Supporting Information

L-Galactose Metabolism in *Bacteroides vulgatus* from the Human Gut Microbiota

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| Organism | Accession       | GI          | %ID to Bvu0220 |
|----------|----------------|-------------|----------------|
| Bacteroides sp. CAG:754  | CDA87444.1     | 524325565   | 78             |
| Bacteroides reticulotermitis JCM 10512 | GAEB4054.1     | 576503104   | 80             |
| Bacteroides thetaiotaomicron VPI-5482 | NP_812526.1     | 29349023    | 79             |
| Bacteroides eggerthii        | WP_004288414.1 | 490415911   | 79             |
| Bacteroides ovatus           | WP_004299638.1 | 490427480   | 79             |
| Bacteroides ovatus           | WP_004305137.1 | 490433298   | 79             |
| Bacteroides ovatus           | WP_004324515.1 | 490453678   | 79             |
| Bacteroides plebeius         | WP_007560655.1 | 494834527   | 76             |
| Bacteroides plebeius         | WP_007560931.1 | 494834831   | 75             |
| Paraprevotella clara         | WP_008622791.1 | 495898212   | 75             |
| Paraprevotella xylaniphila   | WP_008629185.1 | 495904606   | 74             |
| Bacteroides sp. D2           | WP_008998003.1 | 496285965   | 79             |
| Bacteroides fluxus           | WP_009123576.1 | 496414729   | 74             |
| Bacteroides oleiciplenus     | WP_009130352.1 | 496421505   | 73             |
| Parabacteroides goldsteinii  | WP_009860772.1 | 497546574   | 78             |
| Bacteroides thetaiotaomicron | WP_016269731.1 | 511015346   | 79             |
| Bacteroides massiliensis     | WP_016277046.1 | 511022736   | 94             |
| Bacteroides gallinarum       | WP_018665958.1 | 517495381   | 80             |
| Prevotella paludivivens      | WP_018463989.1 | 517275171   | 69             |
| Proteiniphilum acetatigenes  | WP_019537825.1 | 518367618   | 71             |
| Bacteroides sp. CAG:598      | WP_021847692.1 | 546360724   | 75             |
| Prevotella sp. CAG:1058      | WP_021852464.1 | 546372248   | 70             |
| Prevotella sp. CAG:255       | WP_021853653.1 | 546381504   | 72             |
| Paraprevotella clara CAG:116 | WP_021980086.1 | 547244297   | 75             |
| Bacteroides sp. CAG:661      | WP_022020392.1 | 547287359   | 77             |
| Bacteroides sp. CAG:702      | WP_022040265.1 | 547308274   | 76             |
| Prevotella sp. CAG:1320      | WP_022149068.1 | 547735181   | 80             |
| Bacteroides clarus CAG:160   | WP_022217888.1 | 547808609   | 80             |
| Prevotella sp. CAG:732       | WP_022328800.1 | 547926725   | 59             |
| Bacteroides sp. CAG:875         | WP_022353146.1 | 547952395 | 76 |
| Bacteroides sp. CAG:462        | WP_022383979.1 | 548143812 | 81 |
| Bacteroides intestinalis CAG:315| WP_022393303.1 | 548171622 | 79 |
| Parabacteroides sp. CAG:409    | WP_022454666.1 | 548236281 | 74 |
| Prevotella ruminicola 23       | YP_003576077.1 | 294675461 | 64 |
| Bacteroides xylanisolvens XB1A | YP_007793517.1 | 479164783 | 79 |

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Table S2: Predicted L-galactose dehydrogenase genes inferred from homology

