TABLE E-1 Reason for Removal, Duration in Vivo, and Average Maximum Oxidation Index Measured in Regions within Rim Surfaces of Explants Shortly After Explantation*

Explant	Reason for Revision†	Duration in Vivo *(mo)*	Maximum Oxidation within Two Months After Explantation‡ *(%)*	
			Region 5	Region 6
H-07-020	Acetabular loosening, dislocation	0.5	0.00 ± 0.01	0.00 ± 0.01
H-04-005	Acetabular loosening, femoral loosening	1	0.01 ± 0.01	0.01 ± 0.01
H-05-046	Femoral loosening, dislocation	1	0.03 ± 0.03	0.03 ± 0.02
H-05-047	Femoral loosening, dislocation	1	0.03 ± 0.01	0.03 ± 0.01
H-06-050	Infection	1	0.03 ± 0.00	0.02 ± 0.00
H-03-066	Infection	2	0.02 ± 0.01	0.02 ± 0.01
H-05-009	Dislocation	3	0.05 ± 0.00	0.02 ± 0.00
H-05-033	Acetabular loosening	5	0.01 ± 0.00	0.03 ± 0.01
H-07-032	Acetabular loosening	6	0.02 ± 0.01	0.01 ± 0.01
H-05-006	Dislocation	8	0.04 ± 0.03	0.04 ± 0.03
H-07-005	Pain	11	0.00 ± 0.01	0.00 ± 0.01
H-06-001	Hematoma, wound dehiscence	13	0.02 ± 0.04	0.01 ± 0.01
H-07-004	Infection	14	0.01 ± 0.00	0.01 ± 0.00
H-07-024	Fracture of femoral neck	14	–0.01 ± 0.01	–0.01 ± 0.00
H-05-054	NA	17	0.01 ± 4.00	0.01 ± 0.00
H-07-041	Acetabular loosening	17	0.01 ± 0.01	0.01 ± 0.02
H-02-084	Infection	20	0.03 ± 0.03	0.03 ± 0.03
H-02-071	Infection	24	0.01 ± 0.01	0.01 ± 0.00
H-04-009	Dislocation	24	0.01 ± 0.00	0.01 ± 0.00
H-04-028	Liner fracture, femoral loosening	24	0.07 ± 0.00	0.03 ± 0.01
H-04-017	NA	26	0.01 ± 0.00	0.01 ± 0.00
H-04-055	Dislocation	32	0.04 ± 0.02	0.02 ± 0.01
H-07-022	Infection	34	0.03 ± 0.01	0.02 ± 0.01
H-07-040	Femoral loosening	39	0.01 ± 0.00	0.01 ± 0.00
H-07-049	Femoral loosening	41	0.03 ± 0.01	0.02 ± 0.00
H-07-006	Trochanteric bursitis	43	0.01 ± 0.01	0.00 ± 0.01
H-05-061	Infection	45	0.04 ± 0.02	0.02 ± 0.03
H-06-028	Dislocation	45	0.01 ± 0.01	0.01 ± 0.02
H-05-045	Infection	48	0.01 ± 0.02	0.01 ± 0.03
H-06-054	Femoral loosening	51	0.02 ± 0.00	0.01 ± 0.00
H-07-037	Femoral loosening	51	0.01 ± 0.00	0.01 ± 0.01
H-07-008	Dislocation	54	0.00 ± 0.00	0.00 ± 0.01
H-05-027	NA	66	0.00 ± 0.01	–0.01 ± 0.00
H-06-037	Femoral loosening	84	0.04 ± 0.03	0.01 ± 0.01

*Note that oxidation was measured shortly after implantation in Regions 5 and 6 only. †NA = not available. ‡The values are given as the average and the standard deviation.

