

Supplementary Table 2 HPV E6/E7 Sanger and deep sequencing results

Sample Info ^a			Seq ^b	Deep Sequencing ^c														
				Reads Info ^d		HPV genotypes and proportional composition ^e												
				Total Merged Reads (n)	Total Mapped Reads (n)	HPV Type (n)	HPV #1	HPV #2	HPV #3	HPV #4	HPV #5	HPV #6	p #1	p #2	p #3	p #4	p #5	p #6
PC_2994	P11_A1	LSIL	39 A2	88,812	42,478	5	39 A	35	52	16	91		0.62	0.32	0.03	0.02	0.02	
PC_3002	P11_A2	LSIL	35 A2	434,264	325,254	3	35 A1,2	39	52				0.96	0.03	0.01			
PC_3010	P11_A3	LSIL	39 A2	592,196	451,184	4	39 A	52	91	35			0.71	0.26	0.02	0.01		
PC_3018	P11_A4	LSIL	91	255,520	187,892	2	91	39					0.93	0.07				
PC_3042	P11_A5	LSIL	39 A2	104,718	32,356	2	39 A	16					0.99	0.01				
PC_3050	P11_A6	LSIL	39 A2	301,906	237,922	1	39 A						1.00					
PC_3058	P11_A7	LSIL	39 A2	201,850	153,368	2	39 A	62					0.99	0.01				
PC_3066	P11_A8	LSIL	39 A2	404,354	313,146	2	39 A	91					0.97	0.03				
PC_3074	P11_A9	LSIL	91	353,110	261,928	4	91	39	43	54			0.75	0.12	0.10	0.02		
PC_3082	P11_A10	LSIL	66 B1*	37,944	24,160	5	66 B1	39	35	16	62		0.53	0.36	0.06	0.04	0.01	
PC_3003	P11_A11	LSIL	66 B1	71,374	26,432	6	66 B1	35	84	16	54	62	0.50	0.18	0.17	0.06	0.04	0.04
PC_3011	P11_A12	LSIL	35 A2	388,530	297,058	5	35 A1,2	62	66	16	54		0.74	0.14	0.05	0.04	0.02	
PC_3019	P11_B1	LSIL	16 A1	640,246	495,266	2	16 A1	39					0.99	0.01				
PC_3059	P11_B2	LSIL	39 A2	283,076	190,446	3	39 A	62	16				0.74	0.25	0.01			
PC_3067	P11_B3	LSIL	16 A1	144,894	79,200	5	16 A1	68	39	43	82		0.90	0.04	0.03	0.01	0.01	
PC_3075	P11_B4	LSIL	16 A1	265,916	216,072	3	16 A1	43	39				0.54	0.41	0.06			
PC_3083	P11_B5	LSIL	58 C1	202,370	130,742	3	58 C1	43	39				0.72	0.26	0.01			
PC_2996	P11_B6	LSIL	62	85,356	12,134	6	62	30	61	39	51	54	0.61	0.23	0.07	0.04	0.02	0.02
PC_3004	P11_B7	LSIL	30 A3	229,388	150,402	3	30 A	54	39				0.92	0.07	0.01			
PC_3020	P11_B8	LSIL	30 A3	232,398	106,562	4	30 A2	39	51	89			0.54	0.42	0.03	0.01		
