

Table S3: Unique markers for SARS-Cov-2 variants identified by High resolution LC-MS/MS (Orbitrap)

variant	Unique Markers	Parent ions	r.t	MS-MS fragments
Alpha (UK)	VCEFAQCNDPFLGVYHK (P1-Spike)	682.6469 (M+3H)/3	6.5	284.172 (y ₂) ⁺¹ , 447.236 (y ₃) ⁺¹ , 546.304 (y ₄) ⁺¹ , 603.325 (y ₅) ⁺¹ , 716.409 (y ₆) ⁺¹ , 863.478 (y ₇) ⁺¹ , 960.531 (y ₈) ⁺¹ , 302.167 (y ₅) ⁺² , 358.709 (y ₆) ⁺² , 432.243 (y ₇) ⁺² , 480.769 (y ₈) ⁺²
	IFTIGTVTFK (P9-Orf3a)	563.8295 (M+2H)/2	6.5	86.097 (imm of Ile), 120.081 (imm of Phe), 147.172 (y ₁) ⁺¹ , 294.182 (y ₂) ⁺¹ , 652.367 (y ₆) ⁺¹ , 765.451 (y ₇) ⁺¹ , 866.499 (y ₈) ⁺¹ , 1013.567 (y ₉) ⁺¹ , 995.557 (y ₉ – H ₂ O) ⁺¹ , 261.160 (b ₂) ⁺¹ , 362.208 (b ₃) ⁺¹ , 507.288 (y ₉) ⁺²
Beta (South Africa)	GISPAR (P1-N)	600.3469 (M+H) 300.6773 (M+2H)/2	3.2	430.241(y ₄) ⁺¹ , 343.209 (y ₃) ⁺¹ , 246.157 (y ₂) ⁺¹ , 175.119 (y ₁) ⁺¹ , 413.215 (z ₄) ⁺¹ , 326.183 (z ₃) ⁺¹ , 412.231 (y ₄ -H ₂ O) ⁺¹ , 325.199 (y ₃ -H ₂ O) ⁺¹ , 413.215 (y ₄ -NH ₃) ⁺¹ , 395.204 (Z ₄ -H ₂ O) ⁺¹ , 171.113 (b ₂), 258.145 (b ₃), 355.198 (b ₄), 143.118 (a ₄), 240.135 (b ₃ -H ₂ O) ⁺ , 355.198 (c ₃ - NH ₃) ⁺ , 272.167 (y ₅) ⁺² , 215.625 (y ₄) ⁺² , 172.109 (y ₃) ⁺² , 86.097 (Imm of Ile), 60.045 (Imm of Ser)
	QIAPGQTGNIAQYNYK (P5-Spike)	876.9317 (M+2H)/2	4.8	1511.558 (y ₁₄) ⁺¹ , 1440.676 (y ₁₃) ⁺¹ , 1158.543 (y ₁₀) ⁺¹ , 1057.495 (y ₉) ⁺¹ , 773.347 (y ₆) ⁺¹ , 702.310 (y ₅) ⁺¹ , 587.283 (y ₄) ⁺¹ , 424.283 (y ₄) ⁺¹ , 129.066 (b ₁) ⁺¹ , 242.150 (b ₂) ⁺¹ , 313.188 (b ₃) ⁺¹ , 756.360 (y ₁₄) ⁺² , 720.842 (y ₁₃) ⁺²
Delta (India)	AYETQALPQK P13(N)	574.8014 (M+2H)/2	4.0	1077.558 (y ₉) ⁺¹ , 914.495 (y ₈) ⁺¹ , 785.452 (y ₇) ⁺¹ , 684.404 (y ₆) ⁺¹ , 556.346 (y ₅) ⁺¹ , 485.309 (y ₄) ⁺¹ , 372.225 (y ₃) ⁺¹ , 275.172 (y ₂) ⁺¹ , 147.113 (y ₁) ⁺¹ , 235.108 (b ₂ -H ₂ O) ⁺¹ , 207.113 (a ₂) ⁺¹ , 759.368 (b ₇ -H ₂ O) ⁺ , 646.284 (b ₆ -H ₂ O) ⁺¹ , 575.247 (b ₅ -H ₂ O) ⁺¹ , 447.188 (b ₄ -H ₂ O) ⁺¹ , 136.076 (Imm of Tyr), 984.479 (b ₉) ⁺¹ , 777.378 (b ₇) ⁺¹ , 749.383 (a ₇) ⁺¹ , 732.357 (a ₇ -NH ₃) ⁺¹ , 667.378 (Z ₆), 593.257 (b ₅) ⁺¹ , 539.283 (y ₉) ⁺² , 530.278 (y ₉ -H ₂ O) ⁺² , 393.230 (y ₇) ⁺² , 465.198 (b ₄) ⁺¹ , 457.751 (y ₈) ⁺² , 420.177 (a ₄ -NH ₃) ⁺
