**Дополнительные материалы.**

**Таблица 1. Трансмембранные (ТМ) и С-концевые домены (SCD) серин-треониновой протеин киназы Pkb2оперона PFNA у видов бифидобактерий, выделенных из микробиоты человека.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Вид бифидобактерий** | **Штамм** | **Организм-хозяин** | **Pkb2,**  **номер белкового продукта и locus\_tag** | **Длина белка Pkb2,**  **аа** | **ТМ домен,**  **аа** | **С-концевой домен,**  **аа** |
| 1. Bifidobacterium adolescentis | ATCC 15703 | человек | WP\_011743628.1  BAD\_RS06945 | 473 | 325-347 | 348-473 |
| 2. Bifidobacterium angulatum | GT102 | человек | WP\_052946515.1  Bang102\_RS00205 | 376 | 329-348 | 349-376 |
| 3. Bifidobacterium animalis subsp. lactis | DSM\_10140 | человек | WP\_004218258.1  BALAT\_RS06615 | 467 | 314-337 | 338-467 |
| 4. Bifidobacterium bifidum | PRL 2010 | человек | WP\_013389588.1  BBPR\_0427 | 472 | 320-342 | 343-472 |
| 5. Bifidobacterium breve | DSM 20213 | человек | WP\_003828453.1  BIFBRE\_RS07070 | 382 | 318-339 | 340-382 |
| 6. Bifidobacterium catenulatum | JCM 1194 | человек | WP\_033512811.1  BBCT\_RS06800 | 474 | 326-348 | 349-474 |
| 7. Bifidobacterium dentium | JCM 1195 = DSM 20436 | человек | WP\_003839029.1  BBDE\_RS08520 | 470 | 318-340 | 341-470 |
| 8. Bifidobacterium gallicum | DSM 20093 | человек | WP\_044085240.1  BIFGAL\_RS02345 | 492 | 348-370 | 371-492 |
| 9.1. Bifidobacterium longum subsp. infantis | 157F | человек (ребенок) | WP\_007057781.1  BLIF\_RS02220 | 473 | 317-339 | 340-473 |
| 9.2. Bifidobacterium longum subsp. longum | GT15 | человек | WP\_007057781.1  BLGT\_RS02820 | 473 | 317-339 | 340-473 |
| 9.3. Bifidobacterium longum subsp. suis | BSM11-5 | человек (ребенок) | WP\_071474750.1  BFS26\_RS04925 | 473 | 317-339 | 340-473 |
| 10. Bifidobacterium pseudocatenulatum | JCM 1200 | человек  (ребенок) | WP\_004221354.1  BBPC\_RS07260 | 475 | 326-348 | 349-475 |
| 11. Bifidobacterium pseudolongum | PV8-2 | человек | WP\_052177298.1  AH67\_RS07065 | 472 | 326-349 | 350-472 |

**Дополнительные материалы.**

**Таблица 2.** Виды бифидобактерий, выделенные из микробиоты человека. Встречаемость в микробиоте детей и взрослых.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Филогенетическая группа | Вид | Число секвенированных геномов | Встречаются в микробиоте младенцев\* | Встречаются в микробиоте взрослых людей\* |
| *B. adolescentis* | *B. adolescentis* | 102 | редко | часто |
| *B. catenulatum* | 2 | часто | часто |
| *B. dentium* | 48 | редко | редко |
| *B. pseudocatenulatum* | 140 | часто | часто |
| *B. bifidum* | *B. bifidum* | 131 | часто | часто |
| *B. longum* | *B. angulatum* | 6 | редко | редко |
| *B. breve* | 168 | редко | редко |
| *B. longum* | 535 | часто | часто |
| *B. pseudolongum* | *B. animalis subsp. lactis* | 118 | редко | часто |
| *B. gallicum* | 3 | редко | редко |
| *B. pseudolongum* | 90 | редко | редко |

\*Таблица частично составлена с использованием данных, приведенных в статье Turroni et al., 2012.