TABLE E-2 Oxidation Measured in Explanted Components After ex Vivo Storage

Explant	In Vivo Duration *(mo)*	Ex Vivo Duration *(mo)*	Ex Vivo Average Regional Oxidation Index* *(%)*					
			Region 1	Region 2	Region 3	Region 4	Region 5	Region 6
H-07-049	41	7	0.20 ± 0.01	0.09 ± 0.02	0.06 ± 0.01	0.09 ± 0.03	0.04 ± 0.01	0.04 ± 0.01
H-07-040	39	12	0.33 ± 0.02	0.15 ± 0.02	0.03 ± 0.01	0.05 ± 0.01	0.03 ± 0.02	0.03 ± 0.01
H-07-037	51	12	0.15 ± 0.00	0.02 ± 0.00	0.02 ± 0.00	0.02 ± 0.01	0.20 ± 0.02	0.08 ± 0.01
H-07-041	17	13	0.02 ± 0.00	0.02 ± 0.00	0.02 ± 0.00	0.02 ± 0.00	0.03 ± 0.01	0.02 ± 0.00
H-07-032	6	14	0.15 ± 0.01	0.05 ± 0.01	0.04 ± 0.01	0.04 ± 0.01	0.03 ± 0.00	0.03 ± 0.00
H-07-024	14	14	0.03 ± 0.01	0.02 ± 0.00	0.01 ± 0.00	0.01 ± 0.00	0.12 ± 0.01	0.06 ± 0.01
H-07-022	34	16	0.08 ± 0.02	0.04 ± 0.00	0.04 ± 0.00	0.10 ± 0.05	0.05 ± 0.03	0.02 ± 0.00
H-07-020	0.5	17	0.04 ± 0.00	0.02 ± 0.00	0.02 ± 0.00	0.03 ± 0.00	0.06 ± 0.00	0.03 ± 0.01
H-07-006	43	18	0.17 ± 0.02	0.03 ± 0.01	0.02 ± 0.01	0.02 ± 0.01	0.02 ± 0.00	0.02 ± 0.00
H-06-054	51	18	0.40 ± 0.05	0.15 ± 0.02	0.04 ± 0.01	0.16 ± 0.02	0.17 ± 0.10	0.15 ± 0.06
H-07-005	11	19	0.25 ± 0.01	0.08 ± 0.00	0.05 ± 0.00	0.04 ± 0.01	0.14 ± 0.07	0.08 ± 0.02
H-07-004	14	19	0.20 ± 0.01	0.04 ± 0.00	0.03 ± 0.01	0.03 ± 0.00	0.16 ± 0.02	0.08 ± 0.00
H-06-050	1	21	0.05 ± 0.01	0.03 ± 0.01	0.04 ± 0.02	0.07 ± 0.01	0.20 ± 0.01	0.14 ± 0.02
H-07-008	54	22	0.29 ± 0.01	0.12 ± 0.01	0.05 ± 0.01	0.11 ± 0.03	0.36 ± 0.02	0.12 ± 0.02
H-06-037	84	23	0.58 ± 0.02	0.16 ± 0.02	0.20 ± 0.03	0.35 ± 0.02	0.81 ± 0.03	0.49 ± 0.01
H-06-028	45	24	0.37 ± 0.03	0.10 ± 0.04	0.05 ± 0.02	0.19 ± 0.03	0.04 ± 0.00	0.03 ± 0.00
H-06-001	13	33	0.29 ± 0.01	0.05 ± 0.00	0.04 ± 0.00	0.11 ± 0.01	0.63 ± 0.23	0.64 ± 0.13
H-05-061	45	33	0.70 ± 0.06	0.27 ± 0.02	0.19 ± 0.01	0.44 ± 0.04	0.30 ± 0.06	0.16 ± 0.03
H-05-054	17	36	0.49 ± 0.01	0.21 ± 0.01	0.16 ± 0.02	0.27 ± 0.06	0.2 ± 0.03	0.15 ± 0.03
H-05-045	48	36	0.20 ± 0.03	0.03 ± 0.01	0.02 ± 0.01	0.06 ± 0.02	0.17 ± 0.05	0.10 ± 0.02
H-05-027	66	36	0.20 ± 0.03	0.02 ± 0.00	0.02 ± 0.01	0.06 ± 0.02	0.05 ± 0.02	0.01 ± 0.00
H-05-046	1	38	0.12 ± 0.02	0.05 ± 0.00	0.04 ± 0.01	0.05 ± 0.01	0.08 ± 0.00	0.17 ± 0.00
H-05-047	1	39	0.06 ± 0.00	0.10 ± 0.00	0.13 ± 0.01	0.01 ± 0.01	0.08 ± 0.01	0.11 ± 0.02
H-05-033	5	40	0.55 ± 0.02	0.28 ± 0.03	0.12 ± 0.03	0.08 ± 0.01	0.26 ± 0.04	0.75 ± 0.14
H-05-009	3	43	0.17 ± 0.00	0.14 ± 0.00	0.11 ± 0.01	0.15 ± 0.00	0.16 ± 0.02	0.46 ± 0.04
H-04-055	32	43	1.38 ± 0.05	0.72 ± 0.06	0.68 ± 0.07	0.65 ± 0.12	1.57 ± 0.06	1.20 ± 0.02
H-05-006	8	44	0.25 ± 0.02	0.09 ± 0.01	0.07 ± 0.01	0.02 ± 0.01	0.11 ± 0.02	0.06 ± 0.00
H-04-028	24	49	1.60 ± 0.17	0.93 ± 0.19	0.52 ± 0.21	0.03 ± 0.61	0.20 ± 0.02	0.07 ± 0.03
H-04-005	1	52	0.82 ± 0.01	0.29 ± 0.04	0.50 ± 0.05	0.43 ± 0.06	0.47 ± 0.07	0.76 ± 0.23
H-04-017	26	53	0.92 ± 0.02	0.22 ± 0.01	0.23 ± 0.01	0.71 ± 0.09	0.11 ± 0.05	0.12 ± 0.05
H-04-009	24	54	0.82 ± 0.06	0.06 ± 0.02	0.10 ± 0.06	0.53 ± 0.11	0.58 ± 0.15	0.56 ± 0.02
H-03-066	2	58	2.52 ± 0.73	1.65 ± 0.37	1.53 ± 0.34	1.38 ± 0.33	1.32 ± 0.09	1.63 ± 0.13
H-02-084	20	69	0.25 ± 0.01	0.93 ± 0.08	0.82 ± 0.09	0.27 ± 0.04	0.29 ± 0.03	1.04 ± 0.22
H-02-071	24	72	3.59 ± 0.17	2.67 ± 0.29	2.44 ± 0.37	2.15 ± 0.25	1.20 ± 0.40	1.86 ± 0.66

