Supplementary File 2. Comparison of amino acid substitutions between protein sequences of MT-BG2012-T1303 (accession numbers MK299341, MK299342, MK299343) and AP92 (accession numbers DQ211638, DQ211625, DQ211612), as well as between MT-BG2012-T1303 and strains comprissing Europe 1 lineage (Kosovo Hoti, accession numbers DQ133507, EU037902, EU044832; Turkey200310849, accession numbers DQ211649, DQ211636, DQ211623; Turkey-Kelkit06, accession numbers GQ337053, GQ337054, GQ337055; Drosdov, accession numbers DQ211643, DQ211630, DQ211617; Kashmanov, accession numbers DQ211644, DQ211631, DQ211618). Positions of substitutions are indicated by subscripted numbers.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S segment | | | M segment | | | L segment | | |
| MT-BG2012-T1303 Europe 1 | MT-BG2012-T1303- AP92 | MT-BG2012-T1303-  Pentafolos | MT-BG2012-T1303- Europe 1 | MT-BG2012-T1303- AP92 | MT-BG2012-T1303-  Pentafolos | MT-BG2012-T1303-Europe 1 | MT-BG2012-T1303- AP92 | MT-BG2012-T1303- Pentafolos |
| D12-E | T65-S | T65-S | S2-P | S2-P | M6-T | E2-D | V114-I | V114-I |
| L13-M | F73-Y | S125-G | D3-I | M6-I | H16-L | S6-N | T165-A | T165-A |
| V27-M | A271-T | N275-S | H4-N | F7-L | T31-S | L13-I | Y495-F | R218-K |
| R45-K |  | N475-S | F5-I | I11-M | G37-S | S24-N | M505-T | E264-D |
| Y48-F |  |  | F7-H | C12-Y | V38-A | D55-A | G593-S | S477-T |
| T65-S |  |  | I11-V | L15-F | K54-R | I64-L | D787-E | I480-T |
| T100-S |  |  | T14-F | K17-Q | Q55-L | K66-E | A931-T | Y495-F |
| S101-G |  |  | H16-Y | S18-H | P56-A | T67-L | V1008-I | S647-N |
| S109-N |  |  | K17-L | G21-D | I59-T | Q70-R | V1023-I | K699-R |
| I117-V |  |  | S18-Q | T26-V | Q64-H | L74-Q | D1041-E | G768-E |
| S124-A |  |  | P19-L | S30-N | A92-V | D75-E | S1064-N | P870-S |
| S125-N |  |  | Q20-L | T31-P | G100-S | Q91-K | S1089-N | A931-T |
| I141-V |  |  | V21-L | G33-N | Y113-H | S94-L | D1163-E | M953-K |
| T146-A |  |  | S23-- | N34-S | S116-G | V114-I | I1180-V | V1023-I |
| L163-V |  |  | A24-G | V38-A | L172-S | T122-A | D1194-E | D1041-E |
| V164-M |  |  | N25-G | G39-S | T174-A | N124-S | R1222-K | S1064-N |
| P165-S |  |  | T26-A | S44-P | Q188-P | E135-D | F1225-L | S1068-N |
| I179-L |  |  | L28-G/R | V48-A | H210-S | V157-I | T1279-A | D1079-N |
| I198-V |  |  | V29-Q | N51-D | S211-N | L161-F | A1288-T | S1089-N |
| I205-V |  |  | T31-N | S52-G | A229-D | G167-E | T1449-A | D1163-E |