**Citation:** Turroni F, Peano C, Pass DA, Foroni E, Severgnini M, et al. (2012) Diversity of Bifidobacteria within the Infant Gut Microbiota. PLoS ONE 7(5): e36957.

doi:10.1371/journal.pone.0036957

**Дополнительные материалы.**

**Таблица 3.** **Каталог последовательностей С-концевых доменов серин-треониновой протеин киназы Pkb2 с заменами аминокислот у видов *Bifidobacterium*, часто встречающихся в микробиоте человека.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Вид бифидобактерий человека** | **Группа** | **Название штамма** | **Pkb2, номер белкового продукта** |
| **1.** *Bifidobacterium longum* subsp. *longum* | 1.1. | GT15 | **WP\_007057781.1** |
| 1.2. | ATCC 55813 | WP\_032746814.1 |
| 1.3. | JCM 7053 | WP\_101026033.1 |
| **2.** *Bifidobacterium longum* subsp. *infantis* | 2.1. | 157F | **WP\_007057781.1** |
| 2.2. | BT1 | WP\_060620037.1 |
| 2.3. | LH\_665 | WP\_174774163.1 |
| 2.4. | IN-07 | WP\_065436081.1 |
| **3.** *B. adolescentis* | 3.1. | ATCC 15703 | WP\_011743628.1 |
| 3.2. | AM34-11 | WP\_117805832.1 |
| 3.3 | Km4;  150 | WP\_038444944.1 |
| 3.4. | MSK.20.2 | WP\_217717171.1 |
| 3.5. | 70B | WP\_085407849.1 |
| **4.** *B. angulatum* | 4. | GT102 | WP\_052946515.1 |
| **5.** *B. animalis* subsp. *lactis* | 5.1. | DSM 10140 | WP\_004218258.1 |
| 5.2. | ATCC 25527 | WP\_014698127.1 |
| **6.** *B. bifidum* | 6.1. | PRL 2010 | WP\_013389588.1 |
| 6.2. | ca\_0067 | WP\_129901282.1 |
| 6.3. | YIT 10347 | WP\_230094024.1 |
| 6.4. | LMG 11583 | WP\_047298710.1 |
| 6.5. | 85B | WP\_047285264.1 |
| **7.** *B. pseudocatenulatum* | 7.1. | JCM 1200 | WP\_004221354.1 |
| 7.2. | YIT12232 | WP\_226595471.1 |
| 7.3. | YIT11027 | WP\_226590582.1 |
| 7.4. | CA-C29 | WP\_065435345.1 |