PC_3028	P11_B9	LSIL	51	447,206	288,514	2	51 B1	89					0.81	0.19				
PC_3036	P11_B10	LSIL	16 A1	124,796	59,988	2	16 A1	39					0.87	0.13				
PC_3044	P11_B11	LSIL	39 A2	315,946	238,710	2	39 A	68					0.99	0.01				
PC_3060	P11_B12	LSIL	39 A2	620,642	492,650	2	39 A	58					0.99	0.01				
PC_3076	P11_C1	LSIL	39 A2	64,626	15,778	4	39 A	62	16	89			0.77	0.20	0.02			
PC_3084	P11_C2	LSIL	39 A2	611,624	470,370	3	39 A	62	89				0.77	0.20	0.02			
PC_3005	P11_C3	LSIL	53 A1*	82,078	20,962	5	16 A2	39	43	84	66		0.47	0.36	0.14	0.02	0.01	
PC_3013	P11_C4	LSIL	39 A2	608,524	459,216	4	39 A	43	84	81			0.69	0.27	0.03	0.01		
PC_3029	P11_C5	LSIL	66 A1	201,624	73,564	3	66 A1	16	54				0.96	0.02	0.01			
PC_3061	P11_C6	LSIL	16 C1	175,128	96,092	4	16 C1	52	89	56			0.96	0.02	0.01	0.01		
PC_3069	P11_C7	LSIL	52 A1	106,440	50,024	5	52 A1	81	16	54	35		0.87	0.04	0.04	0.04	0.01	
PC_3085	P11_C8	LSIL	54 A1	172,584	107,672	4	54 A1	35	74	39			0.96	0.02	0.01	0.01		
PC_2998	P11_C9	LSIL	35 A2	253,604	168,400	4	35 A1,2	39	43	16			0.93	0.04	0.02	0.01		
PC_3006	P11_C10	LSIL	16 A2	201,574	116,266	1	16 A1,2						1.00					
PC_3014	P11_C11	LSIL	53 A1*	132,216	13,684	4	39 A	16	62	89			0.66	0.16	0.16	0.02		
PC_3030	P11_C12	LSIL	16 A1	300,230	207,512	1	16 A1						1.00					
PC_3038	P11_D1	LSIL	91	102,316	29,464	6	91	51	82	90	84	39	0.75	0.13	0.06	0.04	0.01	0.01
PC_3046	P11_D2	LSIL	84	132,618	58,194	6	84	90	62	31	30	68	0.69	0.18	0.08	0.02	0.01	0.01
PC_3062	P11_D3	LSIL	51 A4	148,572	41,620	3	51 A4	39	67				0.96	0.03	0.01			
PC_3086	P11_D4	LSIL	35 A2	160,108	101,614	3	39 A	67	35				0.56	0.29	0.15			
PC_2999	P11_D5	LSIL	39 A2	517,018	351,454	3	39 A	67	35				0.62	0.33	0.05			
PC_3007	P11_D6	LSIL	40	243,734	46,454	2	40	39					0.88	0.12				
PC_3023	P11_D7	LSIL	39 A2	740,600	525,878	3	39 A	56	43				0.98	0.01	0.01			
PC_3031	P11_D8	LSIL	58 A2	161,618	90,066	3	58 A2	52	81				0.72	0.25	0.03			
PC_3039	P11_D9	LSIL	81	313,654	231,320	2	81	43					0.97	0.03				