| E248-D |  |  | S32-A/T | P56-S | Y325-H | T168-A | R1478-K | F1225-L |
| K258-N |  |  | G33-T | I59-T | N336-S | P189-L | I1502-V | V1256-I |
| D259-G |  |  | N34-E | P61-T | A346-V | A200-T | A1589-V | K1272-R |
| N275-S |  |  | T35-H | Q64-R | N347-S | D201-S | K1680-R | T1279-A |
| V277-I |  |  | T36-N | L65-P | S360-R | T202-A/V | I1695-V | A1288-T |
| S279-N |  |  | V38-T | G66-S | S381-T | R206-Y | I1784-V | I1502-V |
| N419-S |  |  | G39-N | T71-I | A388-V | T209-S | I1865-V | I1865-V |
| S422-T |  |  | A41-- | I72-T | I454-L | R219-K | I1909-V | I1909-V |
| R428-K |  |  | F42-- | E73-T | G652-R | V223-I/L | T1964-A | T1964-A |
| D442-N |  |  | N43-- | T77-M | Y868-F | T262-S | N1978-S | Q1981-L |
| K444-Q |  |  | S44-T | A79-V | G878-S | S263-A | D1989-N | I2100-V |
|  |  |  | V45-T | S86-T | T955-A | E264-D | G2015-E | R2127-K |
|  |  |  | H46-A | S89-P | I1046-M | M267-T | K2128-R | G2130-S |
|  |  |  | N47-P | A92-T | L1047-S | H306-Y | I2438-T | I2141-V |
|  |  |  | V48-G/S | S93-P | G1116-R | V352-I | R2531-K | I2355-V |
|  |  |  | T50-S | T97-E | M1129-I | F385-Y | S2715-N | R2531-K |
|  |  |  | N51-Q | V98-T | I1331-V | S390-N | I2721-V | A2733-T |
|  |  |  | Q53-P | G100-T | I1351-V | S392-G | A2733-T | K3047-R |
|  |  |  | Q55-P | S103-N | F1370-Y | T405-A | R3161-K | R3150-K |
|  |  |  | T57-A/V/M | W104-Q | I1435-V | I406-T | I3376-V | R3161-K |
|  |  |  | I59-T | R105-K | S1494-N | N453-S | R3537-K | I3376-V |
|  |  |  | M62-S/P | P106-S | R1544-E | Y495-F | T3578-S | M3433-L |
|  |  |  | A63-H | T107-A | L1611-F | D498-S | I3705-M | R3537-K |
|  |  |  | Q64-A | V110-M | K1650-R | S499-D | N3777-S | D3560-G |
|  |  |  | G66-E | N111-G | R1663-K | H502-R | K3798-R | T3578-S |
|  |  |  | T67-P/S | A112-T | F1674-L | C504-S | S3816-T | I3581-V |
|  |  |  | V68-S | Y113-L |  | M505-T | F3883-L | V3703-I |
|  |  |  | Q70-I | I119-D |  | S507-N | A3898-T | I3705-M |
|  |  |  | T71-K | T121-A |  | V508-I | S3904-F | S3839-G |
|  |  |  | I72-L/P | P122-L |  | T509-A |  | N3854-C |
|  |  |  | E73-T | T123-M |  | H514-F |  | A3898-T |
|  |  |  | A74-T | I124-T |  | T556-S |  | S3904-F |
|  |  |  | Q75-P | S126-T |  | S561-T |  |  |
|  |  |  | T77-S | D127-G |  | R599-K |  |  |
|  |  |  | D80-E | K128-R |  | S674-N |  |  |
|  |  |  | S85-T | G129-S |  | E676-D |  |  |
|  |  |  | S86-- | T130-I |  | V715-I |  |  |
|  |  |  | L88-P/S | P131-L |  | A719-V |  |  |
|  |  |  | S89-P/T | L133-S |  | C761-H |  |  |
