continent lineage	Human
MW512413	Singapore	2014	Indian sub-continent lineage	Human
MW512449	Singapore	2016	Indian sub-continent lineage	Human
MW512468	Singapore	2017	Indian sub-continent lineage	Human
MW512469	Singapore	2017	Indian sub-continent lineage	Human
MW512470	Singapore	2017	Indian sub-continent lineage	Human
MW512490	Singapore	2019	Indian sub-continent lineage	Human
MW510156	Singapore	2014	Indian sub-continent lineage	Mosquito
MW510263	Singapore	2013	Lineage1	Human
MW510264	Singapore	2013	Lineage1	Human
MW510265	Singapore	2013	Lineage1	Human
MW510266	Singapore	2013	Lineage1	Human
MW510270	Singapore	2013	Lineage1	Human
MW512380	Singapore	2012	Lineage1	Human
MW512408	Singapore	2013	Lineage1	Human
MW512409	Singapore	2013	Lineage1	Human
MW512431	Singapore	2014	Lineage1	Human
MW512432	Singapore	2014	Lineage1	Human

MW512433	Singapore	2014	Lineage1	Human
MW512434	Singapore	2014	Lineage1	Human
MW512467	Singapore	2016	Lineage1	Human
MW512489	Singapore	2018	Lineage1	Human
MW510024	Singapore	2012	Lineage2	Mosquito
MW510125	Singapore	2012	Lineage2	Mosquito
MW510126	Singapore	2012	Lineage2	Mosquito
MW510127	Singapore	2012	Lineage2	Mosquito
MW510128	Singapore	2012	Lineage2	Mosquito
MW510129	Singapore	2012	Lineage2	Mosquito
MW510130	Singapore	2012	Lineage2	Mosquito
MW510131	Singapore	2012	Lineage2	Mosquito
MW510132	Singapore	2012	Lineage2	Mosquito
MW510133	Singapore	2012	Lineage2	Mosquito
MW510134	Singapore	2012	Lineage2	Mosquito
MW510135	Singapore	2012	Lineage2	Mosquito
MW510136	Singapore	2012	Lineage2	Mosquito
MW510137	Singapore	2012	Lineage2	Mosquito
MW510138	Singapore	2012	Lineage2	Mosquito
MW510139	Singapore	2012	Lineage2	Mosquito
MW510140	Singapore	2012	Lineage2	Mosquito
MW510141	Singapore	2012	Lineage2	Mosquito
MW510142	Singapore	2012	Lineage2	Mosquito

MW510143	Singapore	2012	Lineage2	Mosquito
MW510144	Singapore	2012	Lineage2	Mosquito
MW510145	Singapore	2012	Lineage2	Mosquito
MW510146	Singapore	2012	Lineage2	Mosquito
MW510147	Singapore	2012	Lineage2	Mosquito
MW510148	Singapore	2012	Lineage2	Mosquito
MW510149	Singapore	2012	Lineage2	Mosquito
MW510150	Singapore	2012	Lineage2	Mosquito
MW510151	Singapore	2013	Lineage2	Mosquito
MW510152	Singapore	2013	Lineage2	Mosquito
MW510238	Singapore	2008	Lineage2	Human
MW510239	Singapore	2008	Lineage2	Human
MW510240	Singapore	2008	Lineage2	Human
MW510241	Singapore	2008	Lineage2	Human
MW510242	Singapore	2010	Lineage2	Human
MW510243	Singapore	2010	Lineage2	Human
MW510245	Singapore	2011	Lineage2	Human
MW510252	Singapore	2011	Lineage2	Human
MW510256	Singapore	2012	Lineage2	Human
MW510257	Singapore	2012	Lineage2	Human
MW510267	Singapore	2013	Lineage2	Human
MW510721	Singapore	2013	Lineage2	Human
MW510722	Singapore	2013	Lineage2	Human