Supplementary Table 2 (continued)

ID	PL	PAP	HPV Type	Total Merged Reads (n)	Total Mapped Reads (n)	HPV Type (n)	HPV #1	HPV #2	HPV #3	HPV #4	HPV #5	HPV #6	p #1	p #2	p #3	p #4	p #5	p #6
PC_3079	P11_D10	LSIL	43	603,936	461,732	1	43						1.00					
PC_3000	P11_D11	LSIL	51 A3	133,102	16,160	3	51 A1	39	16				0.91	0.06	0.02			
PC_3024	P11_D12	LSIL	39 A2	143,500	51,696	3	39 A	16	43				0.75	0.24	0.01			
PC_3040	P11_E1	LSIL	74	154,566	13,726	4	39 A	44	74	16			0.55	0.23	0.22	0.01		
PC_3048	P11_E2	LSIL	39 A2	795,470	614,336	1	39 A						1.00					
PC_3064	P11_E3	LSIL	39 A2	112,554	27,900	4	39 A	51	52	16			0.95	0.02	0.02	0.01		
PC_3072	P11_E4	LSIL	51 B2	176,666	27,338	3	51 B2	40	16				0.95	0.03	0.02			
PC_3001	P11_E5	LSIL	40	305,320	196,398	3	40	51	43				0.64	0.35	0.01			
PC_3009	P11_E6	LSIL	16 C1	243,784	189,034	2	16 C1	6					0.88	0.12				
PC_3025	P11_E7	LSIL	67 A2	140,348	29,552	3	67 A2	16	51				0.75	0.22	0.03			
PC_3049	P11_E8	LSIL	51 A	301,144	100,922	2	51 A4	56					0.97	0.03				
PC_3057	P11_E9	LSIL	54 A1	60,022	9,190	3	54 A1	16	53				0.74	0.25	0.01			
PC_3073	P11_E10	LSIL	16 A2	361,292	264,282	1	16 A1,2						1.00					
PC_3081	P11_E11	LSIL	51 A3	41,084	10,078	3	51 A1	39	43				0.97	0.02	0.01			
PC_2610	P11_E12	LSIL	39 A2	183,508	48624	1	39 A						1.00					
PC_2642	P11_F1	LSIL	39 A2	265,374	138,400	3	39 A	16	18				0.93	0.06	0.01			
PC_2690	P11_F3	LSIL	43	440,606	331,194	4	43	66	18	16			0.77	0.14	0.07	0.02		
PC_2698	P11_F4	LSIL	39 A2	449,646	341,468	1	39 A						1.00					
PC_2611	P11_F5	LSIL	84	759,680	146,418	1	84						1.00					
PC_2651	P11_F6	LSIL	35 A1	673,276	76,172	2	35 A1	39					0.74	0.26				
PC_2659	P11_F7	LSIL	62	308,150	36,790	1	62						1.00					
PC_2675	P11_F8	LSIL	68 E1	582,066	57,072	2	68	16					0.98	0.02				
PC_2683	P11_F9	LSIL	62	504,304	100,586	2	62	56					0.92	0.08				
PC_2612	P11_F10	LSIL	54 A1	81,752	18,626	3	54 A1	39	81				0.90	0.09	0.01			
PC_2620	P11_F11	LSIL	16 A1	429,260	337,404	2	16 A1	39					0.89	0.11				
PC_2652	P11_F12	LSIL	18 A1	176,334	23,824	2	18 A1	39					0.93	0.07				
PC_2676	P11_G1	LSIL	40	307,624	48,504	5	40	44	39	43	53		0.56	0.38	0.03	0.01	0.01	
PC_2684	P11_G2	LSIL	58 A3	76,416	25,226	2	58 A2	44					0.60	0.40				
PC_2692	P11_G3	LSIL	43	294,944	54,114	3	43	58	44				0.84	0.09	0.07			
PC_2700	P11_G4	LSIL	39 A2	351,682	279,162	2	39 A	58					0.98	0.02				
PC_2613	P11_G5	LSIL	54 A1	65,182	4,936	2	54 A1	39					0.99	0.01				
PC_2621	P11_G6	LSIL	62	129,820	24,382	5	62	51	90	84	83		0.46	0.41	0.06	0.06	0.01	
PC_2637	P11_G7	LSIL	52 A1	86,988	40,658	1	52 A1						1.00					
PC_2661	P11_G8	LSIL	51 A4	43,236	17,496	2	51 A1	84					0.88	0.12				
PC_2669	P11_G9	LSIL	81	108,428	64,810	2	81	66					0.59	0.41				
PC_2677	P11_G10	LSIL	82 A2	106,552	33,860	2	82 A2	84					0.99	0.01				
PC_2685	P11_G11	LSIL	91	336,892	45,024	1	91						1.00					
PC_2693	P11_G12	LSIL	43	538,632	391,228	1	43						1.00					
PC_2614	P11_H1	LSIL	39 A2	614,046	241,416	1	39 A						1.00					
PC_2678	P11_H2	LSIL	52 A1	175,324	80,180	3	52 A1	58	81				0.89	0.10	0.01			
PC_2686	P11_H3	LSIL	16 A2	417,468	194,648	3	16 A2	52	58				0.76	0.22	0.02			
PC_2702	P11_H4	LSIL	39 A2	615,566	404,610	1	39 A						1.00					
PC_2615	P11_H5	LSIL	66 B2	87,348	38,712	1	66 B2						1.00					
PC_2655	P11_H6	LSIL	39 A2	87,386	21,386	4	39 A	84	44	74			0.70	0.23	0.05	0.03		
PC_2663	P11_H7	LSIL	35 A2	166,216	61,464	1	35 A1,2						1.00					
PC_2695	P11_H8	LSIL	39 A2	556,854	468,962	1	39 A						1.00					
PC_2624	P11_H9	LSIL	39 A2	606,788	449,354	1	39 A						1.00					
PC_2664	P11_H10	LSIL	16 A4	196,816	131,420	2	16 A1	39					0.68	0.32				
PC_2680	P11_H11	LSIL	6 B1	382,046	62,782	1	6 B1						1.00					
PC_2696	P11_H12	LSIL	39 A2	406,312	267,566	1	39 A						1.00					

Supplementary Table 2 (continued)

