Supplementary Information

Table S1. Number of protein coding genes classified into each functional COG category. Each alphabet represents functional categories as same as those shown in Fig. 4.

Table S2. List of Mobile gene elements found in TUM19329\textsuperscript{T}

Table S3. List of Insertion sequences (ISs) structures interrupted by other ISs

Supplementary Figure legends

Fig. S1. Maximum-Likelihood tree of the TUM19329\textsuperscript{T} with related \textit{Legionella} spp. based on 16S rRNA genes. Bootstrap value based on 100 resamples are shown. Scale bar indicates the base substitutions for each position. \textit{Coxiella burnettii} (Accession No. HM208383) was used as an out group.

Fig. S2. Growth curves of strain TUM19329\textsuperscript{T} in BYE broth at different (a) NaCl concentration and (b) pH.

Fig. S3. Maximum-likelihood tree of the TUM19329\textsuperscript{T} with related \textit{Legionella} spp. based on functional homologs of IcmRs. Bootstrap value based on 100 resamples are shown. Scale bar indicates the base substitutions for each position.

Fig. S4. Example of insertion sequence interrupting other gene. ISLa5 interrupting ISLa1 at position 91894 to 95878 of the chromosome of TUM19329\textsuperscript{T}. 
| Taxon name                  | CELULAR PROCESSES AND SIGNALING | INFORMATION STORAGE AND PROCESSING | METABOLISM | POORLY CHARACTERIZED |
|----------------------------|---------------------------------|-----------------------------------|------------|----------------------|
|                            | D  | M  | N  | O  | T  | U  | V  | Z  | A  | B  | J  | K  | L  | C  | E  | F  | G  | H  | I  | P  | Q  | S  |
| TUM19329<sup>T</sup>       | 29 | 150| 35 | 88 | 69 | 49 | 34 | 0  | 1  | 1  | 148| 67 | 721| 115| 133| 42 | 68 | 73 | 91 | 83 | 34 | 802|
| *Legionella bozemanae*     | 30 | 177| 34 | 99 | 108| 89 | 45 | 1  | 1  | 1  | 159| 111| 206| 133| 187| 56 | 97 | 81 | 98 | 128| 61 | 893|
| *Legionella cincinnatiensis* | 26 | 163| 1  | 112| 87 | 52 | 50 | 1  | 1  | 0  | 156| 107| 193| 132| 168| 57 | 88 | 79 | 87 | 109| 60 | 892|
| *Legionella fallonii*      | 29 | 197| 50 | 112| 102| 61 | 64 | 0  | 1  | 2  | 162| 107| 171| 152| 193| 56 | 89 | 90 | 95 | 104| 53 | 972|
| *Legionella hackeliae*     | 27 | 163| 35 | 97 | 77 | 50 | 50 | 1  | 1  | 1  | 159| 99 | 143| 138| 165| 47 | 86 | 78 | 72 | 80 | 44 | 797|
| *Legionella jordanis*      | 27 | 152| 36 | 100| 69 | 54 | 29 | 1  | 1  | 1  | 152| 68 | 149| 124| 146| 49 | 84 | 69 | 70 | 88 | 37 | 715|
| *Legionella lansingensis*  | 26 | 147| 1  | 99 | 51 | 44 | 35 | 1  | 1  | 2  | 147| 64 | 156| 126| 168| 51 | 82 | 77 | 70 | 79 | 40 | 642|
| *Legionella longbeachae*   | 26 | 178| 1  | 117| 106| 55 | 50 | 0  | 1  | 0  | 150| 103| 189| 155| 178| 59 | 86 | 80 | 85 | 112| 53 | 861|
| *Legionella micdadei*      | 24 | 163| 50 | 105| 89 | 46 | 30 | 1  | 1  | 0  | 150| 78 | 122| 138| 157| 54 | 77 | 77 | 82 | 83 | 44 | 685|
| *Legionella moravica*      | 28 | 153| 50 | 104| 93 | 57 | 42 | 2  | 1  | 0  | 150| 88 | 158| 129| 152| 58 | 73 | 75 | 90 | 98 | 36 | 804|
| *Legionella pneumophila*   | 26 | 151| 34 | 109| 82 | 56 | 39 | 0  | 1  | 0  | 152| 95 | 145| 137| 165| 55 | 80 | 74 | 91 | 96 | 41 | 769|
| *Legionella quateirimensis* | 30 | 170| 52 | 110| 99 | 89 | 37 | 3  | 1  | 1  | 155| 109| 160| 141| 182| 60 | 89 | 78 | 95 | 102| 56 | 909|
| *Legionella saintheleni*   | 26 | 179| 1  | 122| 109| 53 | 51 | 0  | 1  | 1  | 158| 108| 220| 148| 188| 57 | 95 | 80 | 88 | 127| 63 | 908|
| *Legionella shakespearei*  | 28 | 136| 36 | 94 | 72 | 56 | 38 | 0  | 1  | 0  | 148| 86 | 130| 123| 169| 55 | 72 | 70 | 84 | 78 | 51 | 695|
| *Legionella tucsonensis*   | 27 | 154| 34 | 100| 79 | 40 | 29 | 0  | 1  | 0  | 152| 77 | 138| 134| 164| 55 | 85 | 79 | 86 | 96 | 44 | 694|