*The values are given as the average and the standard deviation.

TABLE E-3 Crosslink Density in Explanted Components After ex Vivo Storage*

Explant	In Vivo Duration *(mo)*	Ex Vivo Duration *(mo)*	Ex Vivo Average Regional Crosslink Density† *(mol/dm^3)*					
			Region 1	Region 2	Region 3	Region 4	Region 5	Region 6
H-07-049	41	7	0.29 ± 0.02	0.29 ± 0.01	0.31 ± 0.01	0.30 ± 0.01	0.30 ± 0.02	0.31 ± 0.02
H-07-040	39	12	0.24 ± 0.00	0.25 ± 0.00	0.27 ± 0.01	0.28 ± 0.00	0.29 ± 0.02	0.27 ± 0.02
H-07-037	51	12	0.29 ± 0.02	0.32 ± 0.02	0.33 ± 0.02	0.32 ± 0.01	0.36 ± 0.04	0.34 ± 0.01
H-07-041	17	13	0.29 ± 0.01	0.29 ± 0.01	0.30 ± 0.01	0.30 ± 0.00	0.30 ± 0.01	0.30 ± 0.01
H-07-032	6	14	0.23 ± 0.03	0.28 ± 0.01	0.29 ± 0.01	0.28 ± 0.01	0.29 ± 0.01	0.28 ± 0.01
H-07-024	14	14	0.30 ± 0.01	0.30 ± 0.02	0.30 ± 0.01	0.29 ± 0.02	0.26 ± 0.03	0.29 ± 0.02
H-07-022	34	16	0.24 ± 0.01	0.26 ± 0.01	0.28 ± 0.01	0.26 ± 0.00	0.29 ± 0.00	0.30 ± 0.01
H-07-020	0.5	17	0.25 ± 0.00	0.28 ± 0.01	0.28 ± 0.00	0.25 ± 0.00	0.26 ± 0.00	0.27 ± 0.00
H-07-006	43	18	0.23 ± 0.02	0.29 ± 0.01	0.29 ± 0.01	0.26 ± 0.01	0.26 ± 0.01	0.28 ± 0.00
H-06-054	51	18	0.19 ± 0.02	0.17 ± 0.15	0.28 ± 0.01	0.24 ± 0.01	0.31 ± 0.03	0.29 ± 0.01
H-07-005	11	19	0.18 ± 0.01	0.23 ± 0.01	0.25 ± 0.01	0.25 ± 0.01	0.26 ± 0.01	0.25 ± 0.01
H-07-004	14	19	0.23 ± 0.00	0.27 ± 0.00	0.28 ± 0.01	0.28 ± 0.01	0.25 ± 0.01	0.26 ± 0.01
H-06-050	1	21	0.22 ± 0.01	0.26 ± 0.00	0.28 ± 0.01	0.23 ± 0.01	0.22 ± 0.01	0.25 ± 0.01
H-07-008	54	22	0.24 ± 0.02	0.28 ± 0.01	0.30 ± 0.01	0.30 ± 0.01	0.29 ± 0.01	0.30 ± 0.01
H-06-037	84	23	0.15 ± 0.01	0.19 ± 0.01	0.20 ± 0.01	0.14 ± 0.02	0.21 ± 0.00	0.19 ± 0.01