MW510723	Singapore	2013	Lineage2	Human
MW510724	Singapore	2013	Lineage2	Human
MW510725	Singapore	2013	Lineage2	Human
MW510726	Singapore	2013	Lineage2	Human
MW510727	Singapore	2013	Lineage2	Human
MW510728	Singapore	2013	Lineage2	Human
MW510729	Singapore	2013	Lineage2	Human
MW510730	Singapore	2013	Lineage2	Human
MW510731	Singapore	2013	Lineage2	Human
MW510732	Singapore	2013	Lineage2	Human
MW510733	Singapore	2013	Lineage2	Human
MW510734	Singapore	2013	Lineage2	Human
MW510735	Singapore	2013	Lineage2	Human
MW510736	Singapore	2013	Lineage2	Human
MW510737	Singapore	2013	Lineage2	Human
MW510738	Singapore	2013	Lineage2	Human
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MW510741	Singapore	2013	Lineage2	Human
MW510742	Singapore	2011	Lineage2	Human
MW510743	Singapore	2011	Lineage2	Human
MW510744	Singapore	2011	Lineage2	Human
MW510745	Singapore	2011	Lineage2	Human

MW510746	Singapore	2011	Lineage2	Human
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MW510749	Singapore	2011	Lineage2	Human
MW510750	Singapore	2011	Lineage2	Human
MW510751	Singapore	2011	Lineage2	Human
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MW510754	Singapore	2011	Lineage2	Human
MW510755	Singapore	2011	Lineage2	Human
MW510756	Singapore	2011	Lineage2	Human
MW510757	Singapore	2011	Lineage2	Human
MW510758	Singapore	2011	Lineage2	Human
MW510759	Singapore	2011	Lineage2	Human
MW510760	Singapore	2011	Lineage2	Human
MW510761	Singapore	2011	Lineage2	Human
MW510762	Singapore	2011	Lineage2	Human
MW510763	Singapore	2011	Lineage2	Human
MW510764	Singapore	2011	Lineage2	Human
MW510765	Singapore	2011	Lineage2	Human
MW510766	Singapore	2011	Lineage2	Human
MW510767	Singapore	2011	Lineage2	Human
MW510768	Singapore	2011	Lineage2	Human

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MW510770	Singapore	2011	Lineage2	Human
MW510771	Singapore	2011	Lineage2	Human
MW510772	Singapore	2011	Lineage2	Human
MW510773	Singapore	2011	Lineage2	Human
MW510774	Singapore	2011	Lineage2	Human
MW510775	Singapore	2011	Lineage2	Human
MW510776	Singapore	2011	Lineage2	Human
MW510777	Singapore	2011	Lineage2	Human
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MW510779	Singapore	2011	Lineage2	Human
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MW510782	Singapore	2012	Lineage2	Human
MW510783	Singapore	2012	Lineage2	Human
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MW510787	Singapore	2012	Lineage2	Human
MW510788	Singapore	2012	Lineage2	Human
MW510789	Singapore	2012	Lineage2	Human
MW510790	Singapore	2012	Lineage2	Human
MW510791	Singapore	2012	Lineage2	Human



MW510792	Singapore	2012	Lineage2	Human
MW510793	Singapore	2012	Lineage2	Human
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MW510797	Singapore	2012	Lineage2	Human
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MW510812	Singapore	2012	Lineage2	Human
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MW510833	Singapore	2013	Lineage2	Human
MW510834	Singapore	2013	Lineage2	Human
MW510835	Singapore	2013	Lineage2	Human
MW510836	Singapore	2013	Lineage2	Human
MW510837	Singapore	2015	Lineage2	Human

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MW512345	Singapore	2007	Lineage2	Human
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MW512347	Singapore	2007	Lineage2	Human
MW512348	Singapore	2007	Lineage2	Human
MW512349	Singapore	2007	Lineage2	Human
MW512350	Singapore	2008	Lineage2	Human
MW512351	Singapore	2008	Lineage2	Human
MW512352	Singapore	2008	Lineage2	Human
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MW512354	Singapore	2009	Lineage2	Human
MW512355	Singapore	2009	Lineage2	Human
MW512356	Singapore	2009	Lineage2	Human
MW512357	Singapore	2010	Lineage2	Human
MW512358	Singapore	2010	Lineage2	Human
MW512359	Singapore	2010	Lineage2	Human
MW512360	Singapore	2010	Lineage2	Human
MW512361	Singapore	2010	Lineage2	Human
MW512363	Singapore	2011	Lineage2	Human
MW512373	Singapore	2012	Lineage2	Human
MW512374	Singapore	2012	Lineage2	Human