|  |  |  | A90-T/P | S138-G |  | D762-G |  |  |
|  |  |  | V91-N | L139-S |  | A763-G |  |  |
|  |  |  | A92-T | S140-F |  | P765-L |  |  |
|  |  |  | S93-T | S141-D |  | G767-A/T |  |  |
|  |  |  | T94-Q | K142-R |  | G768-K |  |  |
|  |  |  | P95-D/G | N144-S |  | K769-E |  |  |
|  |  |  | A96-S/P/L | R145-K |  | E770-K |  |  |
|  |  |  | T97-P/S | S147-Q |  | G771-E/D |  |  |
|  |  |  | V98-P/S | H153-N |  | T772-G |  |  |
|  |  |  | T99-L/P | A163-V |  | E773-D |  |  |
|  |  |  | G100-E | T167-A |  | Q774-L |  |  |
|  |  |  | H101-T/A | V168-A |  | G776-E |  |  |
|  |  |  | A102-T | S169-P |  | P778-G |  |  |
|  |  |  | W104-E | L172-S |  | T779-N/S |  |  |
|  |  |  | S108-T | S177-T |  | S780-Q |  |  |
|  |  |  | V110-A/S | T178-A |  | G782-S |  |  |
|  |  |  | N111-T/I | E179-D |  | T783-A |  |  |
|  |  |  | A112-S | G180-Q |  | D784-V |  |  |
|  |  |  | Y113-- | T183-A |  | P786-H |  |  |
|  |  |  | T115-S/P | A185-T |  | D787-E |  |  |
|  |  |  | L117-T | A189-V |  | T789-P |  |  |
|  |  |  | E118-D | P194-S |  | N790-S |  |  |
|  |  |  | I119-N/S | T195-P |  | V791-I |  |  |
|  |  |  | T121-N | A196-S |  | L792-S |  |  |
|  |  |  | I124-T | A197-T |  | S793-A/V |  |  |
|  |  |  | L125-Q/H | T201-V |  | R798-G |  |  |
|  |  |  | S126-M/V | P204-S |  | F810-L |  |  |
|  |  |  | D127-T | V205-A |  | K818-T |  |  |
|  |  |  | K128-D | D206-G |  | K876-T |  |  |
|  |  |  | G129-N | P209-S |  | K879-R |  |  |
|  |  |  | Q134-T | H210-S |  | I882-V |  |  |
|  |  |  | S135-V/I | S211-N |  | A931-T |  |  |
|  |  |  | Q136-S | P212-S |  | S935-L |  |  |
|  |  |  | K142-S | T216-S |  | G943-E |  |  |
|  |  |  | T143-P | P222-L |  | S947-N |  |  |
|  |  |  | N144-S | P225-S |  | M953-T |  |  |
|  |  |  | R145-T/M | S226-G |  | N956-A |  |  |
|  |  |  | R150-Q | P227-S |  | N957-S |  |  |
|  |  |  | S151-G | S239-N |  | L979-S |  |  |
|  |  |  | T152-I | A244-V |  | M988-L |  |  |
|  |  |  | Q154-H | I245-T |  | Q997-R |  |  |
|  |  |  | L156-V/A | T248-A |  | Y1000-F |  |  |
|  |  |  | K158-S/N | R278-K |  | V1009-T |  |  |
|  |  |  | S169-T | T305-A |  | T1020-S |  |  |
|  |  |  | A163-S | S309-G |  | V1023-I |  |  |
|  |  |  | Q170-T | K333-R |  | A1026-S |  |  |
|  |  |  | T171-P | L334-S |  | S1029-T |  |  |
|  |  |  | L172-T | N336-S |  | N1033-T |  |  |
|  |  |  | A175-S | L343-S |  | A1034-N |  |  |
|  |  |  | V176-P | N347-S |  | I1039-V |  |  |
|  |  |  | S177-G | T348-P |  | E1040-D |  |  |
