

Table S3. A. Experimentally described B-vitamin growth requirements (except B12) of human gut bacteria.

Experimentally studied strains/species ¹	B-vitamin requirements ²	References
<i>Lactobacillus delbrueckii</i>	B2, B3, B5, B6	(Hébert et al., 2004)
<i>Lactobacillus plantarum</i> WCFS1	B2, B3, B5, B9 ³	(Wegkamp et al., 2010)
<i>Campylobacter jejuni</i> NCTC 11168	B3	(Alazzam et al., 2011)
<i>Helicobacter pylori</i> 26695	B1	(Testerman et al., 2006)
<i>Neisseria cinerea</i> ATCC 14685	B7	(McDonald and Johnson, 1975)
<i>Propionibacterium freudenreichii</i> subsp. <i>shermanii</i> CIRM-BIA1	B1, B5, B7	(Falentin et al., 2010)
<i>Propionibacterium freudenreichii</i> subsp. <i>freudenreichii</i>	B5, B7	(Delwiche, 1949)
<i>Propionibacterium jensenii</i>	B5, B7	(Delwiche, 1949)
<i>Listeria monocytogenes</i> serotype 1/2a	B1, B2, B7	(Tsai and Hodgson, 2003)
<i>Staphylococcus aureus</i>	B1, B3	(Cove et al., 1980)
<i>Staphylococcus capitis</i>	B1, B3, B7	(Cove et al., 1980)
<i>Staphylococcus cohnii</i>	B1, B3, B5, B7	(Cove et al., 1983)
<i>Staphylococcus epidermidis</i>	B1, B3, B7	(Cove et al., 1980)
<i>Staphylococcus haemolyticus</i>	B1, B3, B7	(Cove et al., 1980)
<i>Staphylococcus hominis</i>	B1, B3, B7	(Cove et al., 1980)
<i>Staphylococcus saprophyticus</i>	B1, B3, B7	(Cove et al., 1980)
<i>Staphylococcus simulans</i>	B1, B3, B7	(Cove et al., 1980)
<i>Staphylococcus warneri</i>	B1, B3, B7	(Cove et al., 1980)
<i>Streptococcus thermophilus</i>	B1, B2, B3, B5, B6	(Letort and Juillard, 2001)
<i>Clostridium botulinum</i> A str. Hall	B1, B7, B9 ³	(Whitmer and Johnson, 1988)
<i>Clostridium botulinum</i> E3 str. Alaska	B1, B7, B9	(Whitmer and Johnson, 1988)
<i>Clostridium butyricum</i>	B7	(Himmi et al., 1999)
<i>Clostridium difficile</i>	B5 ⁴ , B6, B7	(Karasawa et al., 1995)
<i>Clostridium perfringens</i>	B3, B5, B6, B7	(Fuchs and Bonde, 1957; Goldner et al., 1985)
<i>Clostridium sporogenes</i>	B7, B9 ³	(Grossowicz et al., 1956)
<i>Clostridium tyrobutyricum</i>	B7, B9 ³	(Storari et al., 2016)
<i>Faecalibacterium prausnitzii</i> A2-165	B1, B2, B3, B5, B6, B7, B9	(Khan et al., 2012; Heinken et al., 2014)
<i>Ruminococcus bromii</i>	B2, B5 ⁵ , B6, B7, B9	(Herbeck and Bryant, 1974)
<i>Megasphaera elsdenii</i>	B5 ⁴ , B6, B7	(Forsberg, 1978)
<i>Veillonella parvula</i>	B1, B6, B7, B9 ³	(Rogosa and Bishop, 1964)

¹Strain name is indicated only if (a) it was included in the original publication, and (b) it is present in the reference collection of genomes analyzed in this work; in all other cases only a species name is included.

²Vitamin requirements that are consistent with the predicted in this work auxotrophic (A) phenotypes are shown in black, while the inconsistent phenotypes are in red.