MW512381	Singapore	2013	Lineage2	Human
MW512382	Singapore	2013	Lineage2	Human
MW512383	Singapore	2013	Lineage2	Human
MW512414	Singapore	2014	Lineage2	Human
MW510052	Singapore	2018	Lineage3	Mosquito
MW510254	Singapore	2012	Lineage3	Human
MW510259	Singapore	2012	Lineage3	Human
MW510260	Singapore	2012	Lineage3	Human
MW510261	Singapore	2012	Lineage3	Human
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MW510269	Singapore	2013	Lineage3	Human
MW510271	Singapore	2013	Lineage3	Human
MW510272	Singapore	2013	Lineage3	Human
MW510273	Singapore	2013	Lineage3	Human
MW510277	Singapore	2015	Lineage3	Human
MW510279	Singapore	2016	Lineage3	Human
MW510280	Singapore	2016	Lineage3	Human
MW510281	Singapore	2016	Lineage3	Human
MW512364	Singapore	2011	Lineage3	Human
MW512375	Singapore	2012	Lineage3	Human
MW512376	Singapore	2012	Lineage3	Human
MW512384	Singapore	2013	Lineage3	Human
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MW512386	Singapore	2013	Lineage3	Human
MW512415	Singapore	2014	Lineage3	Human
MW512450	Singapore	2016	Lineage3	Human
MW512479	Singapore	2018	Lineage3	Human
MW512480	Singapore	2018	Lineage3	Human
MW510025	Singapore	2013	Lineage4	Mosquito
MW510026	Singapore	2013	Lineage4	Mosquito
MW510027	Singapore	2016	Lineage4	Mosquito
MW510153	Singapore	2014	Lineage4	Mosquito
MW510154	Singapore	2014	Lineage4	Mosquito
MW510255	Singapore	2012	Lineage4	Human
MW510258	Singapore	2012	Lineage4	Human
MW510274	Singapore	2013	Lineage4	Human
MW510275	Singapore	2013	Lineage4	Human
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MW510841	Singapore	2013	Lineage4	Human
MW510842	Singapore	2013	Lineage4	Human
MW510843	Singapore	2013	Lineage4	Human
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MW510851	Singapore	2013	Lineage4	Human
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MW510858	Singapore	2013	Lineage4	Human
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MW510860	Singapore	2013	Lineage4	Human
MW510861	Singapore	2012	Lineage4	Human
MW510862	Singapore	2012	Lineage4	Human
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MW510865	Singapore	2012	Lineage4	Human
MW510866	Singapore	2012	Lineage4	Human
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MW510868	Singapore	2012	Lineage4	Human
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MW510871	Singapore	2012	Lineage4	Human
MW510872	Singapore	2012	Lineage4	Human
MW510873	Singapore	2012	Lineage4	Human
MW510874	Singapore	2012	Lineage4	Human
MW510875	Singapore	2012	Lineage4	Human
MW510876	Singapore	2012	Lineage4	Human
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MW510880	Singapore	2012	Lineage4	Human
MW510881	Singapore	2012	Lineage4	Human
MW510882	Singapore	2012	Lineage4	Human
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MW510893	Singapore	2013	Lineage4	Human
MW510894	Singapore	2013	Lineage4	Human
MW510895	Singapore	2013	Lineage4	Human
MW510896	Singapore	2013	Lineage4	Human
MW510897	Singapore	2013	Lineage4	Human
MW510898	Singapore	2013	Lineage4	Human
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MW510903	Singapore	2013	Lineage4	Human
MW510904	Singapore	2013	Lineage4	Human
MW510905	Singapore	2013	Lineage4	Human
MW510906	Singapore	2013	Lineage4	Human
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MW510908	Singapore	2013	Lineage4	Human
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MW510912	Singapore	2013	Lineage4	Human
MW510913	Singapore	2013	Lineage4	Human
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MW510938	Singapore	2013	Lineage4	Human