H-06-028	45	24	0.17 ± 0.03	0.24 ± 0.01	0.26 ± 0.04	0.21 ± 0.06	0.30 ± 0.02	0.25 ± 0.03
H-06-001	13	33	0.14 ± 0.01	0.18 ± 0.01	0.16 ± 0.01	0.12 ± 0.01	0.13 ± 0.01	0.12 ± 0.01
H-05-061	45	33	0.10 ± 0.00	0.20 ± 0.01	0.21 ± 0.03	0.18 ± 0.03	0.21 ± 0.07	0.24 ± 0.04
H-05-054	17	36	0.12 ± 0.02	0.20 ± 0.06	0.22 ± 0.04	0.24 ± 0.03	0.16 ± 0.04	0.19 ± 0.05
H-05-045	48	36	0.14 ± 0.00	0.22 ± 0.03	0.29 ± 0.02	0.27 ± 0.03	0.27 ± 0.05	0.18 ± 0.03
H-05-027	66	36	0.23 ± 0.01	0.29 ± 0.01	0.30 ± 0.04	0.32 ± 0.03	0.31 ± 0.02	0.30 ± 0.00
H-05-046	1	38	0.23 ± 0.01	0.24 ± 0.01	0.23 ± 0.02	0.24 ± 0.01	0.24 ± 0.01	0.22 ± 0.01
H-05-047	1	39	0.24 ± 0.02	0.27 ± 0.02	0.24 ± 0.03	0.23 ± 0.01	0.24 ± 0.04	0.21 ± 0.02
H-05-033	5	40	0.15 ± 0.07	0.22 ± 0.04	0.26 ± 0.03	0.28 ± 0.02	0.21 ± 0.00	0.17 ± 0.01
H-05-009	3	43	0.21 ± 0.04	0.20 ± 0.01	0.20 ± 0.01	0.21 ± 0.03	0.16 ± 0.02	0.14 ± 0.03
H-04-055	32	43	0.09 ± 0.03	0.10 ± 0.01	0.11 ± 0.00	0.09 ± 0.02	0.09 ± 0.00	0.08 ± 0.00
H-05-006	8	44	0.22 ± 0.03	0.28 ± 0.03	0.28 ± 0.02	0.32 ± 0.01	0.31 ± 0.01	0.29 ± 0.02
H-04-028	24	49	0.13 ± 0.01	0.17 ± 0.02	0.17 ± 0.01	0.24 ± 0.04	0.26 ± 0.02	0.20 ± 0.01
H-04-005	1	52	0.11 ± 0.01	0.17 ± 0.00	0.19 ± 0.01	0.13 ± 0.00	0.11 ± 0.01	0.14 ± 0.03
H-04-017	26	53	0.09 ± 0.01	0.17 ± 0.03	0.18 ± 0.03	0.14 ± 0.01	0.14 ± 0.02	0.14 ± 0.02
H-04-009	24	54	0.12 ± 0.03	0.29 ± 0.03	0.29 ± 0.02	0.14 ± 0.03	0.15 ± 0.00	0.14 ± 0.02
H-03-066	2	58	0.06 ± 0.01	0.10 ± 0.00	0.09 ± 0.01	0.10 ± 0.02	0.08 ± 0.02	0.11 ± 0.03
H-02-084	20	69	0.26 ± 0.03	0.14 ± 0.02	0.13 ± 0.00	0.28 ± 0.03	0.15 ± 0.04	0.13 ± 0.03
H-02-071	24	72	0.04 ± 0.00	0.06 ± 0.01	0.06 ± 0.01	0.05 ± 0.00	0.06 ± 0.00	0.06 ± 0.01