**Дополнительные материалы.**

**Таблица 4.** Каталог сенсорных последовательностей 2D FN3 бифидобактерий из ЖКТ человека.

|  |  |  |  |
| --- | --- | --- | --- |
| Вид *Bifidobacterium* | Группа по заменам аминокислот | Название штамма | Номер в NCBI Protein |
| *B. longum* subsp. *longum* | Группа 1.1 | GT15 | AIW43408 |
| Группа 1.2 | DSM 20219 | SEB43038 |
| Группа 1.3 | MCC10014 | TCD94273 |
| Группа 1.4 | MCC10099 | TCF41702 |
| *B. longum* subsp. *infantis* | Группа 2.1 | ATCC 15697 | BAJ69696 |
| Группа 2.2 | LH\_23 | VWQ35166 |
| *B. adolescentis* | Группа 3.1 | ATCC 15703 | BAF40092 |
| Группа 3.2 | BIOML-A186 | KAB5750345 |
| Группа 3.3 | BIOML-A135 | KAB5842581 |
| Группа 3.4 | BIOML-A120 | KAB5869187 |
| *B. angulatum* | Группа 4.1 | GT102 | AMK57067 |
| Группа 4.2 | LMG 11039 | KFI41277 |
| [*B. dentium*](https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Tree&id=1689&lvl=3&p=genome&p=gcassembly&lin=f&keep=1&srchmode=1&unlock) | Группа 5.1 | JCM 1195 | BAQ27672 |
| Группа 5.2 | ATCC 27679 | EFM42500 |
| *B. animalis* subsp. *lactis* | Нет замен | DSM 10140 | ACS48252 |
| *B. bifidum* | LMG 11041 | KFI42505 |
| *B. breve* | LMG 13208 | KFI49501 |
| [***B. catenulatum***](https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Tree&id=1686&lvl=3&p=genome&p=gcassembly&lin=f&keep=1&srchmode=1&unlock) | LMG 11043 | EEB21319 |
| [***B. catenulatum***](https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Tree&id=1686&lvl=3&p=genome&p=gcassembly&lin=f&keep=1&srchmode=1&unlock)subsp.*kashiwanohense* | DSM 21854 | KFI67447 |
| *B. gallicum* | LMG 11596 | EFA22966 |
| *B. pseudocatenulatum* | LMG 10505 | EEG71395 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Дополнительные материалы.**  **Таблица 5.** Идентификация наличия C-концевого домена белка Pkb2 в метагеномах здоровых детей и взрослых. | | | | | | | | | | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | C-end Pkb2; B. adole-scentis; группа 3.2 | C-end Pkb2; B. adole-scentis; группа 3.3 | C-end Pkb2; B. adole-scentis; группа 3.4 | C-end Pkb2; B. adole-scentis; группа 3.5 | C-end Pkb2; B. animalis; группа 5.1 | C-end Pkb2; B. bifidum; группа 6.1 | C-end Pkb2; B. bifidum; группа 6.2 | C-end Pkb2; B. bifidum; группа 6.3 | C-end Pkb2; B. longum; группа 1.1 | C-end Pkb2; B. longum; группа 1.2 | C-end Pkb2; B. longum; группа 1.3 | C-end Pkb2; B. pseudoca-tenulatum; группа 7.2 | C-end Pkb2; B. pseudoca-tenulatum; группа 7.3 |
| CHILD\_HC\_1 | - | - | - | - | - | - | - | - | - | - | 99,254 | - | - |
| CHILD\_HC\_2 | - | - | - | - | - | - | - | - | - | - | 97,248 | - | - |
| CHILD\_HC\_3 | - | - | - | 99,206 | - | - | - | - | - | - | 95,683 | - | - |
| CHILD\_HC\_4 | 100 | - | - | - | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_5 | - | - | - | 99,206 | 100 | - | - | - | 100 | - | - | - | - |
| CHILD\_HC\_6 | - | - | - | 100 | - | - | - | - | - | - | 99,219 | - | - |
| CHILD\_HC\_7 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_8 | 100 | - | - | - | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_9 | - | - | - | - | - | - | - | - | - | - | 99,254 | - | - |
| CHILD\_HC\_10 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_11 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_12 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_13 | - | - | - | - | - | - | - | - | - | - | 99,254 | - | - |
| CHILD\_HC\_14 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_15 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_16 | 100 | - | - | - | - | - | - | - | 100 | - | - | - | - |