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MW510941	Singapore	2013	Lineage4	Human
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MW512369	Singapore	2011	Lineage4	Human
MW512377	Singapore	2012	Lineage4	Human
MW512378	Singapore	2012	Lineage4	Human
MW512379	Singapore	2012	Lineage4	Human
MW512404	Singapore	2013	Lineage4	Human

MW512405	Singapore	2013	Lineage4	Human
MW512406	Singapore	2013	Lineage4	Human
MW512407	Singapore	2013	Lineage4	Human
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MW512448	Singapore	2015	Lineage4	Human
MW512464	Singapore	2016	Lineage4	Human
MW512465	Singapore	2016	Lineage4	Human
MW512466	Singapore	2016	Lineage4	Human
MW510028	Singapore	2018	Lineage5	Mosquito
MW510029	Singapore	2018	Lineage5	Mosquito
MW510030	Singapore	2018	Lineage5	Mosquito
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MW510036	Singapore	2018	Lineage5	Mosquito
MW510039	Singapore	2018	Lineage5	Mosquito
MW510040	Singapore	2018	Lineage5	Mosquito
MW510041	Singapore	2018	Lineage5	Mosquito
MW510042	Singapore	2018	Lineage5	Mosquito

MW510043	Singapore	2018	Lineage5	Mosquito
MW510044	Singapore	2018	Lineage5	Mosquito
MW510045	Singapore	2018	Lineage5	Mosquito
MW510046	Singapore	2018	Lineage5	Mosquito
MW510047	Singapore	2018	Lineage5	Mosquito
MW510048	Singapore	2018	Lineage5	Mosquito
MW510049	Singapore	2018	Lineage5	Mosquito
MW510050	Singapore	2018	Lineage5	Mosquito
MW510051	Singapore	2018	Lineage5	Mosquito
MW510053	Singapore	2018	Lineage5	Mosquito
MW510054	Singapore	2019	Lineage5	Mosquito
MW510055	Singapore	2019	Lineage5	Mosquito
MW510056	Singapore	2019	Lineage5	Mosquito
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MW510059	Singapore	2019	Lineage5	Mosquito
MW510060	Singapore	2019	Lineage5	Mosquito
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MW510063	Singapore	2019	Lineage5	Mosquito
MW510064	Singapore	2019	Lineage5	Mosquito
MW510065	Singapore	2019	Lineage5	Mosquito
MW510066	Singapore	2019	Lineage5	Mosquito

MW510067	Singapore	2019	Lineage5	Mosquito
MW510068	Singapore	2019	Lineage5	Mosquito
MW510069	Singapore	2019	Lineage5	Mosquito
MW510070	Singapore	2019	Lineage5	Mosquito
MW510071	Singapore	2019	Lineage5	Mosquito
MW510072	Singapore	2019	Lineage5	Mosquito
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MW510074	Singapore	2019	Lineage5	Mosquito
MW510075	Singapore	2019	Lineage5	Mosquito
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MW510078	Singapore	2019	Lineage5	Mosquito
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MW510719	Singapore	2017	Lineage5	Human
MW510720	Singapore	2017	Lineage5	Human
MW512341	Singapore	2004	Lineage5	Human

MW512365	Singapore	2011	Lineage5	Human
MW512366	Singapore	2011	Lineage5	Human
MW512367	Singapore	2011	Lineage5	Human
MW512368	Singapore	2011	Lineage5	Human
MW512387	Singapore	2013	Lineage5	Human
MW512388	Singapore	2013	Lineage5	Human
MW512389	Singapore	2013	Lineage5	Human
MW512390	Singapore	2013	Lineage5	Human
MW512392	Singapore	2013	Lineage5	Human
MW512393	Singapore	2013	Lineage5	Human
MW512394	Singapore	2013	Lineage5	Human
MW512395	Singapore	2013	Lineage5	Human
MW512396	Singapore	2013	Lineage5	Human
MW512397	Singapore	2013	Lineage5	Human
MW512398	Singapore	2013	Lineage5	Human
MW512399	Singapore	2013	Lineage5	Human
MW512400	Singapore	2013	Lineage5	Human
MW512401	Singapore	2013	Lineage5	Human
MW512402	Singapore	2013	Lineage5	Human
MW512403	Singapore	2013	Lineage5	Human
MW512416	Singapore	2014	Lineage5	Human
MW512417	Singapore	2014	Lineage5	Human
MW512418	Singapore	2014	Lineage5	Human