| Organism                     | Accession   | GI         | %ID to Bvu0219 |
|------------------------------|-------------|------------|----------------|
| Bacteroides sp. CAG:754      | CDA87442.1  | 524325563  | 80             |
| Bacteroides reticulotermitis JCM 10512 | GAE84053.1  | 576503103  | 78             |
| Bacteroides thetaiotaomicron VPI-5482 | NP_812525.1 | 29349022   | 80             |
| Bacteroides ovatus           | WP_004299636.1 | 490427478 | 81             |
| Bacteroides ovatus           | WP_004305138.1 | 490433299 | 81             |
| Bacteroides ovatus           | WP_004324513.1 | 490453676 | 82             |
| Bacteroides plebeius         | WP_007560657.1 | 494834529 | 83             |
| Bacteroides plebeius         | WP_007560932.1 | 494834832 | 76             |
| Paraprevotella clara         | WP_008622792.1 | 495898213 | 75             |
| Paraprevotella xylaniphila   | WP_008629182.1 | 495904603 | 74             |
| Bacteroides sp. D2           | WP_008998004.1 | 496285966 | 81             |
| Bacteroides fluxus           | WP_009123575.1 | 496414728 | 79             |
| Bacteroides fluxus           | WP_009130350.1 | 496421503 | 69             |
| Bacteroides oleciplenus      | WP_009860773.1 | 497546575 | 81             |
| Parabacteroides goldsteinii  | WP_016269730.1 | 51101534  | 80             |
| Bacteroides thetaiotaomicron | WP_016277047.1 | 511022737 | 96             |
| Bacteroides massiliensis     | WP_018665957.1 | 517495380 | 80             |
| Bacteroides gallinarum       | WP_018463990.1 | 517275172 | 73             |
| Prevotella paludivivens      | WP_019537823.1 | 518367616 | 67             |
| Proteiniphilum acetatigenes  | WP_021847693.1 | 546360725 | 78             |
| Bacteroides sp. CAG:598      | WP_021852465.1 | 546372252 | 82             |
| Prevotella sp. CAG:1058      | WP_021853654.1 | 546381508 | 77             |
| Prevotella sp. CAG:255       | WP_021980087.1 | 547244298 | 76             |
| Paraprevotella clara CAG:116 | WP_022020391.1 | 547287358 | 80             |
| Bacteroides sp. CAG:661      | WP_022040264.1 | 547308273 | 79             |
| Bacteroides sp. CAG:702      | WP_022149069.1 | 547735182 | 79             |
| Prevotella sp. CAG:1320      | WP_022217889.1 | 547808610 | 79             |
| Bacteroides clarus CAG:160   | WP_022328799.1 | 547926724 | 72             |
| Prevotella sp. CAG:732       | WP_022353145.1 | 547952394 | 82             |
| Bacteroides sp. CAG:875          | WP_022383980.1 | 548143816 | 79 |
|----------------------------------|----------------|-----------|----|
| Bacteroides sp. CAG:462          | WP_022393304.1 | 548171623 | 80 |
| Bacteroides intestinalis CAG:315 | WP_022454665.1 | 548236280 | 82 |
| Parabacteroides sp. CAG:409      | YP_003576078.1 | 294675462 | 72 |
| Bacteroides xylanisolvens XB1A   | YP_007793516.1 | 479164782 | 81 |
Table S3: Predicted L-galactonate dehydrogenase genes inferred from homology

| Organism                          | Accession  | GI         | %ID to Bvu0222 |
|-----------------------------------|------------|------------|----------------|
| Bacteroides sp. CAG:754           | CDA87447.1 | 524325567  | 80             |
| Bacteroides reticulotermitis JCM 10512 | GAE84056.1  | 576503106  | 80             |
| Bacteroides thetaiotaomicron VPI-5482 | NP_812528.1 | 29349025  | 80             |
| Bacteroides eggerthii             | WP_004288412.1 | 490415909 | 81             |
| Bacteroides ovatus                | WP_004299646.1 | 490427488 | 81             |
| Bacteroides ovatus                | WP_004305135.1 | 490433296 | 81             |
| Bacteroides ovatus                | WP_004324520.1 | 490453683 | 81             |
| Bacteroides plebeius              | WP_007560651.1 | 494834523 | 78             |
| Bacteroides plebeius              | WP_007560927.1 | 494834827 | 73             |
| Paraprevotella clara              | WP_008622790.1 | 495898211 | 70             |
| Paraprevotella xylaniphila        | WP_008629194.1 | 495904615 | 72             |
| Bacteroides sp. D2                | WP_008998001.1 | 496285963 | 80             |
| Bacteroides fluxus                | WP_009123577.1 | 496414730 | 77             |
| Bacteroides oleiciplenus          | WP_009130351.1 | 496421504 | 66             |
| Parabacteroides goldsteinii       | WP_009860770.1 | 497546572 | 80             |
| Bacteroides thetaiotaomicron      | WP_016269733.1 | 511015348 | 81             |
| Bacteroides massiliensis          | WP_016277045.1 | 511022735 | 94             |
| Bacteroides gallinarum            | WP_018665960.1 | 517495383 | 80             |
| Prevotella paludivivens           | WP_018463987.1 | 517275169 | 75             |
| Proteiniphilum acetatigenes       | WP_019537824.1 | 518367617 | 63             |
| Bacteroides sp. CAG:598           | WP_021847690.1 | 546360722 | 79             |
| Prevotella sp. CAG:1058           | WP_021852462.1 | 546372241 | 74             |
| Prevotella sp. CAG:255            | WP_021853652.1 | 546381500 | 74             |
| Paraprevotella clara CAG:116      | WP_021980085.1 | 547244296 | 71             |
| Bacteroides sp. CAG:661           | WP_022020393.1 | 547287360 | 76             |
| Bacteroides sp. CAG:702           | WP_022040266.1 | 547308275 | 79             |
| Prevotella sp. CAG:1320           | WP_022149066.1 | 547735179 | 77             |
| Bacteroides clarus CAG:160        | WP_022217886.1 | 547808607 | 80             |
| Prevotella sp. CAG:732            | WP_022328802.1 | 547926727 | 68             |
| Microorganism                                      | Accession      | Start      | End        | Length |
|---------------------------------------------------|----------------|------------|------------|--------|
| Bacteroides sp. CAG:875                           | WP_022353148.1 | 547952397  |            | 78     |
| Bacteroides sp. CAG:462                           | WP_022383977.1 | 548143804  |            | 80     |
| Bacteroides intestinalis CAG:315                   | WP_022393301.1 | 548171620  |            | 79     |
| Parabacteroides sp. CAG:409                        | WP_022454668.1 | 548236283  |            | 74     |
| Prevotella ruminicola 23                           | YP_003576076.1 | 294675460  |            | 74     |
| Bacteroides xylanisolvens XB1A                     | YP_007793520.1 | 479164786  |            | 81     |