Supplemental Table S1 – Summary of cadaver information, exposure, sample preparation and DNA results of rapid and traditional approaches

Donor	Age	Season*	Decomposition		Sample		PMI	Mass (g)	Cleaning	Prep.	Lysis	Incubation	Quantification (ng/µL)			Allelic recovery
			Surface	Burial									SA	LA	DI	
16-03 Male	76	Summer	✓		R - distal phalanx (foot)	1st	~4 years	2.1707	Bleach/water/ethanol wipe	Crushed	PrepFiler	15 min	0.5919	Undet	-	-
													1:5 0.0638	1:5 0.0028	23.04	78%
												2 h	0.5548	Undet	-	57%
						2nd		0.2384	Bleach/water/ethanol wipe	Crushed	PrepFiler	15 min	0.3604	0.0019	185.5	83%
						3rd		0.2450	Bleach/water/ethanol wipe	Whole	PrepFiler	2 h	0.1968	0.0013	152.1	59%
						4th		0.2625	Bleach/water/ethanol wipe	Crushed	PrepFiler	15 min	0.0238	0.0018	13.07	61%
						5th		0.1804	Bleach/water/ethanol wipe	Whole	PrepFiler	2 h	0.0917	0.0008	117.4	47%
					L - distal phalanx (foot)	2nd		0.3228	Physical/chemical/UV	Milled	Demin.	o/n	3.4334	0.5755	5.965	78%
						3rd		0.3285	Bleach/water/ethanol wipe	Whole	PrepFiler	15 min	0.0737	0.0003	237.5	92%
						4th		0.3146	Bleach/water/ethanol wipe	Crushed	PrepFiler	15 min	Undet	Undet	-	-
													1:5 0.0025	Undet	-	11%
						5th		0.2474	Physical/chemical/UV	Milled	Demin.	o/n	1.9543	0.4174	4.682	85%
18-14 Female	75	Winter	✓		R - distal phalanx (hand)	1st	~2 years	1.5600	Physical/chemical/UV	Milled	Demin.	o/n	43.3355	34.6438	1.250	90%
						2nd		1.1000	Physical/chemical/UV	Milled	Demin.	o/n	86.9682	81.8279	1.062	100%
						3rd		1.2700	Physical/chemical/UV	Milled	Demin.	o/n	127.2142	83.5883	1.521	100%
						4th		0.7000	Physical/chemical/UV	Milled	Demin.	o/n	31.7632	16.6916	1.902	85%
						5th		0.5700	Physical/chemical/UV	Milled	Demin.	o/n	55.2118	42.7386	1.291	80%
					R - distal phalanx (foot)	1st		3.5000	Physical/chemical/UV	Milled	Demin.	o/n	90.8681	83.3555	1.090	100%
						2nd		0.6200	Physical/chemical/UV	Milled	Demin.	o/n	57.6558	47.2153	1.221	100%
						3rd		0.6400	Physical/chemical/UV	Milled	Demin.	o/n	55.8839	63.6569	0.877	100%
						4th		0.2800	Physical/chemical/UV	Milled	Demin.	o/n	22.442	26.3336	0.852	97%
						5th		0.1300	Physical/chemical/UV	Milled	Demin.	o/n	15.4191	15.8274	0.974	100%
18-16 Male	68	Winter		✓	L - distal phalanx (hand)	1st	~1 year	1.2825	Bleach/water/ethanol wipe	Whole	PrepFiler	15 min	0.0172	0.002	8.547	73%
						2nd		0.6502	Bleach/water/ethanol wipe	Crushed	PrepFiler	15 min	0.0021	0.0001	19.86	45%
						4th		0.5217	Bleach/water/ethanol wipe	Crushed	PrepFiler	15 min	0.0148	0.0017	8.958	47%
						5th		0.4562	Bleach/water/ethanol wipe	Whole	PrepFiler	15 min	0.004	0.0008	4.947	33%
					L – distal phalanx (foot)	1st		1.7267	Bleach/water/ethanol wipe	Whole	Demin.	o/n	0.0178	0.0056	3.199	100%
						2nd		0.2276	Bleach/water/ethanol wipe	Crushed	Demin.	o/n	0.0208	0.0011	18.22	76%