MW512419	Singapore	2014	Lineage5	Human
MW512420	Singapore	2014	Lineage5	Human
MW512421	Singapore	2014	Lineage5	Human
MW512422	Singapore	2014	Lineage5	Human
MW512423	Singapore	2014	Lineage5	Human
MW512424	Singapore	2014	Lineage5	Human
MW512425	Singapore	2014	Lineage5	Human
MW512426	Singapore	2014	Lineage5	Human
MW512427	Singapore	2014	Lineage5	Human
MW512435	Singapore	2015	Lineage5	Human
MW512436	Singapore	2015	Lineage5	Human
MW512437	Singapore	2015	Lineage5	Human
MW512438	Singapore	2015	Lineage5	Human
MW512439	Singapore	2015	Lineage5	Human
MW512440	Singapore	2015	Lineage5	Human
MW512441	Singapore	2015	Lineage5	Human
MW512442	Singapore	2015	Lineage5	Human
MW512443	Singapore	2015	Lineage5	Human
MW512444	Singapore	2015	Lineage5	Human
MW512445	Singapore	2015	Lineage5	Human
MW512446	Singapore	2015	Lineage5	Human
MW512447	Singapore	2015	Lineage5	Human
MW512451	Singapore	2016	Lineage5	Human

MW512452	Singapore	2016	Lineage5	Human
MW512453	Singapore	2016	Lineage5	Human
MW512454	Singapore	2016	Lineage5	Human
MW512455	Singapore	2016	Lineage5	Human
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MW512458	Singapore	2016	Lineage5	Human
MW512459	Singapore	2016	Lineage5	Human
MW512460	Singapore	2016	Lineage5	Human
MW512461	Singapore	2016	Lineage5	Human
MW512462	Singapore	2016	Lineage5	Human
MW512463	Singapore	2016	Lineage5	Human
MW512471	Singapore	2017	Lineage5	Human
MW512472	Singapore	2017	Lineage5	Human
MW512473	Singapore	2017	Lineage5	Human
MW512474	Singapore	2017	Lineage5	Human
MW512475	Singapore	2017	Lineage5	Human
MW512476	Singapore	2017	Lineage5	Human
MW512477	Singapore	2017	Lineage5	Human
MW512478	Singapore	2017	Lineage5	Human
MW512481	Singapore	2018	Lineage5	Human
MW512482	Singapore	2018	Lineage5	Human
MW512483	Singapore	2018	Lineage5	Human

MW512484	Singapore	2018	Lineage5	Human
MW512485	Singapore	2018	Lineage5	Human
MW512486	Singapore	2018	Lineage5	Human
MW512487	Singapore	2018	Lineage5	Human
MW512488	Singapore	2018	Lineage5	Human
MW512491	Singapore	2019	Lineage5	Human
MW512492	Singapore	2019	Lineage5	Human
MW512493	Singapore	2019	Lineage5	Human
MW512494	Singapore	2019	Lineage5	Human
MW512495	Singapore	2019	Lineage5	Human
MW512496	Singapore	2019	Lineage5	Human
MW512497	Singapore	2019	Lineage5	Human
MW512498	Singapore	2019	Lineage5	Human
MW510037	Singapore	2018	Lineage5	Mosquito
MW510038	Singapore	2018	Lineage5	Mosquito
MW510117	Singapore	2017	Lineage5	Mosquito
MW510118	Singapore	2017	Lineage5	Mosquito
MW510120	Singapore	2017	Lineage5	Mosquito
MW510992	Singapore	2015	Unclassified (Outgroup)	Human
MW510993	Singapore	2015	Unclassified (Outgroup)	Human
MW510989	Singapore	2012	Unclassified (Outgroup)	Human
MW510988	Singapore	2011	Unclassified (Outgroup)	Human
MW510991	Singapore	2015	Unclassified (Outgroup)	Human