	LQNVVNQNAQALNTLVK P8 (Spike)	934.0239 (M+2H)/2 623.0185 (M+3H)/3	5.9	1412.786 (y ₁₃) ⁺¹ , 1313.718 (y ₁₂) ⁺¹ , 1071.616 (y ₁₀) ⁺¹ , 957.573 (y ₉) ⁺¹ , 886.536 (y ₈) ⁺¹ , 758.478 (y ₇) ⁺¹ , 574.356 (y ₅) ⁺¹ , 460.314 (y ₄) ⁺¹ , 706.897 (y ₁₃) ⁺² , 443.772 (y ₈) ⁺² , 242.150 (b ₂) ⁺¹ , 356.193 (b ₃) ⁺¹ , 455.262 (b ₄) ⁺¹ , 554.330 (b ₅) ⁺¹ , 796.432 (b ₇) ⁺¹ , 981.512 (b ₉) ⁺¹ , 228.135 (b ₄) ⁺² , 277.669 (b ₅) ⁺² , 344.690 (b ₆) ⁺² , 398.720 (b ₇) ⁺² , 455.741 (b ₈) ⁺² , 491.260 (b ₉) ⁺² , 555.289 (b ₁₀) ⁺²
	NSTPGSSMGTSPPAR P12 (N)	675.3098 (M+2H)/2	3.7	1148.537 (y ₁₂) ⁺¹ , 1047.489 (y ₁₁) ⁺¹ , 950.437 (y ₁₀) ⁺¹ , 863.415 (y ₉) ⁺¹ , 806.383 (y ₈) ⁺¹ , 719.351 (y ₇) ⁺¹ , 588.311 (y ₆) ⁺¹ , 430.241 (y ₄) ⁺¹ , 343.209 (y ₃) ⁺¹ , 175.120 (y ₁) ⁺¹ , 618.288 (y ₁₃) ⁺² , 574.772 (y ₁₂) ⁺² , 524.249 (y ₁₁) ⁺² , 202.083 (b ₂) ⁺¹ , 303.130 (b ₃) ⁺¹
	VGGNYNYR P7 (Spike)	471.7255 (M+2H)/2	3.6	843.375 (y ₇) ⁺¹ , 786.353 (y ₆) ⁺¹ , 729.332 (y ₅) ⁺¹ , 615.289 (y ₄) ⁺¹ , 452.226 (y ₃) ⁺¹ , 338.183 (y ₂) ⁺¹ , 175.120 (y ₁) ⁺¹ , 422.191 (y ₇) ⁺² , 393.681 (y ₆) ⁺² , 157.098 (b ₂) ⁺¹ , 72.081 (Imm of Val), 136.076 (Imm of Tyr)
Gamma (Brazil)	GQGVPIINTSSR (P14-N)	615.3158 (M+2H)/2	3.9	186.088 (b ₂) ⁺¹ , 169.061 (b ₂ -NH ₃), 243.109 (b ₃) ⁺¹ , 314.1778 (a ₄) ⁺¹ , 342.178(b ₄) ⁺¹ , 296.172 (a ₄ -H ₂ O), 411.236(a ₅) ⁺¹ , 888.454(y ₈) ⁺¹ , 871.427 (z ₈) ⁺¹ , 791.401(y ₇) ⁺¹ , 678.317(y ₆) ⁺¹ , 494.265(y ₉) ⁺² , 444.731(y ₈) ⁺²
	QIAPGQTGTIADYNYK (P8-Spike)	870.4341 (M+2H)/2	4.8	1498.718(y ₁₄) ⁺¹ , 1427.681(y ₁₃) ⁺¹ , 1330.628(y ₁₂) ⁺¹ , 1145.548(y ₁₀) ⁺¹ , 1044.500(y ₉) ⁺¹ , 987.479(y ₈) ⁺¹ , 886.431(y ₇) ⁺¹ , 773.347(y ₆) ⁺¹ , 702.310(y ₅) ⁺¹ , 587.283(y ₄) ⁺¹ , 424.220(y ₃) ⁺¹ , 310.177(y ₂) ⁺¹ , 147.113(y ₁) ⁺¹ , 242.150(b ₂) ⁺¹ , 313.188(b ₃) ⁺¹ , 595.320(b ₆) ⁺¹ , 967.521(b ₁₀) ⁺¹ , 749.863(y ₁₄) ⁺² , 714.344(y ₁₃) ⁺² , 136.076 (Imm of Tyr)
	ASANLAAIK (P12-Spike)	429.7563 (M+2H)/2	4.1	787.468(y ₈) ⁺¹ , 700.436(y ₇) ⁺¹ , 629.399(y ₆) ⁺¹ , 515.356(y ₅) ⁺¹ , 402.272(y ₄) ⁺¹ , 331.234(y ₃) ⁺¹ , 260.197(y ₂) ⁺¹ , 147.113(y ₁) ⁺¹ , 159.077(b ₂) ⁺¹ , 344.157(b ₄) ⁺¹ , 457.241(b ₅) ⁺¹ , 212.103(b ₃ -H ₂ O) ⁺¹ , 555.325(a ₇ -H ₂ O) ⁺¹ , 394.238(y ₈) ⁺² , 350.722(y ₇) ⁺² , 86.097 (Imm of Leu), 60.045 (Imm of Ser)
	TQLPSAYTNSFTR (P5-Spike)	743.3707	5.0	1256.627(y ₁₁) ⁺¹ , 1143.543(y ₁₀) ⁺¹ , 959.459(y ₈) ⁺¹ , 725.358(y ₈) ⁺¹ , 175.119(y ₁) ⁺¹ , 628.818(y ₁₁) ⁺² , 572.276(y ₁₀) ⁺² , 230.114(b ₂) ⁺¹ , 343.198(b ₃) ⁺¹ , 136.076 (Imm of Tyr), 129.114(Imm of Arg)