					L femur			0.1	Tissue removed/ethanol wipe	Drillings	PrepFiler	15 min	0.0382	0.0075	5.121	100%

					R – distal phalanx (hand)	1st	~2 years	1.1036	Bleach/water/ethanol wipe	Whole	PrepFiler	15 min	0.003	Undet	-	0%
						2nd		0.6149	Bleach/water/ethanol wipe	Whole	PrepFiler	15 min	0.0001	Undet	-	0%
						3rd		0.6756	Bleach/water/ethanol wipe	Crushed	PrepFiler	15 min	Undet	0.0001	-	0%
					R – distal phalanx (foot in shoe)	1st		1.227	Bleach/water/ethanol wipe	Whole	PrepFiler	15 min	0.0022	0.0003	7.275	9%
						2nd		0.2912	Bleach/water/ethanol wipe	Whole	PrepFiler	15 min	0.0162	0.001	15.91	54%
						3rd		0.4281	Bleach/water/ethanol wipe	Crushed	PrepFiler	15 min	0.0027	0.0001	42.25	19%
						4th		0.3579	Bleach/water/ethanol wipe	Crushed	PrepFiler	15 min	0.0064	0	197.5	42%
						5th		0.3110	Bleach/water/ethanol wipe	Crushed	PrepFiler	15 min	0.0228	0.0031	7.342	61%
					R femur			0.1	Tissue removed/ethanol wipe	Drillings	PrepFiler	15 min	0.0132	0.0064	2.049	100%
18-17 Female	51	Winter		✓	L – distal phalanx (hand)	1st	~1 year	0.5896	Bleach/water/ethanol wipe	Whole	PrepFiler	15 min	0.1052	0.0461	2.284	100%
						2nd		0.4519	Bleach/water/ethanol wipe	Whole	Demin.	o/n	2.1722	1.1295	1.923	100%
						4th		0.4938	Bleach/water/ethanol wipe	Crushed	PrepFiler	15 min	0.1097	0.0525	2.087	100%
					L – distal phalanx (foot in shoe)	1st		1.3423	Bleach/water/ethanol wipe	Whole	PrepFiler	15 min	0.0606	0.0419	1.447	100%
						2nd		0.3327	Bleach/water/ethanol wipe	Whole	PrepFiler	15 min	1.8618	1.3613	1.367	100%
						3rd		0.3420	Bleach/water/ethanol wipe	Crushed	PrepFiler	15 min	0.7569	0.7328	1.032	100%
						4th		0.2634	Bleach/water/ethanol wipe	Crushed	PrepFiler	15 min	0.6938	0.5241	1.323	100%
						5th		0.2499	Bleach/water/ethanol wipe	Crushed	PrepFiler	15 min	0.4536	0.3927	1.155	100%
					Left femur			0.1	Tissue removed/ethanol wipe	Drillings	PrepFiler	15 min	0.0109	0.0065	1.676	97%
					R – distal phalanx (hand)	3rd	~2 years	0.5795	Bleach/water/ethanol wipe	Crushed	Demin.	o/n	1.132	0.553	2.046	100%
						4th		0.6375	Bleach/water/ethanol wipe	Crushed	PrepFiler	15 min	0.0857	0.0154	5.554	100%
						5th		0.5157	Bleach/water/ethanol wipe	Whole	PrepFiler	15 min	0.0079	0.0024	3.227	64%
					R – distal phalanx (foot)	1st		0.1	Bleach/water/ethanol wipe	Crushed^	PrepFiler	2 h	0.0186	0.0111	1.6704	100%
					Right femur			0.1	Bleach/water/ethanol wipe	Drillings	PrepFiler	2 h	0.0016	0.0005	3.2374	35%
19-01	87	Summer	✓		Digits – R hand	1st	0 days									
						Nail clipping		0.0040	Nil	Subsampled	PrepFiler	2h	32.6255	25.2383	1.2927	-
						Nail bed		0.2214	Nil	Subsampled	PrepFiler	2h	180.156	142.74	1.2621	-
													1:20 8.6019	1:20 10.1716	0.8457	-
						Tissue		0.0449	Nil	Subsampled	PrepFiler	2h	112.0748	123.3544	0.9086	-
													1:20 5.3925	1:20 7.0578	0.764	-
						2nd	2 days									