MW510994	Singapore	2016	Unclassified (Outgroup)	Human
MW510990	Singapore	2014	Unclassified (Outgroup)	Human

**Supplementary Table S2: Oligonucleotides used for the amplification and sequencing of DENV-2 genomes**

Fragment	Primer name	Sequence (5' - 3')
Fragment 1	Den2 16F*	TGGACCGACAAAGACAGATTCTTTG
	Den2 348F	CAGGAAAGAGATTGGAAGGATGC
	Den2 738F	AATGGGACTGGAGACACGAACTG
	Den2 934R	TCATTGAAGGAGCGACAGC
	Den2 1169R*	CCTTGTGTTGGGCAGCGAGAT
Fragment 2	Den2 771F*	ACATGGATGTCRTCAGAAGG
	Den2 1353F	GTGATAACACCTCACTCAGGG
	Den2 1596R	CCATGGTAACGGCAGGTC
	Den2 2540R*	GAAGGGGATTCTGGTTGG
Fragment 3	Den2 2146F*	ACAACAATGAGAGGAGCGAAGAG
	Den2 2796F	CACAGAACTTCATAACCACACCT
	Den2 3222R	GGGCCTGCCGTTTGTGTATGAT
	Den2 3865R	CTAAAGCCAACGCGTCAGTCAGT
	Den2 3545F	TCAGGACCCGAGTAGGAACGAA
	Den2 4590R*	ATAGGCTCCATCTTCCAGTTCAG
Fragment 4	Den2 4158F*	GGCAGTCGGGATGGTGAGC
	Den2 4539F	TGTCCCTTCACCCCCACCTGT
	Den2 4590R	ATAGGCTCCATCTTCCAGTTCAG

	Den2 4773R	CTTCCAGCCTCCTCCATACGATA
	Den2 5403R	TATGCTTGCTGGGTCTGTGAAAT
	Den2 5784R*	CCTCTCGGCCTTGAAGTTAGCAC
Fragment 5	Den2 5443F*	GAAGCAGCTGGGATTTTTATGAC
	Den2 6072R	GTCCACCTTTTCACGCTCTG
	Den2 6359F	TCGCAGCTGGAAGAAAGTC
	Den2 6776R	AATTGGTTATCTTGGGGTGTTT
	Den2 7161R	GAGAAGGGCTGCTGTGAGAGTTA
	Den2 7733R*	ACAGCGTGATGGTCCGTTTCT
Fragment 6	Den2 7416F*	AACCGGGCCCATCTCTACTG
	Den2 7926F	CGGTTGGAATCTGGTGCGTCTT
	Den2 8181R	AGCTCCTCCGTATTTCCTTTGT
	Den2 8327F	AGCCAGATGTTGACCTCGGAAGT
	Den2 8847R	AACAGCCTCACGTGCCGACTT
	Den2 9154R*	CTCCTCCTTCTTTCTTACTCACG
Fragment 7	Den2 8662F*	GAACCGAAAGAAGGCACGAAAAA
	Den2 9599R	GCGCTTGCAAACCTGTCATCTAA
	Den2 8967F	CAAAGCAAAAGGCAGCAGAGC
	Den2 9821F	CAGCCTGTTTGGGGAAGTCT
	Den2 10321R*	GGCTTAATCCGACCTGACTTCTG

Amplification primers are denoted by asterisks. The remaining primers, together with amplification primers were used for sequencing.

### Amplification protocol

<b>PCR conditions - Fragments 1 - 7</b>
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Temperature °C	Time	Cycle
98 °C	10 sec	1
98 °C	5 sec	35
62 °C (F2 & F6)	10 sec	
65 °C (F1, F3, F4, F5 & F7)		
72 °C	45 sec	
72 °C	2 min	1
20 °C	infinity	1

Each fragment was PCR amplified by using 0.5  $\mu$ M of fragment-specific primers and 1X Phusion™ Flash High-Fidelity PCR Master Mix (Thermo Fisher Scientific, MA, USA).