| CHILD\_HC\_17 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_18 | - | - | - | 99,206 | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_19 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_20 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_21 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_22 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_23 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ADULT\_HC\_1 | 100 | - | - | - | - | - | - | - | - | - | 99,153 | - | - |
| ADULT\_HC\_2 | - | 100 | - | - | - | - | - | - | 100 | - | - | - | - |
| ADULT\_HC\_3 | 100 | - | - | - | - | - | 100 | - | - | - | 99,254 | - | 98,473 |
| ADULT\_HC\_4 | - | - | - | - | - | - | - | - | - | - | 99,254 | - | 98,473 |
| ADULT\_HC\_5 | 100 | - | - | - | 100 | 100 | - | - | - | - | 99,254 | - | - |
| ADULT\_HC\_6 | - | - | - | - | - | - | - | - | - | - | 99,254 | - | - |
| ADULT\_HC\_7 | - | - | - | - | - | - | 100 | - | - | - | - | - | - |
| ADULT\_HC\_8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ADULT\_HC\_9 | - | - | - | - | - | - | - | - | - | 100 | - | - | - |
| ADULT\_HC\_10 | - | - | - | - | - | - | - | - | - | - | 99,254 | - | - |
| ADULT\_HC\_11 | - | - | - | - | - | - | - | - | - | - | - | - | 97,71 |
| ADULT\_HC\_12 | - | 100 | - | - | - | - | - | - | - | 100 | - | - | - |
| ADULT\_HC\_13 | - | - | - | 99,206 | - | 100 | - | - | - | - | 99,254 | - | - |
| ADULT\_HC\_14 | - | - | - | - | - | - | - | - | - | - | 99,254 | - | - |
| ADULT\_HC\_15 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ADULT\_HC\_16 | - | 100 | - | - | - | - | - | - | - | - | 99,254 | - | - |
| ADULT\_HC\_17 | - | 100 | - | - | - | 100 | - | - | - | - | 99,254 | 100 | - |
| ADULT\_HC\_18 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ADULT\_HC\_19 | - | 99,206 | - | - | - | - | - | - | - | - | 99,254 | - | - |
| ADULT\_HC\_20 | - | - | - | 98,413 | - | - | - | - | - | - | 99,254 | - | - |
| ADULT\_HC\_21 | 99,206 | - | - | - | - | - | - | - | - | - | 99,254 | - | - |
| ADULT\_HC\_22 | 99,206 | - | - | - | - | - | - | - | - | - | 99,254 | - | - |
| ADULT\_HC\_23 | 99,206 | - | - | - | - | - | - | - | - | - | 99,254 | - | - |
| ADULT\_HC\_24 | - | - | - | - | - | - | - | - | 100 | - | - | - | - |
| ADULT\_HC\_25 | - | - | - | - | - | - | - | 100 | - | - | 99,254 | - | - |
| ADULT\_HC\_27 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ADULT\_HC\_28 | - | - | 99,206 | - | 100 | 100 | - | - | - | - | 99,254 | - | 98,473 |
| ADULT\_HC\_30 | - | - | 99,206 | - | - | - | 100 | - | - | 100 | - | - | - |
| ADULT\_HC\_31 | - | - | - | 99,206 | - | - | - | - | - | - | 99,254 | - | 97,674 |
| ADULT\_HC\_32 | 100 | - | - | - | - | - | - | - | - | - | 99,254 | - | - |
| ADULT\_HC\_33 | 99,206 | - | - | - | - | - | - | - | - | - | 99,254 | - | - |
| ADULT\_HC\_34 | - | 100 | - | - | - | - | - | - | - | - | - | - | - |
| ADULT\_HC\_35 | 100 | - | - | - | - | - | - | - | - | - | - | - | - |
| ADULT\_HC\_36 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ADULT\_HC\_37 | - | 99,206 | - | - | - | - | - | - | - | - | 99,254 | 96,899 | - |
| ADULT\_HC\_38 | 100 | - | - | - | - | - | - | 100 | - | - | 99,231 | - | - |
| ADULT\_HC\_39 | - | 100 | - | - | - | - | - | - | - | - | - | - | - |
| ADULT\_HC\_40 | 100 | - | - | - | - | - | - | - | - | - | - | - | - |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Дополнительные материалы.**  **Таблица 6.** Идентификация наличия сенсорного белка 2D-FN3 в метагеномах здоровых детей и взрослых. | | | | | | | |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | 2D-FN3; B. adolescentis; группа 3.2 | 2D-FN3; B. adolescentis; группа 3.3 | 2D-FN3; B. animalis | 2D-FN3; B. bifidum | 2D-FN3; B. catenulatum | 2D-FN3; B. pseudo-catenulatum | 2D-FN3; B. longum; группа 1.1 | 2D-FN3; B. longum; группа 1.3 | 2D-FN3; B. longum; группа 1.4 |