|  |  |  | T178-E | S360-K |  | D1041-E |  |  |
|  |  |  | E179-M | V364-I |  | T1043-A |  |  |
|  |  |  | G180-S | A388-I |  | M1056-L |  |  |
|  |  |  | T181-S | A393-I |  | T1059-V |  |  |
|  |  |  | A185-S | I395-V |  | G1063-S |  |  |
|  |  |  | S186-Q | R420-K |  | S1064-N |  |  |
|  |  |  | P187-H | I454-L |  | S1068-N |  |  |
|  |  |  | Q188-S | I465-V |  | N1073-S |  |  |
|  |  |  | T190-M | R501-K |  | D1079-C |  |  |
|  |  |  | T191-S | I503-V |  | C1084-K |  |  |
|  |  |  | D192-R | A533-G |  | V1085-I |  |  |
|  |  |  | A196-- | S535-D |  | R1094-K |  |  |
|  |  |  | A197-P/L | R546-K |  | I1124-V |  |  |
|  |  |  | P198-H/Y | S603-N |  | K1156-R |  |  |
|  |  |  | Q200-A | Y609-A |  | A1158-S |  |  |
|  |  |  | T202-Q/R | G652-K |  | L1161-H |  |  |
|  |  |  | S203-V | K794-R |  | K1162-N |  |  |
|  |  |  | P204-S | M826-V |  | S1165-T/N |  |  |
|  |  |  | V205-T | I836-V |  | R1167-K |  |  |
|  |  |  | D206-E | I843-V |  | K1169-R |  |  |
|  |  |  | S207-N/I | G854-S |  | E1172-D |  |  |
|  |  |  | S208-A/T | A858-T |  | N1173-D |  |  |
|  |  |  | P209-N | F869-S |  | R1179-K |  |  |
|  |  |  | N214-R | F874-V |  | I1182-T |  |  |
|  |  |  | H215-Q | A875-I |  | K1184-R |  |  |
|  |  |  | T216-S | G878-S |  | A1190-S |  |  |
|  |  |  | K217-E | K888-R |  | K1200-R |  |  |
|  |  |  | T218-S | I904-V |  | I1210-L |  |  |
|  |  |  | T219-S | S926-G |  | R1215-K |  |  |
|  |  |  | P220-AV | E941-D |  | F1225-L |  |  |
|  |  |  | S224-T | R952-K |  | Y1273-C |  |  |
|  |  |  | E228-V/M/I | T955-A |  | A1276-V |  |  |
|  |  |  | A229-T | A972-I |  | H1277-Q |  |  |
|  |  |  | Q230-S | G976-S |  | T1278-S |  |  |
|  |  |  | Q231-P | R978-K |  | T1279-S/F |  |  |
|  |  |  | T232-A | L981-F |  | R1285-K |  |  |
|  |  |  | P234-S | I985-V |  | A1288-V |  |  |
|  |  |  | T235-I | M992-V |  | H1308-Y |  |  |
|  |  |  | T236-L | V999-A |  | M1309-I |  |  |
|  |  |  | M237-L/V | T1002-A |  | S1310-G |  |  |
|  |  |  | P238-M | T1005-A |  | V1317-I |  |  |
|  |  |  | T240-A | Y1045-F |  | V1331-T |  |  |
|  |  |  | A242-P | T1092-A |  | I1358-V |  |  |
|  |  |  | L243-T/I | G1116-R |  | N1389-G |  |  |
|  |  |  | P246-Q | M1129-I |  | K1395-Q |  |  |
|  |  |  | T247-N/D | V1290-I |  | V1416-I |  |  |
|  |  |  | T248-I | E1298-D |  | S1436-N |  |  |
|  |  |  | I250-P | I1351-V |  | D1437-E |  |  |
|  |  |  | S260-L | I1405-T |  | M1439-T |  |  |
|  |  |  | P269-S | I1453-V |  | S1450-L |  |  |