**Supplementary Table S3: List of countries and the number of *E* gene sequences of each genotype of DENV-2 used in the analyses**

Country Name	latitude	longitude	Number of sequences
American Samoa	-14.2756	-170.702	10
Australia	-35.3438	149.083	26
Bangladesh	23.77718	90.39945	12
Bhutan	26.87056	90.48556	2
Borneo	1.0343	114.33	2
Brunei	4.94029	114.9481	3
Burkina Faso	12.36566	-1.53388	6

China	39.91382	116.3636	518
Ireland	53.35014	-6.26615	2
Ivory Coast	5.345317	-4.02443	1
Fiji	-17.7134	178.065	14
France	48.86472	2.349014	1
French Polynesia	-16.7613	-151.444	12
Ghana	7.952771	-1.03071	1
Guam	13.4443	144.7937	1
India	28.4512	77.1646	137
Indonesia	-6.21462	106.8451	267
Japan	35.65283	139.8395	3
Kenya	-1.28042	36.81631	21
Maldives	1.924992	73.39966	3
Malaysia	3.140853	101.6932	180
Micronesia	6.887481	158.2151	3
New Caledonia	-21.2107	165.8517	13
Palau	7.51498	134.5825	1
Pakistan	33.73805	73.08449	52
Papua New Guinea	-6.47838	145.2417	25
Philippines	14.59951	120.9842	138
Saudi Arabia	24.77427	46.73859	11
Singapore	1.29027	103.852	1,691
Solomon Islands	-9.42635	160.1874	1

Somalia	2.046934	45.31816	5
South Korea	37.53260	127.0246	3
Sri Lanka	6.927079	79.86124	13
Taiwan	25.1055	121.5974	73
Tanzania	-6.16118	35.74543	3
Thailand	13.73672	100.5232	19
Timor Leste	-8.55686	125.5603	48
Tuvalu	-8.52115	179.1962	4
Uganda	0.347596	32.58252	1
Vietnam	10.76262	106.6602	36
Wallis	29.63414	-96.0639	5

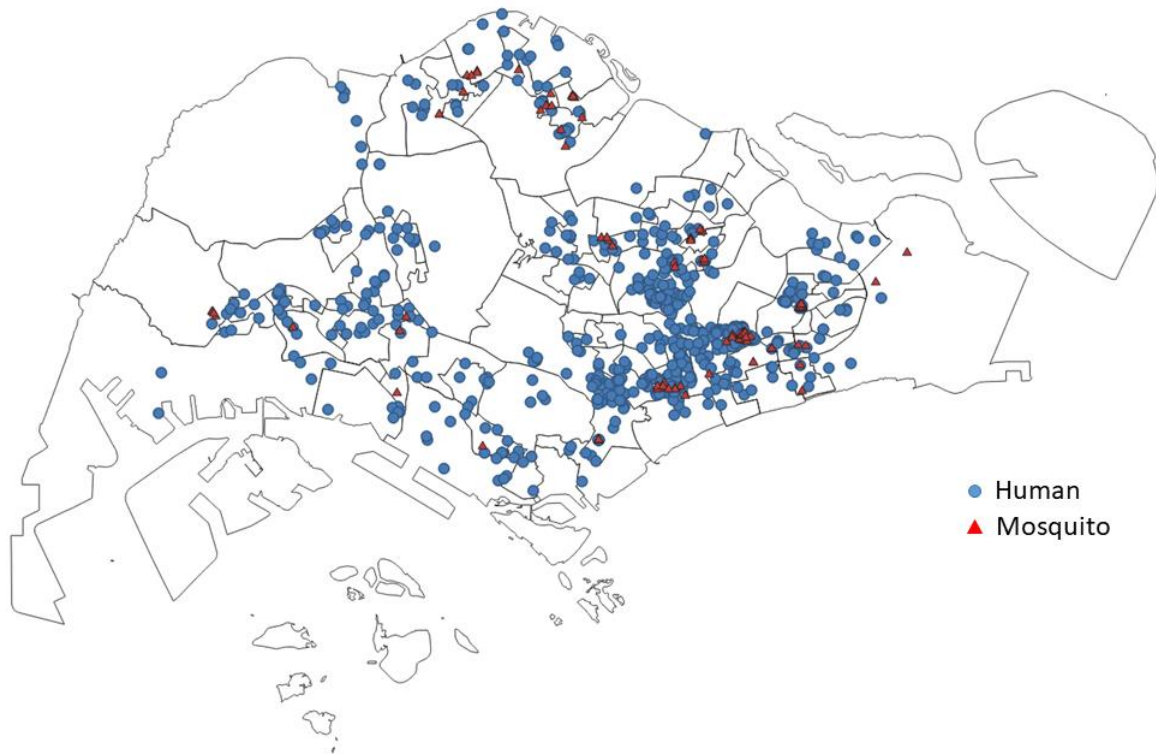
**Supplementary Table S4: Unique amino acid signature of Indian sub-continent lineage as compared to other lineages of cosmopolitan genotype and other non-sylvatic genotypes of DENV-2**