ID	PL	PAP	HPV Type	Total Merged Reads (n)	Total Mapped Reads (n)	HPV Type (n)	HPV #1	HPV #2	HPV #3	HPV #4	HPV #5	HPV #6	p #1	p #2	p #3	p #4	p #5	p #6
PC_3101	P9_E6	HSIL	16 A1	276,904	202,426	1	16 A1						1.00					
PC_3109	P9_E7	HSIL	16 A1	257,900	182,236	1	16 A1						1.00					
PC_3102	P9_E10	HSIL	51 A4	111,284	19,942	4	51 A4	39	52	16			0.91	0.05	0.03	0.01		
PC_3110	P9_E11	HSIL	39 A2	290,156	202,112	1	39 A						1.00					
PC_3142	P9_F1	HSIL	16 A1	287,112	121,304	1	16 A1						1.00					
PC_3103	P9_F2	HSIL	16 A1	229,842	119,434	1	16 A1						1.00					
PC_3111	P9_F3	HSIL	16 A1	357,738	139,506	1	16 A1						1.00					
PC_3119	P9_F4	HSIL	16 A1	319,146	128,092	1	16 A1						1.00					
PC_3127	P9_F5	HSIL	33 A1	178,144	67,688	1	33 A1,2						1.00					
PC_3135	P9_F6	HSIL	31 B2	208,128	62,228	1	31 B1,2						1.00					
PC_3143	P9_F7	HSIL	58 A2	191,080	29,722	1	58 A2						1.00					
PC_3104	P9_F8	HSIL	39 A2	184,298	32,962	4	39 A	18	51	16			0.95	0.03	0.01	0.01		
PC_3112	P9_F9	HSIL	NA	161,424	9,116	3	35 A1,2	16	18				0.94	0.04	0.02			
PC_3120	P9_F10	HSIL	16 A1	251,164	136,528	1	16 A1						1.00					
PC_3144	P9_F12	HSIL	18 A1	234,778	59,404	2	18 A1	58					0.84	0.16				
PC_3121	P9_G1	HSIL	51 A2	209,376	93,372	1	51 A1						1.00					
PC_3129	P9_G2	HSIL	16 A2	713,672	545,054	1	16 A1,2						1.00					
PC_3137	P9_G3	HSIL	16 A1	261,602	127,236	2	16 A1	62					0.81	0.19				
PC_3145	P9_G4	HSIL	58 A2	370,106	269,016	2	58 A2	54					0.96	0.04				
PC_3106	P9_G5	HSIL	58 A3	78,976	10,948	1	58 A2						1.00					
PC_3114	P9_G6	HSIL	16 A2	242,740	147,226	1	16 A1,2						1.00					
PC_3122	P9_G7	HSIL	52 A1	226,378	116,138	2	52 A1	66					0.99	0.01				
PC_3146	P9_G8	HSIL	16 A2	540,442	423,124	1	16 A1,2						1.00					
PC_3107	P9_G9	HSIL	16 A2	471,444	349,684	3	16 A1,2	30	62				0.93	0.06	0.01			
PC_3123	P9_G10	HSIL	31 C3	220,708	146,006	1	31 C1,3						1.00					
PC_3131	P9_G12	HSIL	62	164,512	13,514	4	52 A1	82	16	59			0.96	0.02	0.01	0.01		
PC_3140	P9_H4	HSIL	16 A1	317,592	188,426	1	16 A1						1.00					
PC_3148	P9_H5	HSIL	16 A2	554,998	406,296	2	16 A1,2	18					0.61	0.39				
PC_3125	P19_F10	HSIL	16 C1	182,394	116,072	1	16 C1						1.00					
PC_1278	P20_C12	HSIL	16 A4*	55,922	33,290	2	16 A1,2	39					0.99	0.01				
PC_3149	P25_A7	HSIL	58 B2*	90,408	37,374	3	58 B2	39	16				0.73	0.22	0.05			
PC_3175	P25_A9	HSIL	16 C1	429,950	341,420	1	16 C1						1.00					
PC_3187	P25_A10	HSIL	16 A4*	198,666	140,648	2	16 A1	35					0.99	0.01				
PC_3172	P25_A11	HSIL	16 A4*	97,068	61,986	3	35 A1,2	39	16				0.98	0.02	0.01			
PC_3150	P25_B7	HSIL	61*	53,576	6,394	3	39 A	16	58				0.86	0.13	0.01			
PC_3163	P25_B8	HSIL	16 A4	83,768	34,466	1	16 A1						1.00					
PC_3178	P25_B9	HSIL	16 A1	122,278	92,284	2	16 A1	44					0.99	0.01				
PC_3153	P25_C7	HSIL	58 A2	53,648	14,764	3	58 A2	52	16				0.82	0.09	0.09			
PC_3164	P25_C8	HSIL	16 C1	119,132	94,270	1	16 C1						1.00					
PC_3179	P25_C9	HSIL	73 A1*	59,262	35,728	2	73 A2	16					0.88	0.12				
PC_3190	P25_C10	HSIL	16 A4	269,908	212,336	1	16 A1						1.00					
PC_3154	P25_D7	HSIL	35 A2	155,558	71,634	1	35 A1,2						1.00					
PC_3167	P25_D8	HSIL	35 A2	37,264	16,864	2	36 A1,2	16					0.95	0.05				
PC_3180	P25_D9	HSIL	16 A4*	122,100	86,816	3	16 A1,2	44	74				0.98	0.01	0.01			
PC_3191	P25_D10	HSIL	16 A4*	570,044	348,482	5	16 A1,2	44	74	62	54		0.67	0.18	0.13	0.01	0.01	
PC_3155	P25_E7	HSIL	39 A1*	367,438	308,654	2	39 A1	52					0.95	0.05				
PC_3168	P25_E8	HSIL	16 A2	249,124	181,846	2	16 A2	58					0.67	0.33				
PC_3181	P25_E9	HSIL	16 A4*	225,558	157,564	2	16 A1	68					0.99	0.01				
PC_3192	P25_E10	HSIL	33 A2	238,546	123,548	2	33 A2	54					0.99	0.01				
PC_3169	P25_F8	HSIL	16 A1	119,918	77,584	1	16 A1						1.00					