						Nail clipping		0.0091	Nil	Subsampled	PrepFiler	2h	55.3737	43.529	1.2721	-
													1:20 2.7064	1:20 2.453	1.1033	-

						Nail bed		0.0749	Nil	Subsampled	PrepFiler	2h	278.5557	233.0341	1.1953	-
													1:20 15.9155	1:20 21.0835	0.7549	-
						Tissue		0.0464	Nil	Subsampled	PrepFiler	2h	204.8194	202.6451	1.0107	-
													1:20 9.1083	1:20 12.3828	0.7356	-
						3rd										
						Nail clipping	6 days	0.0027	Nil	Subsampled	PrepFiler	2h	12.818	8.3813	1.5294	-
						Nail bed		0.0690	Nil	Subsampled	PrepFiler	2h	271.0962	172.8216	1.5686	-
													1:20 13.4614	1:20 11.1743	1.2047	-
						Tissue		0.0530	Nil	Subsampled	PrepFiler	2h	0.1284	0.0792	1.6209	-
						4th										
						Nail clipping	10 days	0.0197	Nil	Subsampled	PrepFiler	2h	18.9833	15.3465	1.237	-
						Nail bed		0.0738	Nil	Subsampled	PrepFiler	2h	157.396	132.2561	1.1901	-
													1:20 5.71	1:20 6.4918	0.8796	-
						Tissue		0.0414	Nil	Subsampled	PrepFiler	2h	0.0062	Undet	-	-
						5th										
						Nail clipping	14 days	0.0089	Nil	Subsampled	PrepFiler	2h	2.9054	2.3568	1.232	100%
						Nail bed		0.0610	Nil	Subsampled	PrepFiler	2h	70.8896	62.9808	1.125	-
													1:20 2.9431	1:20 3.4349	0.856	100%
						Tissue		0.0268	Nil	Subsampled	PrepFiler	2h	0.0249	0.0042	5.962	80%
					Digits – L hand	1st										
						Nail clipping	14 days	0.0240	Nil	Subsampled	PrepFiler	2h	80.5443	67.6819	1.19	-
													1:20 3.6381	1:20 3.7374	0.973	100%
						Nail bed		0.0791	Nil	Subsampled	PrepFiler	2h	46.0586	49.1382	0.937	-
													1:20 2.583	1:20 3.1007	0.833	100%
						Tissue		0.0803	Nil	Subsampled	PrepFiler	2h	0.239	0.0456	5.241	57%
						2nd										
						Nail clipping	10 days	0.0308	Nil	Subsampled	PrepFiler	2h	50.6869	49.7667	1.0185	-
													1:20 2.1904	1:20 2.4519	0.8933	-
						Nail bed		0.0543	Nil	Subsampled	PrepFiler	2h	102.1453	106.8544	0.9559	-
													1:20 5.3972	1:20 6.3983	0.8435	-
						Tissue		0.05	Nil	Subsampled	PrepFiler	2h	290.7895	213.1055	1.3645	-
													1:20 10.6329	1:20 12.2889	0.8652	-
						3rd	6 days									

						Nail clipping		0.0182	Nil	Subsampled	PrepFiler	2h	9.0197	4.8765	1.8496	-
						Nail bed		0.0874	Nil	Subsampled	PrepFiler	2h	287.4311	236.0109	1.2179	-
													1:20 15.3756	1:20 19.4078	0.7922	-
						Tissue		0.0625	Nil	Subsampled	PrepFiler	2h	92.8711	11.705	7.9343	-
													1:20 4.3486	1:20 0.7636	5.6948	-
						4^{th}										
						Nail clipping		0.0040	Nil	Subsampled	PrepFiler	2h	4.6403	2.0994	2.2103	-
						Nail bed	2 days	0.1135	Nil	Subsampled	PrepFiler	2h	180.5851	157.1197	1.1493	-
													1:20 6.8037	1:20 8.2215	0.8276	-
						Tissue		0.0468	Nil	Subsampled	PrepFiler	2h	256.9568	226.5088	1.1344	-
													1:20 10.5226	1:20 14.347	0.7334	-
						5^{th}										
						Nail clipping		0.0093	Nil	Subsampled	PrepFiler	2h	1.3255	0.5158	2.5696	-