B9³ indicates that organism requires pABA, a precursor of B9, which is consistent with the absence of pABA synthesis pathway, while all other enzymes of B9 biosynthesis pathway are present (B9 prototroph with missing pABA pathway).

B5⁴ indicates that organism may require β -alanine, a precursor of B5, since the β -alanine synthesis pathway is missing, while all other enzymes of B5 biosynthesis pathway are present (B5 prototroph with missing β -alanine pathway).

B5⁵ indicates that organism is predicted to require pantetheine, a precursor of Coenzyme A which is synthesized from pantothenate, since only the pantetheine salvage pathway was identified in its genome.

Table S3. B. Experimentally described growth requirements for vitamin B12 in human gut bacteria.

Experimentally studied strains / species ¹	B12 requirements ²	References
<i>Bacteroides caccae</i> ATCC 43185	RG	(Goodman et al., 2009)
<i>Bacteroides fragilis</i> NCTC 9343	RG	(Varel and Bryant, 1974)
<i>Bacteroides ovatus</i> ATCC 8483	RG	(Goodman et al., 2009)
<i>Bacteroides vulgatus</i> ATCC 8482	RG	(Varel and Bryant, 1974)
<i>Bacteroides thetaiotaomicron</i> VPI-5482	RG	(Degnan et al., 2014)
<i>Parabacteroides distasonis</i> ATCC 8503	RG	(Goodman et al., 2009; Varel and Bryant, 1974)
<i>Porphyromonas gingivalis</i> W83	RG	(Roper et al., 2000)
<i>Lactobacillus delbrueckii</i>	RG	(Rao et al., 1984; Hébert et al., 2004)
<i>Lactobacillus sakei</i>	RG	(Masuda et al., 2012)
<i>Lactobacillus plantarum</i> WCFS1	NEFG	(Wegkamp et al., 2010)
<i>Akkermansia muciniphila</i> ATCC BAA-835	NEFG	(Derrien et al., 2004)
<i>Escherichia coli</i> K-12	RG	(Giannella et al., 1971; Lawrence and Roth, 1996)
<i>Escherichia fergusonii</i> ATCC 35469	RG	(Lawrence and Roth, 1996)
<i>Shigella dysenteriae</i>	RG	(Lawrence and Roth, 1996)
<i>Shigella flexneri</i>	RG	(Giannella et al., 1971; Lawrence and Roth, 1996)
<i>Shigella sonnei</i> A	RG	(Giannella et al., 1971; Lawrence and Roth, 1996)
<i>Serratia fonticola</i>	RG	Lawrence and Roth, 1996
<i>Serratia marcescens</i>	RG	Lawrence and Roth, 1996
<i>Campylobacter jejuni</i> subsp. <i>jejuni</i> NCTC 11168	NEFG	(Alazzam et al., 2011)
<i>Helicobacter pylori</i> 26695	NEFG	(Testerman et al., 2006)
<i>Neisseria cinerea</i> ATCC 14685	NEFG	(McDonald and Johnson, 1975)
<i>Neisseria flavescens</i> ATCC 13120	NEFG	(McDonald and Johnson, 1975)
<i>Collinsella aerofaciens</i> ATCC 25986	RG	(Goodman et al., 2009)
<i>Bacillus cereus</i> ATCC 14579	NEFG	(Abbas et al., 2014)
<i>Staphylococcus aureus</i> , <i>S. capitis</i> , <i>S. cohnii</i> , <i>S. epidermidis</i> , <i>S. haemolyticus</i> , <i>S. hominis</i> , <i>S. saprophyticus</i> , <i>S. simulans</i> , <i>S. warneri</i>	NEFG	(Cove et al., 1980; Cove et al., 1983)
<i>Streptococcus thermophilus</i>	NEFG	(Letort and Juillard, 2001)
<i>Clostridium scindens</i> ATCC 35704	RG	(Goodman et al., 2009)
<i>Clostridium spiroforme</i> DSM 1552	RG	(Goodman et al., 2009)
<i>Ruminococcus bromii</i>	RG	(Herbeck and Bryant, 1974)

¹ Strain name is indicated only if (a) it was included in the original publication, and (b) it is present in the reference collection of genomes analyzed in this work; in all other cases only a species name is included.