*Note that the crosslink density measurements were carried out only after ex vivo storage. †The values are given as the average and the standard deviation.

TABLE E-4 Crystallinity in Explanted Components After ex Vivo Storage*

Explant	In Vivo Duration *(mo)*	Ex Vivo Duration *(mo)*	Ex Vivo Average Regional Crystallinity† *(%)*					
			Region 1	Region 2	Region 3	Region 4	Region 5	Region 6
H-07-049	41	7	55.0 ± 0.9	53.4 ± 2.6	53.9 ± 0.5	53.3 ± 1.7	53.5 ± 2.4	54.7 ± 1.5
H-07-040	39	12	54.6 ± 0.4	51.9 ± 2.6	52.2 ± 1.0	54.3 ± 1.5	53.1 ± 0.6	53.5 ± 0.8
H-07-037	51	12	53.3 ± 1.0	53.9 ± 0.7	51.6 ± 1.1	52.7 ± 1.2	50.5 ± 1.7	51.1 ± 0.7
H-07-041	17	13	55.4 ± 1.2	55.4 ± 3.1	54.7 ± 2.3	54.6 ± 1.1	53.6 ± 3.2	54.5 ± 2.3
H-07-032	6	14	53.5 ± 1.9	54.0 ± 1.6	51.4 ± 1.8	53.5 ± 1.3	53.5 ± 1.1	53.7 ± 2.1
H-07-024	14	14	51.7 ± 0.5	54.7 ± 1.8	53.8 ± 0.9	53.3 ± 0.3	53.8 ± 1.7	53.7 ± 0.6
H-07-022	34	16	56.7 ± 0.4	55.3 ± 0.6	53.9 ± 0.1	54.5 ± 1.0	52.8 ± 3.6	53.9 ± 0.9
H-07-020	0.5	17	51.7 ± 2.7	52.9 ± 2.7	53.4 ± 1.3	52.5 ± 1.4	52.9 ± 1.1	51.9 ± 0.9
H-07-006	43	18	57.0 ± 1.1	55.9 ± 1.2	53.2 ± 0.5	54.6 ± 2.3	54.4 ± 1.8	53.8 ± 2.3
H-06-054	51	18	55.7 ± 3.2	53.7 ± 1.4	53.5 ± 1.5	55.3 ± 2.9	55.6 ± 1.4	54.3 ± 2.0
H-07-005	11	19	53.0 ± 4.1	56.2 ± 0.8	54.4 ± 1.8	54.2 ± 2.6	54.2 ± 1.1	55.0 ± 1.0
H-07-004	14	19	54.8 ± 1.3	54.1 ± 1.4	52.2 ± 1.5	53.5 ± 2.2	55.4 ± 0.6	53.5 ± 3.4
H-06-050	1	21	52.8 ± 1.2	54.3 ± 0.4	52.9 ± 2.1	54.2 ± 1.0	51.6 ± 1.1	53.4 ± 3.0
H-07-008	54	22	54.5 ± 2.1	53.5 ± 2.6	55.0 ± 1.8	53.8 ± 2.5	54.1 ± 1.4	54.0 ± 1.9
H-06-037	84	23	52.9 ± 0.8	50.4 ± 1.3	51.1 ± 0.5	51.5 ± 1.5	50.5 ± 1.4	50.2 ± 0.4
