

**Table S1.** *Helicobacter* genomes examined for homologs of *H. pylori* G27 genes.

<i>Helicobacter</i> species with flagellar sheaths		
species and strain	sequence status	reference
<i>Helicobacter acinonychis</i> Sheeba	finished	[1]
<i>Helicobacter ailurogastricus</i> ASB7	incomplete	[2]
<i>Helicobacter anseris</i> MIT 04-9362	incomplete	
<i>Helicobacter aurati</i> isolate 137778_3	incomplete	[3]
<i>Helicobacter baculiformis</i> isolate 427351_3	incomplete	[4]
<i>Helicobacter bilis</i> AAQJH	finished	[5]
<i>Helicobacter bizzozeronii</i> CIII-1	finished	[6]
<i>Helicobacter brantae</i> MIT 04-9366	incomplete	[7]
<i>Helicobacter canis</i> NCTC 12740	finished	[8]
<i>Helicobacter cetorum</i> MIT 99-5656	finished	[9]
<i>Helicobacter cholecystus</i> ERZ467480	incomplete	[10]
<i>Helicobacter cinaedi</i> ATCC BAA-847	finished	[11]
<i>Helicobacter cynogastricus</i> 329937_4	incomplete	[12]
<i>Helicobacter equorum</i> 361872_4	incomplete	[13]
<i>Helicobacter felis</i> ATCC 49179	finished	[14]
<i>Helicobacter fennelliae</i> MRY-12-0050	finished	[11]
<i>Helicobacter heilmannii</i> ASB1.4	finished	[15]
<i>Helicobacter hepaticus</i> ATCC 51449	finished	[16]
<i>Helicobacter himalayensis</i> YS1	finished	[17]
<i>Helicobacter jaachi</i> MIT 09-6949	finished	[18]
<i>Helicobacter japonicus</i> MIT 01-6451	incomplete	[19]
<i>Helicobacter labetoulli</i> 48519	incomplete	[7]
<i>Helicobacter macacae</i> MIT 99-5501	finished	[20]
<i>Helicobacter magdeburgensis</i> MIT 96-1001	finished	[21]
<i>Helicobacter marmotae</i> 152490_3	incomplete	[22]
<i>Helicobacter muridarum</i> ST1	incomplete	[23]
<i>Helicobacter mustelae</i> 12198	finished	[24]
<i>Helicobacter pametensis</i> ATCC 51478	incomplete	[25]
<i>Helicobacter rappini</i> 95150_3	incomplete	[26]
<i>Helicobacter saguini</i> MIT 97-6194	finished	[27]
<i>Helicobacter salomonis</i> 56878_5	incomplete	[28]
<i>Helicobacter suis</i> HS1	incomplete	[29]
<i>Helicobacter trogontum</i> ATCC 700114	finished	[30]
<i>Helicobacter typhlonius</i> MIT 97-6810	finished	[31]
<i>Helicobacter</i> species with unsheathed flagella		
species and strain	sequence status	[7]
<i>Helicobacter apodemus</i> SCJK1	finished	[32]
<i>Helicobacter burdigaliensis</i> CNRCH 2005/566H	incomplete	[7]
<i>Helicobacter canadensis</i> MIT 98-5491	finished	[33]
<i>Helicobacter ganmani</i> MIT 99-5101	incomplete	[7]
<i>Helicobacter mesocricetorum</i> 87012_3	incomplete	[34]

<i>Helicobacter pullorum</i> MIT 98-5489	incomplete	[35]
<i>Helicobacter rodentium</i> ATCC 700285	incomplete	[36]
<i>Helicobacter valdiviensis</i> WBE14	incomplete	[37]
<i>Helicobacter winghamensis</i> ATCC BAA-430	finished	[38]

Table S4. Primers used in this study.

primer ID #	primer name	sequence
P117	HP1489 US_F	CATCAAAAACGCGGTGGA
P118	HP1489 US_R	GCTAGCATAATCGAATTCCTCGAGAGGAACTCC ATCAACAGCGCT
P119	HP1489 DS_F	CTCGAGGAATTCGATTATGCTAGCGCTTATAAA TACATTGTTTCATTAGCG
P120	HP1489 DS_R	CTTAGGGCTAAGCTCACCACC
P129	BamHI 1491 pr F	GGATCCTAATGGGCTTGCTTGAAC
P130	1491 promoter R	GAGGGTTGTTTTTTCATACCGTCATAAAAACCTTATTC
P131	1489 gene F	GAATAAGGTTTTTATGACGGTATGAAAAAACAACCCTC
P132	1489 gene R	CTCGAGTTAATAAAACAATTCATAAAAATAA
P139	HP1488 US F	GAAGACATGATCCCTAGTTGGTTT-3'
P140	HP1488 US R	GCTAGCGATTTCGATCCTCGAGCACTTCAGCCTT AGGGCG
P141	HP1488 DS F	CTCGAGGATCGAATCGCTAGCGAGTTTAGGGTG GGTAAGGAATTT
P142	HP1488 DS R	CCACTTGGTATTTGATTTGAAGTG
P177	1487 US F	AAGCGCGATGAAGCCTAT
P178	1487 US R	GCTAGCGATTTCGATCCTCGAGCTTGTCTTGTA AACCCATGC
P179	1486 DS F	CTCGAGGATCGAATCGCTAGCTTGAATCAAATG CATGCG
P180	1486 DS R	AAAAACGCTTGCAAATTTTC

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