|  |  |  | S277-G | G1502-S |  | L1455-F |  |  |
|  |  |  | R278-K | N1543-K |  | A1460-F |  |  |
|  |  |  | S291-T | R1544-N |  | T1461-A |  |  |
|  |  |  | T299-K | D1546-E |  | A1468-E |  |  |
|  |  |  | T301-N | K1566-T |  | S1474-T |  |  |
|  |  |  | K303-G | T1579-S |  | A1475-S |  |  |
|  |  |  | Q304-S | K1580-R |  | R1478-K |  |  |
|  |  |  | T305-N | N1597-S |  | V1495-I |  |  |
|  |  |  | S309-D | I1607-F |  | F1496-V |  |  |
|  |  |  | Y310-F | L1611-F |  | I1502-V |  |  |
|  |  |  | E313-K | L1622-F |  | M1507-I |  |  |
|  |  |  | K316-E | S1666-N |  | G1540-N |  |  |
|  |  |  | L320-I/M | F1674-L |  | T1565-S |  |  |
|  |  |  | L331-Q |  |  | V1566-I |  |  |
|  |  |  | L334-T |  |  | E1575-D |  |  |
|  |  |  | N336-S |  |  | V1577-I |  |  |
|  |  |  | Q337-T |  |  | L1582-Q |  |  |
|  |  |  | G339-S |  |  | K1583-R |  |  |
|  |  |  | T340-S/P |  |  | D1588-E |  |  |
|  |  |  | G342-E |  |  | A1589-V |  |  |
|  |  |  | L343-P |  |  | V1601-I |  |  |
|  |  |  | P344-S |  |  | R1655-K |  |  |
|  |  |  | L345-H |  |  | E1658-A |  |  |
|  |  |  | N347-R/G |  |  | M1682-L |  |  |
|  |  |  | T348-L/P |  |  | L1684-S |  |  |
|  |  |  | F357-Y |  |  | S1685-N |  |  |
|  |  |  | Y358-F |  |  | D1686-S |  |  |
|  |  |  | S360-K |  |  | A1688-T |  |  |
|  |  |  | V364-S |  |  | N1693-Q |  |  |
|  |  |  | M365-I |  |  | V1749-I |  |  |
|  |  |  | K377-R |  |  | S1758-N |  |  |
|  |  |  | A378-S/L |  |  | D1760-E |  |  |
|  |  |  | N380-T/A |  |  | V1762-I |  |  |
|  |  |  | A388-V |  |  | V1787-I |  |  |
|  |  |  | S392-P |  |  | Y1795-F |  |  |
|  |  |  | K394-R |  |  | K1910-R |  |  |
|  |  |  | V396-A |  |  | E1914-D |  |  |
|  |  |  | N397-E |  |  | V1932-I |  |  |
|  |  |  | Y403-T |  |  | I1949-V |  |  |
|  |  |  | S404-T |  |  | D1957-E |  |  |
|  |  |  | N405-S |  |  | I1960-L |  |  |
|  |  |  | V409-I |  |  | E1963-S |  |  |
|  |  |  | K415-R |  |  | T1964-E |  |  |
|  |  |  | V416-A |  |  | Q1967-N |  |  |
|  |  |  | T418-V |  |  | E1982-D |  |  |
|  |  |  | D419-F |  |  | N1987-K |  |  |
|  |  |  | R420-K |  |  | A1994-S |  |  |
|  |  |  | D421-E |  |  | T1996-I |  |  |
|  |  |  | S423-R |  |  | S1998-C |  |  |
|  |  |  | L425-V/I |  |  | T2001-A |  |  |
|  |  |  | V427-I |  |  | N2007-S |  |  |
|  |  |  | V434-I |  |  | Q2018-H |  |  |
|  |  |  | I438-L |  |  | G2025-D |  |  |
|  |  |  | L444-V |  |  | V2067-I |  |  |
|  |  |  | K446-N |  |  | L2105-S |  |  |
|  |  |  | I454-L |  |  | P2112-T |  |  |