| CHILD\_HC\_1 | - | - | - | - | - | - | - | - | 100 |
| CHILD\_HC\_2 | - | - | - | - | - | - | - | - | 100 |
| CHILD\_HC\_3 | - | 100 | - | - | - | - | - | - | - |
| CHILD\_HC\_4 | - | - | - | - | 98,361 | - | - | - | - |
| CHILD\_HC\_5 | - | 100 | 100 | - | - | - | - | - | - |
| CHILD\_HC\_6 | - | - | - | - | - | 99,31 | - | - | - |
| CHILD\_HC\_7 | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_8 | - | 100 | - | - | - | - | - | - | - |
| CHILD\_HC\_9 | - | - | - | - | - | - | - | - | 99,457 |
| CHILD\_HC\_10 | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_11 | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_12 | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_13 | - | - | - | - | - | - | - | - | 100 |
| CHILD\_HC\_14 | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_15 | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_16 | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_17 | - | - | - | - | - | 99,265 | - | - | - |
| CHILD\_HC\_18 | - | 100 | - | - | - | - | - | - | - |
| CHILD\_HC\_19 | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_20 | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_21 | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_22 | - | - | - | - | - | - | - | - | - |
| CHILD\_HC\_23 | - | - | - | - | - | - | - | - | - |
| ADULT\_HC\_1 | - | 100 | - | - | - | - | 99,457 | - | - |
| ADULT\_HC\_2 | - | 99,451 | - | - | - | - | - | 99,32 | - |
| ADULT\_HC\_3 | - | 100 | - | 100 | - | 98,907 | 100 | - | - |
| ADULT\_HC\_4 | - | - | - | - | - | - | - | - | - |
| ADULT\_HC\_5 | 100 | - | 100 | 100 | - | - | 99,457 | - | - |
| ADULT\_HC\_6 | - | - | - | - | - | - | - | - | 100 |
| ADULT\_HC\_7 | - | - | - | 100 | - | - | - | - | - |
| ADULT\_HC\_8 | - | - | - | - | - | - | - | - | - |
| ADULT\_HC\_9 | - | - | - | - | - | - | - | 99,457 | - |
| ADULT\_HC\_10 | - | - | - | - | - | - | - | - | 100 |
| ADULT\_HC\_11 | - | - | - | - | - | 99,454 | - | 100 | - |
| ADULT\_HC\_12 | - | 99,451 | - | - | - | - | - | 100 | - |
| ADULT\_HC\_13 | - | 99,451 | - | 100 | - | 99,454 | 100 | - | - |
| ADULT\_HC\_14 | - | - | - | - | - | - | - | 100 | - |
| ADULT\_HC\_15 | - | - | - | - | - | 99,454 | - | - | - |
| ADULT\_HC\_16 | 100 | - | - | - | - | - | - | - | 100 |
| ADULT\_HC\_17 | - | 99,451 | - | 100 | - | 98,361 | - | 100 | - |
| ADULT\_HC\_18 | - | - | - | - | - | - | - | - | - |
| ADULT\_HC\_19 | - | 100 | - | - | - | - | - | 100 | - |
| ADULT\_HC\_20 | - | 100 | - | - | - | - | - | - | 100 |
| ADULT\_HC\_21 | 100 | - | - | - | 100 | - | - | - | 100 |
| ADULT\_HC\_22 | 100 | - | - | - | - | 99,351 | - | - | 100 |
| ADULT\_HC\_23 | 100 | - | - | - | - | 99,351 | - | - | 100 |
| ADULT\_HC\_24 | - | - | - | - | - | - | - | - | 100 |
| ADULT\_HC\_25 | - | - | 100 | 99,476 | - | - | 99,457 | - | - |
| ADULT\_HC\_27 | - | - | - | - | - | - | - | - | - |
| ADULT\_HC\_28 | 99,451 | - | 100 | 100 | - | 98,907 | - | 100 | - |
| ADULT\_HC\_30 | - | 100 | - | 100 | - | 98,907 | - | 100 | - |
| ADULT\_HC\_31 | - | 100 | - | - | - | - | - | 100 | - |
| ADULT\_HC\_32 | - | 100 | - | - | - | 99,454 | - | 100 | - |
| ADULT\_HC\_33 | - | 100 | - | - | 99,454 | - | - | - | - |
| ADULT\_HC\_34 | - | 99,451 | - | - | 98,361 | - | - | - | - |
| ADULT\_HC\_35 | - | 100 | - | - | - | - | - | - | - |
| ADULT\_HC\_36 | - | - | - | - | - | - | - | - | - |
| ADULT\_HC\_37 | 100 | - | - | - | - | 99,454 | - | 99,457 | - |
| ADULT\_HC\_38 | - | 100 | - | 100 | - | - | - | - | - |
| ADULT\_HC\_39 | 100 | - | - | - | - | - | - | - | - |
| ADULT\_HC\_40 | 100 | - | - | - | - | - | - | - | - |