						Nail bed	0 days	0.0748	Nil	Subsampled	PrepFiler	2h	224.8325	213.9209	1.051	-
													1:20 10.5061	1:20 13.5562	0.775	-
						Tissue		0.0551	Nil	Subsampled	PrepFiler	2h	337.2275	287.463	1.1731	-
													1:20 13.553	1:20 18.7928	0.7212	-
					Digits – R foot	1^{st}										
						Nail clipping		0.0731	Nil	Subsampled	PrepFiler	2h	11.4732	7.7569	1.479	100%
						Nail bed		0.3496	Nil	Subsampled	PrepFiler	2h	133.1683	104.8617	1.269	-
													1:20 7.8133	1:20 7.3163	1.067	100%
						Tissue	14 days	0.0491	Nil	Subsampled	PrepFiler	2h	153.4238	83.1584	1.845	-
													1:20 6.777	1:20 5.135	1.319	100%
						Bone		4.3934	Nil	Nil	PrepFiler	2h	533.8893	331.0216	1.612	-
													1:20 24.3466	1:20 27.7349	0.877	100%
						2^{nd}										
						Nail clipping		0.0315	Nil	Subsampled	PrepFiler	2h	1.6974	0.8847	1.9187	-
						Nail bed	10 days	0.1652	Nil	Subsampled	PrepFiler	2h	199.576	198.8661	1.0036	-
													1:20 10.2789	1:20 13.9068	0.7391	-
						Tissue		0.0281	Nil	Subsampled	PrepFiler	2h	163.3163	152.9764	1.0676	-
													1:20 7.6395	1:20 10.4681	0.7298	-
						3^{rd}	6 days									
						Nail clipping		0.0040	Nil	Subsampled	PrepFiler	2h	2.0754	1.1511	1.8029	-

						Nail bed		0.0611	Nil	Subsampled		PrepFiler	2h	285.3868	249.0123	1.1461	-
														1:20 14.5823	1:20 18.7047	0.7796	-
						Tissue		0.0538	Nil	Subsampled		PrepFiler	2h	242.0638	215.444	1.1236	-
														1:20 9.9073	1:20 13.7751	0.7192	-
						Toe		1.7749	Nil	DESS+ swab at day:	1	Automated PrepFiler		2.6245	2.3873	1.099	100%
											2			4.2807	3.6373	1.176	100%
											4			5.6226	3.7771	1.488	100%
											8			13.9392	9.3821	1.485	100%
										Nil		PrepFiler	2h	515.7092	457.4386	1.127	-
														1:5 64.2138	1:5 65.0295	0.987	100%
						4^{th}											
						Nail clipping		0.0106	Nil	Subsampled		PrepFiler	2h	2.9737	1.6689	1.7819	-
						Nail bed	2 days	0.0437	Nil	Subsampled		PrepFiler	2h	248.2898	242.7919	1.0226	-
														1:20 14.1588	1:20 18.6454	0.7594	-
						Tissue		0.0859	Nil	Subsampled		PrepFiler	2h	413.2822	319.7974	1.2923	-
														1:20 16.1223	1:20 20.8234	0.7742	-
						5^{th}											
						Nail clipping	0 days	-	Nil	Subsampled		PrepFiler	2h	45.9019	53.854	0.852	-
														1:20 2.3588	1:20 3.1264	0.754	100%
						Toe		1.3442	Nil	Nil		PrepFiler	2h	292.4578	198.4171	1.474	-
														1:20 13.3899	1:20 14.1711	0.944	100%
					Digits – L foot	1^{st}											
						Nail clipping		0.0664	Nil	Subsampled		PrepFiler	2h	3.6151	3.1247	1.156	100%
						Nail bed		0.2793	Nil	Subsampled		PrepFiler	2h	233.6811	222.1548	1.051	-
														1:20 12.4823	1:20 16.5337	0.755	100%
						Tissue	0 days	0.0663	Nil	Subsampled		PrepFiler	2h	137.8792	143.9271	0.958	-
														1:20 6.5226	1:20 9.1299	0.714	100%
						Bone		5.5211	Nil	Nil		PrepFiler	2h	293.0207	228.9717	1.279	-