|  |  |  | M459-P |  |  | S2124-C |  |  |
|  |  |  | I460-V |  |  | G2130-D/Y |  |  |
|  |  |  | Q464-R/H |  |  | E2131-N/K |  |  |
|  |  |  | T466-Y |  |  | V2134-T |  |  |
|  |  |  | M492-L |  |  | Q2135-N |  |  |
|  |  |  | T493-V |  |  | N2136-S/G |  |  |
|  |  |  | I503-V |  |  | G2138-S |  |  |
|  |  |  | T509-V |  |  | I2141-L |  |  |
|  |  |  | R514-K |  |  | G2197-S |  |  |
|  |  |  | R518-K |  |  | D2383-N |  |  |
|  |  |  | V519-I |  |  | V2392-T |  |  |
|  |  |  | Q521-K |  |  | K2418-R |  |  |
|  |  |  | M522-A |  |  | H2428-Y |  |  |
|  |  |  | S523-T |  |  | I2438-A |  |  |
|  |  |  | T524-S |  |  | T2495-A |  |  |
|  |  |  | R528-K |  |  | Y2497-F |  |  |
|  |  |  | A533-E |  |  | R2501-K |  |  |
|  |  |  | G534-P |  |  | M2503-L |  |  |
|  |  |  | S535-G |  |  | I2508-V |  |  |
|  |  |  | G536-D |  |  | R2531-K |  |  |
|  |  |  | G537-D |  |  | D2532-E |  |  |
|  |  |  | I545-L |  |  | A2535-S |  |  |
|  |  |  | V552-I |  |  | I2586-V |  |  |
|  |  |  | G554-D |  |  | I2594-M |  |  |
|  |  |  | D556-N |  |  | H2614-Q |  |  |
|  |  |  | E562-D |  |  | I2628-V |  |  |
|  |  |  | I589-V |  |  | S2695-H |  |  |
|  |  |  | Q600-T |  |  | G2711-S |  |  |
|  |  |  | S603-T |  |  | E2713-G/S |  |  |
|  |  |  | V609-T |  |  | R2714-C/G/S |  |  |
|  |  |  | Q612-K |  |  | A2717-T |  |  |
|  |  |  | Y617-F |  |  | S2720-T |  |  |
|  |  |  | S622-T |  |  | I2721-V |  |  |
|  |  |  | I637-V |  |  | D2722-E |  |  |
|  |  |  | V641-A |  |  | I2727-V |  |  |
|  |  |  | T644-S |  |  | Q2735-H |  |  |
|  |  |  | I648-V |  |  | A2741-S |  |  |
|  |  |  | G652-K |  |  | I2757-L |  |  |
|  |  |  | Q670-K |  |  | R2767-K |  |  |
|  |  |  | S671-D |  |  | I2769-T |  |  |
|  |  |  | V674-I |  |  | I2774-V |  |  |
|  |  |  | N680-H |  |  | V2775-I |  |  |
|  |  |  | L719-F/S |  |  | F2818-L |  |  |
|  |  |  | T721-A |  |  | N2894-S |  |  |
|  |  |  | I725-S |  |  | K2989-R |  |  |
|  |  |  | L736-I |  |  | S3003-G/S |  |  |
|  |  |  | S752-T |  |  | I3109-M |  |  |
|  |  |  | V753-A |  |  | R3150-K |  |  |
|  |  |  | E782-D |  |  | T3157-S |  |  |
|  |  |  | T785-A |  |  | S3162-N |  |  |
|  |  |  | N789-K/P/T |  |  | H3169-Q |  |  |
|  |  |  | K794-R |  |  | K3173-R |  |  |
|  |  |  | M826-V |  |  | G3251-S/C |  |  |
|  |  |  | M834-L |  |  | T3257-A |  |  |
|  |  |  | I836-V |  |  | P3278-S |  |  |
|  |  |  | I839-V |  |  | G3288-S |  |  |
|  |  |  | I842-T |  |  | T3350-S |  |  |
