**Table S4.** *Helicobacter* isolates used in the current study to construct the in-house *Helicobacter* main spectrum profile (MSP) database

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Helicobacter* species** | **Isolate** | **Host of isolation** | **Culture conditions** | ***In vitro* passage** | **Accession number\*** |
| *H. acinonychis* | 1L  90-624  Hacino3  SB-1 | Sumatrian tiger  cheetah  lion  Bengal tiger | dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  biphasic, BHI agar + broth, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  dry, BHI agar, pH 7, 37°C, microaerobic | unknown  unknown  unknown  unknown | FZLX00000000b  FZMD00000000b  FZMC00000000b  FZLV00000000b |
| *H. ailurogastricus* | ASB 7.1T  ASB 9.4  ASB 11.2  ASB 13.2  ASB 21.1  ASB 23 | cat  cat  cat  cat  cat  cat | biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  dry, *Brucella* agar, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic | unknown  unknown  unknown  unknown  unknown  11 | CDMG00000000  CDMN00000000  CDML00000000  CDMH00000000  FZLU00000000b  FZMH00000000b |
| *H. baculiformis* | M50T | cat | dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic | unknown | FZMF00000000b |
| *H. bizzozeronii* | 10  12A  14F  ASB 22 kol 15  Heydar  M20  R53  R1051  Yryla | dog  dog  dog  cat  dog  dog  human  dog  dog | dry, BHI agar, pH 7, 37°C, microaerobic  dry, BHI agar, pH 7, 37°C, microaerobic  dry, BHI agar, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  biphasic, BHI agar + broth, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  dry, BHI agar, pH 7, 37°C, microaerobic  dry, BHI agar, pH 7, 37°C, microaerobic  dry, BHI agar, pH 7, 37°C, microaerobic | unknown  unknown  unknown  unknown  unknown  unknown  unknown  unknown  unknown | FZEH00000000b  FZMK00000000b  FZLJ00000000b  FZKO00000000b  FZLB00000000b  FZMY00000000b  FZKR00000000b |
| *H. cetorum* | MIT 01-5903  MIT 01-6202  MIT 01-6096 | Pacific white sided dolphin  Atlantic bottle nose dolphin  Atlantic bottle nose dolphin | dry, BHI agar, pH 7, 37°C, microaerobic  dry, BHI agar, pH 7, 37°C, microaerobic  dry, BHI agar, pH 7, 37°C, microaerobic | unknown  unknown  unknown | FZMR00000000b  FZMU00000000b |
| *H. cynogastricus* | JKM4T | dog | dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic | unknown | FZMQ00000000b |
| *H. felis* | 1-1602 kol1  1-1602 kol 2  1-1602 kol 3  1-1602 kol 4  2301  16937  CS1T  CS6  CS7  CS8  Dog7  DS1  JKM3  JKM5  M26  M29  M35  M38  M39  M42 | dog  dog  dog  dog  dog  dog  cat  cat  cat  cat  dog  dog  dog  dog  dog  dog  dog  dog  dog  dog | dry, BHI agar, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar + broth, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar + broth, pH 7, 37°C, microaerobic  dry, BHI agar, pH 7, 37°C, microaerobic  biphasic, BHI agar + broth, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar + broth, pH 7, 37°C, microaerobic  biphasic, BHI agar + broth, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  biphasic, BHI agar + broth, pH 7, 37°C, microaerobic  dry, BHI agar, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  dry, BHI agar, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic | unknown  unknown  unknown  unknown  unknown  unknown  unknown  unknown  unknown  unknown  unknown  unknown  unknown  unknown  unknown  unknown  unknown  unknown  unknown  unknown | FZLC00000000b  FZLH00000000b  FZLL00000000b  FZKQ00000000b  FZKU00000000.1  NC\_014810  FZKM00000000b  FZKX00000000b  FZKG00000000b  FZLG000000000b  FZNI00000000b  FZKW00000000b  FZKZ00000000b  FZKS00000000b  FZLF00000000b  FZKK00000000b  FZKF00000000b  FZKP00000000b  FZLA00000000b |
| *H. heilmannii* | ASB 1.4T  ASB 2.1  ASB 3.2  ASB 6.3  ASB 14.1  ASB 19.4  ASB 20.2 | cat  cat  cat  cat  cat  cat  cat | biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic | unknown  15  13  19  5  15  20 | CDMK00000000  CDMP00000000  CDMJ00000000  CDMM00000000  CDMI00000000  FZMG00000000b  FZME00000000b |
| *H. salomonis* | Alma0595  Elvira II  InkinenT  KokIII  M45  MINI13  R1053 | dog  dog  dog  dog  dog  dog  dog | dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  dry + biphasic, BHI agar ± broth, pH 7, 37°C, microaerobic  dry, BHI agar, pH 7, 37°C, microaerobic  dry, BHI agar, pH 7, 37°C, microaerobic  dry, BHI agar, pH 7, 37°C, microaerobic | unknown  unknown  unknown  unknown  unknown  unknown  unknown | FZMB00000000b  FZMA00000000b  FZLZ00000000b  FZLY00000000b  OANQ00000000b |
| *H. suis* | HS1T  HS2  HS3  HS4  HS5  HS6  HS7  HS8  HS9  HS10  P13/04  P13/24  P13/26  P13/28  P13/32  P13/35  P13/36  P14/06  P14/09  P14/10  HSMf 331  HSMf 503b  HSMf 504/1  HSMf 504/2  HSMf 505/1  HSMf 505/2  HSMm R02019a  HSMm R02019b  HSMm R04052a  HSMm R04052c  HSMm R07055a  HSMm R07055b  HSMm R07102c  HSMm R08041a  HSMm R08041b | pig  pig  pig  pig  pig  pig  pig  pig  pig  pig  pig  pig  pig  pig  pig  pig  pig  pig  pig  pig  *Macaca fascicularis*  *Macaca fascicularis*  *Macaca fascicularis*  *Macaca fascicularis*  *Macaca fascicularis*  *Macaca fascicularis*  *Macaca mulatta*  *Macaca mulatta*  *Macaca mulatta*  *Macaca mulatta*  *Macaca mulatta*  *Macaca mulatta*  *Macaca mulatta*  *Macaca mulatta*  *Macaca mulatta* | biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic  biphasic, *Brucella* agar + broth, pH 5, 37°C, microaerobic | 26  24  19  28  21  24  22  27  26  17  28  23  25  21  25  27  25  22  17  21  6  6  7  8  9  7  8  8  6  8  8  7  8  8  8 | ADGY00000000  FZLI00000000b  FZKT00000000b  FZKI00000000b  FZKN00000000b  FZLD00000000b  FZKH00000000b  FZKJ00000000b  FZLE00000000b  FZKV00000000b  GCA\_902312335.1  GCA\_902312325.1  GCA\_902312345.1  GCA\_902196125.1  GCA\_902196095.1  GCA\_902196115.1    GCA\_902196135.1    GCA\_902196105.1  GCA\_902196145.1  GCA\_902196155.1 |

BHI: Brain Heart Infusion

microaerobic: 85% N2, 10% CO2 and 5% O2

Ttype strain

bEMBL accession numbers can be found via Bioproject record number PRJEB21369

\*Genome accession number; only isolates with a genome accession number were included in the phylogenetic analysis (Figure S5)