Supplementary Table 2 (continued)

ID	PL	PAP	HPV Type	Total Merged Reads (n)	Total Mapped Reads (n)	HPV Type (n)	HPV #1	HPV #2	HPV #3	HPV #4	HPV #5	HPV #6	p #1	p #2	p #3	p #4	p #5	p #6
PC_3182	P25_F9	HSIL	39 A2	139,590	97,146	2	39 A	51					0.99	0.01				
PC_3193	P25_F10	HSIL	16 A1	430,734	368,762	1	16 A1						1.00					
PC_3157	P25_G7	HSIL	16 A1	211,808	165,168	1	16 A1						1.00					
PC_3173	P25_G8	HSIL	35 A2	319,774	204,232	1	35 A1,2						1.00					
PC_3184	P25_G9	HSIL	16 A1	219,202	138,658	2	16 A1	39					0.97	0.03				
PC_3195	P25_G10	HSIL	18 A2	136,122	40,256	1	18 A3,4						1.00					
PC_3158	P25_H7	HSIL	16 A2	254,954	204,866	1	16 A2						1.00					
PC_3174	P25_H8	HSIL	16 A4*	235,520	184,872	1	16 A1						1.00					
PC_3186	P25_H9	HSIL	83*	100,474	68,930	1	35 A1,2						1.00					
PC_3171	P25_H10	HSIL	16 A4*	104,174	68,234	1	16 A1						1.00					

E6/E7, HPV E6/E7 gene amplified by PCR; HSIL, high-grade squamous intraepithelial lesion; HPV, human papillomavirus; Info, information; ID, sample identification; L1, HPV L1 gene amplified by PCR; LSIL, low-grade squamous intraepithelial lesion; PCR, polymerase chain reaction; PL, PCR plate number and 96-well plate position; NA, not available/sequenceable; p #n, proportional composition of HPV genotype ranked in descending order by abundance; PAP, Pap smear; Seq, Sanger (dideoxy) sequencing; HPV #n, HPV genotype(s) identified ranked in descending order by abundance.

^a Sample ID, plate number and well position of LSIL ($n = 95$) and HSIL ($n = 60$) cervical cytology samples.

^b HPV genotype determined by BLAST alignment of E6/E7 amplicon/Sanger-based sequences. HPV genotypes are in numerals; variant lineage and sublineage are in alphanumeric values, respectively. For non-sequenceable or interpretable E6/E7 results, HPV L1 sequencing results were used alternatively for genotype determination. These samples ($n = 16$) are indicated by a star (*). Samples (9/155 samples, 5.81%) with discordant HPV typing results by Sanger sequencing/BLAST and deep sequencing/taxonomic profiling are in bold.

^c Sequence data and HPV genotype composition determined by the Taxonomic Profiling workflow.

^d Total merged and mapped reads statistics generated by the Taxonomic Profiling workflow.

^e HPV genotype(s) determined by taxonomic profiling of amplicon/deep seq-based sequences. HPV genotypes are in numerals; variant lineage and sublineage are in alphanumeric values, respectively. Up to 6 predominant HPV type(s) per sample are tabulated. Only types meeting qualification (confidence score ≥ 0.995) and constituting $\geq 1\%$ of the HPV composition within the sample) are listed. The reported confidence score equates to $1 - p$ -value under the null hypothesis that the reads map at random positions in the database [32]. The corresponding proportional composition are tabulated under p #n. Discordant HPV typing results by Sanger and deep sequencing are highlighted in bold ($n = 9$).