² Experimental phenotypes: RG, requires B12 for growth; NEFG, B12 is not essential for growth. The RG phenotypes that are consistent with the predicted B12 auxotrophic phenotypes are shown in black, while the inconsistent phenotypes are in red.

Table S3. C. Experimentally described B-vitamin production capabilities of human gut bacteria.

Experimentally studied strains / species ¹	B-vitamin production ²	References
<i>Bacteroides vulgatus</i>	B1, B2, B3, B7	(Burkholder and McVeigh, 1942)
<i>Bacteroides thetaiotaomicron</i> VPI-5482	B1	(Costliow and Degnan, 2017)
<i>Lactobacillus acidophilus</i>	B9 ³	(Rao et al., 1984)
<i>Lactobacillus coryniformis</i>	B9 ³ , B12	(Masuda et al., 2012)
<i>Lactobacillus fermentum</i>	B9 ³	(Hugenschmidt et al., 2010)
<i>Lactobacillus plantarum</i>	B9 ³	(Hugenschmidt et al., 2010)
<i>Lactobacillus sakei</i>	B9 ³	(Masuda et al., 2012)
<i>Lactobacillus reuteri</i> JCM 1112	B9 ³ , B12	(Santos et al., 2008)
<i>Escherichia coli</i>	B1, B2, B3, B7	(Burkholder and McVeigh, 1942)
<i>Proteus vulgaris</i>	B1, B2, B3, B7	(Burkholder and McVeigh, 1942)
<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium str. Lt2	B12	(Giannella et al., 1971; Lawrence and Roth, 1996)
<i>Citrobacter freundii</i>	B12	(Keuth and Bisping, 1994; Lawrence and Roth, 1996)
<i>Klebsiella pneumoniae</i>	B12	(Giannella et al., 1971; Keuth and Bisping, 1994; Lawrence and Roth, 1996)
<i>Bifidobacterium adolescentis</i> ATCC 15703&DSM 20087	B6, B9	(Deguchi et al., 1985; SUGAHARA et al., 2015; Kopp et al., 2017)
<i>Bifidobacterium bifidum</i> ATCC 29521	B1, B3, B6, B9	(Deguchi et al., 1985; SUGAHARA et al., 2015)
<i>Bifidobacterium breve</i> MCC 0121&1114&1604	B1, B3, B6, B9 ³	(Deguchi et al., 1985; SUGAHARA et al., 2015)
<i>Bifidobacterium longum</i> subsp. <i>infantis</i> ATCC 15697	B1, B3, B6, B9	(Deguchi et al., 1985; Pompei et al., 2007; SUGAHARA et al., 2015)
<i>Bifidobacterium longum</i> subsp. <i>longum</i>	B1, B3, B6, B9	(Deguchi et al., 1985)
<i>Bifidobacterium pseudocatenulatum</i> DSM 20438	B9 ³	(Kopp et al., 2017)
<i>Propionibacterium freudenreichii</i>	B12	(Hugenschmidt et al., 2010)
<i>Bacillus clausii</i>	B2	(Salveti et al., 2003)
<i>Bacillus megaterium</i> DSM319	B12	(Moore et al., 2014)
<i>Bacillus pumilus</i>	B1, B2, B3	(Burkholder and McVeigh, 1942)
<i>Ruminococcus obeum</i> ATCC 29174	B12	(Goodman et al., 2009)

¹ Strain name is indicated only if (a) it was included in the original publication, and (b) it is present in the reference collection of genomes analyzed in this work; in all other cases only a species name is included.

²All experimental vitamin production phenotypes are consistent with the predicted in this work prototrophic (P) phenotypes. B9³ indicates that organism requires pABA, a precursor of B9, which is consistent with the absence of pABA synthesis pathway, while all other enzymes of B9 biosynthesis pathway are present (B9 prototroph with missing pABA pathway).

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