														1:20 9.266	1:20 12.0215	0.770	100%
						2^{nd}											
						Nail clipping		-	Nil	Subsampled		PrepFiler	2h	1.0558	0.473	2.232	-
						Nail bed	2 days	0.0547	Nil	Subsampled		PrepFiler	2h	240.3772	225.5853	1.0656	-
														1:20 11.1827	1:20 13.4875	0.8291	-

						Tissue		0.0518	Nil	Subsampled		PrepFiler	2h	649.9872	402.59	1.6145	-
														1:20 21.5276	1:20 23.8421	0.9029	-
						3rd											
						Nail clipping		0.0048	Nil	Subsampled		PrepFiler	2h	1.5081	1.1195	1.3471	-
						Nail bed		0.0446	Nil	Subsampled		PrepFiler	2h	117.2141	106.1164	1.1046	-
														1:20 4.2864	1:20 5.8782	0.7292	-
						Tissue		0.1049	Nil	Subsampled		PrepFiler	2h	32.635	33.5718	0.9721	-
						Toe	6 days	2.1803	Nil	DESS+ swab at day:	1	Automated PrepFiler		8.2922	6.1361	1.351	100%
											2			15.2413	13.5315	1.126	100%
											4			6.9539	4.7542	1.462	100%
											8			13.5741	9.4432	1.437	100%
										Nil		PrepFiler	2h	432.9052	479.7599	0.902	-
														1:10 35.4914	1:10 37.393	0.949	100%
						4th											
						Nail clipping		Error	Nil	Subsampled		PrepFiler	2h	17.0538	19.8604	0.8587	-
						Nail bed	10 days	0.0452	Nil	Subsampled		PrepFiler	2h	355.1298	267.4773	1.3277	-
														1:20 16.2386	1:20 20.2798	0.8007	-
						Tissue		0.0479	Nil	Subsampled		PrepFiler	2h	507.732	345.54	1.4694	-
														1:20 20.7085	1:20 22.1764	0.9338	-
						5th											
						Nail clipping	14 days	-	Nil	Subsampled		PrepFiler	2h	2.1648	1.9549	1.107	100%
						Toe		1.4931	Nil	Nil		PrepFiler	2h	121.6109	121.466	1.001	-
														1:20 4.5285	1:20 6.3373	0.714	100%
20-02 Female	94	Summer#	✓		Fingernail		14-17 days	0.4600	Nil	Nil		PrepFiler	2 h	Undet	Undet	-	-
														1:5 0.0445	1:5 0.0039	11.27	69%
					Little toe			0.9962	Nil	Nil		PrepFiler	2 h	0.0095	0.0007	14.38	45%
20-03 Female	88	Summer#	✓		Fingernail		14-17 days	0.0828	Nil	Nil		PrepFiler	2 h	0.1605	0.026	6.175	52%
					Little toe			1.9396	Nil	Nil		PrepFiler	2 h	0.1632	0.0498	3.274	85%

*Where cadavers decomposed over multiple seasons, the season of placement is noted; #cadavers were a part of the national disaster victim identification exercise; ^Crushed by BioPulveriser 59014N (BioSpec)

PMI = post mortem interval; Prep. = preparation; SA = small autosomal target; LA = large autosomal target; DI = degradation index; R = right; L = left; PrepFiler™ = PrepFiler™ Lysis Buffer and PrepFiler™ BTA Forensic DNA Extraction Kit (Thermo Fisher Scientific: TFS) followed by extraction on the AutoMate Express™ Forensic DNA Extraction System (TFS); Undet = Undetectable (ng)/µL; UV = ultra-violet irradiated; Demin. = total demineralisation and silica clean-up protocol; o/n = overnight; DESS = dimethyl sulfoxide (DMSO), ethylenediaminetetraacetic acid (EDTA), salt saturated solution