Polyprotein position	Gene	Gene position	REF <sup>¶</sup>	Other genotypes	Indian lineage	Cosmo lineages (Excluding Indian lineage)
112	C	112	V	V/A	A (97%)	V (100%)
143	preM	29	D	D	D (100%)	N (100%)

332	E	52	Q	Q/E	Q (100%)	H (97%)
906	NS1	131	Q	Q	Q (100%)	H (98%)
1190	NS2A	63	T	T	A (97%)	T (97%)
1260	NS2A	133	V	V/A	I (96%)	V (98%)
1342	NS2A	215	S	S	N (99%)	S (99%)
1408	NS2B	63	D	D	D (100%)	E (98%)
1548	NS3	73	K	K	R (97%)	K (100%)
1748	NS3	273	V	V	V (100%)	I (98%)
1936	NS3	461	I	I	I (98%)	V (97%)
2487	NS4B	244	T	T	T (95%)	A (100%)
2589	NS5	98	R	R	R (98%)	K (98%)
3096	NS5	605	G	G	G (100%)	V (98%)
3107	NS5	616	E	E	G (98%)	E (100%)
3136	NS5	645	N	N	D (96%)	N (100%)

<sup>†</sup>REF=NCBI refseq accession number NC\_001474.2

### Supplementary Figures



**Supplementary Figure S1. Distribution of newly generated sequences obtained from human sera and field-caught mosquitoes.** The map was generated by using the QGIS 3.16 open source ([www.qgis.org](http://www.qgis.org)) software and the layer obtained from the OneMap open source portal ([www.datascoutonemap.com](http://www.datascoutonemap.com)). Each sequence was mapped based on the postal codes of locations where respective human cases were detected and mosquitoes were captured.

**Supplementary Figure S2. Bayesian phylogeny of DENV-2 complete coding sequences.** This is an expansion view of Figure 3. The maximum clade credibility (MCC) tree was constructed in BEAST 1.10.4 version, using general time reversible (GTR) substitution model, relaxed random clock model and Bayesian skyline prior. The analysis included 380 complete coding sequences of the cosmopolitan genotype and a relatively small reference dataset to represent Asian I (n=10),

Asian II (n=10), Asian-American (n=8), American (n=8) and sylvatic (n=3) genotypes. Each genotype is colour coded as shown in the legend. The numbers at the nodes represent the posterior probability values. The time scale (in years) and scale bar (substitutions/site/year) are given at the bottom of the figure.

**Supplementary Figure S3. Phylogenetic analysis of *E* gene sequences of cosmopolitan**

**genotype.** This is an expansion view of Figure 4. The neighbour joining tree was constructed by using 3,367 complete *E* gene sequences. The alignment included 2,319 sequences retrieved from NCBI database and 1,048 sequences generated during the present study. The taxa names of newly generated sequences are colour coded; those obtained from human sera in light blue and those derived from mosquitoes in red. Distinct lineages are shown in different colours. Sequences that were not classified into any distinct lineage are shown in black branches.