|  |  |  | I843-V |  |  | T3353-S |  |  |
|  |  |  | M845-L |  |  | V3383-I |  |  |
|  |  |  | I853-V |  |  | V3405-L/M |  |  |
|  |  |  | Q855-H |  |  | M3433-L |  |  |
|  |  |  | E856-G |  |  | N3439-S |  |  |
|  |  |  | R857-K |  |  | I3470-V |  |  |
|  |  |  | A858-T |  |  | R3537-K |  |  |
|  |  |  | V859-I |  |  | R3577-K |  |  |
|  |  |  | A860-E |  |  | I3581-V |  |  |
|  |  |  | L861-T |  |  | S3585-T |  |  |
|  |  |  | F864-T |  |  | E3588-I/V |  |  |
|  |  |  | D867-G |  |  | D3595-N |  |  |
|  |  |  | Y868-F |  |  | I3607-V |  |  |
|  |  |  | M869-T/A |  |  | K3652-R |  |  |
|  |  |  | G870-S |  |  | I3678-V/M |  |  |
|  |  |  | A875-M |  |  | S3696-A |  |  |
|  |  |  | M876-L |  |  | I3705-M |  |  |
|  |  |  | G878-S |  |  | Q3709-N |  |  |
|  |  |  | V879-I |  |  | T3714-V |  |  |
|  |  |  | L881-F |  |  | L3734-F |  |  |
|  |  |  | A882-I |  |  | V3736-A/T |  |  |
|  |  |  | L885-C |  |  | C3738-Y |  |  |
|  |  |  | I891-V |  |  | T3741-N |  |  |
|  |  |  | I894-V |  |  | R3743-C |  |  |
|  |  |  | S896-D/E |  |  | G3747-D |  |  |
|  |  |  | T897-S |  |  | T3754-A |  |  |
|  |  |  | I904-V |  |  | G3758-S |  |  |
|  |  |  | R906-K |  |  | I3760-V |  |  |
|  |  |  | H909-S/T |  |  | S3776-N |  |  |
|  |  |  | L928-F |  |  | I3782-V |  |  |
|  |  |  | A935-H |  |  | I3787-N |  |  |
|  |  |  | T938-A |  |  | H3793-L |  |  |
|  |  |  | Q940-R |  |  | S3801-P |  |  |
|  |  |  | A942-I |  |  | I3804-V |  |  |
|  |  |  | F945-L |  |  | T3806-I |  |  |
|  |  |  | V949-I |  |  | E3821-D |  |  |
|  |  |  | R952-K |  |  | V3823-M |  |  |
|  |  |  | K334-R |  |  | T3824-S |  |  |
|  |  |  | A972-T |  |  | A3830-S |  |  |
|  |  |  | G976-S |  |  | F3831-L |  |  |
|  |  |  | N977-R |  |  | S3839-N |  |  |
|  |  |  | V979-A |  |  | L3840-F |  |  |
|  |  |  | N984-S |  |  | K3857-R |  |  |
|  |  |  | M992-I |  |  | K3874-R |  |  |
|  |  |  | V996-T |  |  | D3875-E |  |  |
|  |  |  | M997-L |  |  | F3883-L |  |  |
|  |  |  | V998-T |  |  | V3884-I |  |  |
|  |  |  | V999-I |  |  | R3890-K |  |  |
|  |  |  | I1001-V |  |  | R3893-K |  |  |
|  |  |  | T1002-V |  |  | I3896-T |  |  |
|  |  |  | S1004-T |  |  | A3898-T |  |  |
|  |  |  | T1005-S |  |  | P3899-Q |  |  |
|  |  |  | E1022-D |  |  | A3900-I |  |  |
|  |  |  | S1044-A |  |  | A3901-E |  |  |
|  |  |  | Y1045-L |  |  | P3902-H |  |  |
|  |  |  | A1057-V |  |  | E3903-K |  |  |
|  |  |  | V1060-M |  |  | S3904-D |  |  |
|  |  |  | A1084-V |  |  | C3919-S |  |  |