H-06-028	45	24	58.4 ± 0.9	57.1 ± 1.6	56.6 ± 1.7	56.1 ± 2.1	52.6 ± 1.9	53.5 ± 0.5
H-06-001	13	33	57.9 ± 1.5	54.1 ± 2.0	54.9 ± 1.1	56.6 ± 1.4	60.7 ± 1.0	57.1 ± 3.0
H-05-061	45	33	58.4 ± 1.8	58.6 ± 1.5	57.7 ± 1.2	59.5 ± 1.0	59.3 ± 1.9	56.7 ± 0.7
H-05-054	17	36	58.3 ± 4.5	56.4 ± 3.8	57.2 ± 1.3	58.1 ± 1.2	62.1 ± 1.1	58.0 ± 1.1
H-05-045	48	36	54.4 ± 3.7	53.3 ± 4.2	53.8 ± 4.4	52.4 ± 1.5	51.4 ± 1.4	56.0 ± 4.7
H-05-027	66	36	53.3 ± 1.8	52.6 ± 2.7	51.6 ± 2.8	53.4 ± 3.0	51.2 ± 2.2	51.5 ± 2.8
H-05-046	1	38	53.5 ± 2.9	56.3 ± 1.0	54.7 ± 2.2	53.2 ± 0.9	53.8 ± 2.0	54.6 ± 1.9
H-05-047	1	39	54.0 ± 1.8	54.8 ± 0.6	54.8 ± 2.9	54.1 ± 1.9	54.6 ± 1.4	57.9 ± 2.2
H-05-033	5	40	59.0 ± 3.7	55.8 ± 0.2	55.3 ± 1.3	54.9 ± 1.2	58.1 ± 0.8	59.8 ± 1.3
H-05-009	3	43	55.1 ± 0.6	54.1 ± 1.4	54.5 ± 0.2	53.6 ± 1.1	58.2 ± 2.4	60.5 ± 0.7
H-04-055	32	43	66.9 ± 3.1	62.4 ± 2.0	62.8 ± 1.7	65.8 ± 3.3	62.0 ± 3.5	65.5 ± 2.2
H-05-006	8	44	56.2 ± 3.5	55.5 ± 1.2	55.4 ± 0.1	54.5 ± 1.2	53.2 ± 4.9	54.3 ± 1.1
H-04-028	24	49	57.4 ± 6.1	60.7 ± 0.6	59.4 ± 0.3	58.1 ± 1.5	57.4 ± 1.6	59.0 ± 1.3
H-04-005	1	52	61.9 ± 2.0	56.9 ± 1.0	58.4 ± 1.9	61.5 ± 1.6	62.5 ± 1.7	61.3 ± 4.6
H-04-017	26	53	65.7 ± 1.5	61.9 ± 1.5	59.8 ± 1.6	61.0 ± 0.7	61.0 ± 0.7	61.9 ± 2.0
H-04-009	24	54	61.6 ± 2.7	56.1 ± 0.9	55.9 ± 1.0	56.3 ± 2.1	62.2 ± 1.9	62.8 ± 4.1
H-03-066	2	58	68.1 ± 2.5	64.3 ± 0.6	61.8 ± 4.7	62.4 ± 0.4	64.2 ± 1.1	63.8 ± 0.7
H-02-084	20	69	55.5 ± 1.5	62.0 ± 4.5	63.1 ± 0.8	54.3 ± 2.9	58.8 ± 3.1	60.5 ± 5.3
H-02-071	24	72	68.7 ± 3.3	63.4 ± 2.9	65.1 ± 2.2	65.7 ± 2.7	64.0 ± 4.6	66.9 ± 3.6

*Note that the crystallinity measurements were carried out only after ex vivo storage. †The values are given as the average and the standard deviation.