|  |  |  | Y1088-F |  |  | I3921-T |  |  |
|  |  |  | T1092-V |  |  | T3922-A |  |  |
|  |  |  | S1094-T |  |  | V3923-I |  |  |
|  |  |  | T1100-S |  |  | V3924-D |  |  |
|  |  |  | S1114-T |  |  | Q3925-L |  |  |
|  |  |  | G1116-R |  |  | S3939-G/S |  |  |
|  |  |  | M1129-I/V |  |  |  |  |  |
|  |  |  | N1132-D |  |  |  |  |  |
|  |  |  | R1142-K |  |  |  |  |  |
|  |  |  | T1143-L |  |  |  |  |  |
|  |  |  | I1146-V |  |  |  |  |  |
|  |  |  | V1148-I |  |  |  |  |  |
|  |  |  | N1179-D |  |  |  |  |  |
|  |  |  | Y1193-H |  |  |  |  |  |
|  |  |  | L1221-V |  |  |  |  |  |
|  |  |  | E1224-D |  |  |  |  |  |
|  |  |  | L1232-F |  |  |  |  |  |
|  |  |  | S1267-N |  |  |  |  |  |
|  |  |  | L1289-I |  |  |  |  |  |
|  |  |  | V1290-I |  |  |  |  |  |
|  |  |  | Y1300-F |  |  |  |  |  |
|  |  |  | M1310-L |  |  |  |  |  |
|  |  |  | V1325-I |  |  |  |  |  |
|  |  |  | I1331-V |  |  |  |  |  |
|  |  |  | V1334-I |  |  |  |  |  |
|  |  |  | L1355-F |  |  |  |  |  |
|  |  |  | F1370-Y |  |  |  |  |  |
|  |  |  | A1393-V |  |  |  |  |  |
|  |  |  | I1405-T |  |  |  |  |  |
|  |  |  | R1429-T |  |  |  |  |  |
|  |  |  | T1454-S |  |  |  |  |  |
|  |  |  | T1462-A |  |  |  |  |  |
|  |  |  | S1464-T |  |  |  |  |  |
|  |  |  | I1498-V |  |  |  |  |  |
|  |  |  | S1503-T |  |  |  |  |  |
|  |  |  | I1510-L |  |  |  |  |  |
|  |  |  | V1514-T |  |  |  |  |  |
|  |  |  | S1523-A |  |  |  |  |  |
|  |  |  | D1527-T |  |  |  |  |  |
|  |  |  | D1537-E |  |  |  |  |  |
|  |  |  | N1540-K |  |  |  |  |  |
|  |  |  | N1543-S |  |  |  |  |  |
|  |  |  | R1544-E |  |  |  |  |  |
|  |  |  | R1549-K |  |  |  |  |  |
|  |  |  | N1552-D |  |  |  |  |  |
|  |  |  | A1553-T |  |  |  |  |  |
|  |  |  | G1578-T |  |  |  |  |  |
|  |  |  | T1579-A |  |  |  |  |  |
|  |  |  | T1581-A |  |  |  |  |  |
|  |  |  | D1586-E |  |  |  |  |  |
|  |  |  | F1588-V |  |  |  |  |  |
|  |  |  | S1600-G |  |  |  |  |  |
|  |  |  | G1601-S |  |  |  |  |  |
|  |  |  | I1602-V |  |  |  |  |  |
|  |  |  | V1606-E/L |  |  |  |  |  |
|  |  |  | I1607-F |  |  |  |  |  |
|  |  |  | L1608-I |  |  |  |  |  |
|  |  |  | A1618-V |  |  |  |  |  |
|  |  |  | L1621-V |  |  |  |  |  |
|  |  |  | F1626-M |  |  |  |  |  |
|  |  |  | R1629-K |  |  |  |  |  |
|  |  |  | I1649-L |  |  |  |  |  |
|  |  |  | V1655-T |  |  |  |  |  |
|  |  |  | K1658-R |  |  |  |  |  |
|  |  |  | K1659-R |  |  |  |  |  |
|  |  |  | F1674-L |  |  |  |  |  |