| *Legionella wadsworthii*   | 27 | 166| 2  | 110| 96 | 47 | 41 | 0  | 1  | 1  | 152| 92 | 120| 132| 174| 57 | 105| 84 | 86 | 103| 42 | 764|
| *Legionella worsleiensis*  | 27 | 134| 52 | 97 | 71 | 50 | 29 | 1  | 1  | 1  | 150| 78 | 155| 117| 123| 46 | 67 | 70 | 69 | 70 | 36 | 638|
| COG IDs       | Description                              | Number of genes |
|--------------|------------------------------------------|-----------------|
| L:COG2801    | Retrotransposon protein                  | 163             |
| L:COG2963    | Transposase                              | 156             |
| L:COG4584    | Transposase                              | 45              |
| L:COG1484    | IstB domain protein ATP-binding protein  | 41              |
| L:COG3344    | RNA-directed DNA polymerase              | 23              |
| L:COG0582    | Integrase                                | 15              |
| L:ENOG4110SJK| Transposase                              | 15              |
| L:COG4644    | Transposase                              | 12              |
| L:ENOG4111NDY| Transposase                              | 11              |
| L:ENOG4111UQ5| Transposase                              | 11              |
| L:COG3316    | Transposase                              | 11              |
| L:COG5433    | Transposase                              | 10              |
| L:COG3464    | Transposase                              | 9               |
| L:COG1961    | Resolvase                                | 6               |
| L:COG3293    | Transposase                              | 5               |
| L:COG3039    | Transposase                              | 5               |
| L:COG3335    | Transposase                              | 5               |
| L:ENOG410XS43| Transposase                              | 4               |
| L:ENOG4111H7A| Transposase                              | 4               |
| L:ENOG410ZVYF| Transposase IS4 Family Protein           | 4               |
| L:ENOG41103Q3| Integrase                                | 4               |
| L:ENOG4111KXU| Transposase (IS4 family)                 | 3               |
| L:ENOG410XPNN| Transposase                              | 2               |
| L:ENOG410XT8A| Transposase                              | 2               |
| L:ENOG410XP6T| Integrase catalytic                      | 1               |
| L:ENOG410XPK3| Integrase catalytic subunit              | 1               |
| L:ENOG410XRAH| Transposase                              | 1               |
| L:ENOG4111IPS| Transposase                              | 1               |
| L:ENOG4111ZAW| Transposase                              | 1               |
| L:COG3385    | Transposase                              | 1               |
| L:COG3547    | Transposase                              | 1               |
| L:COG3666    | Transposase                              | 1               |
| L:COG2826    | Transposase                              | 1               |
| L:COG3328    | Transposase                              | 1               |
| L:ENOG410XQBA| Transposase                              | 1               |
| L:ENOG4111USC| Transposase IS4 family                   | 1               |
| L:ENOG411218M| Transposase                              | 1               |
| L:ENOG41123GT| IS4 family Transposase                   | 1               |
| Fragmented IS elements | Description |
|------------------------|-------------|
| TUM19329_00105         | Fragments of ISLa1 interrupted by ISLa5 |
| TUM19329_00310         | Fragments of ISLa1 interrupted by ISLa1 |
| TUM19329_01099         | Fragments of ISLa1 interrupted by ISLa1 |
| TUM19329_01101         | Fragments of ISLa1 interrupted by ISLa4 |
| TUM19329_01105         | Fragments of ISLa1 possibly interrupted by other mobile elements |
| TUM19329_01438         | Fragments of ISLa1 interrupted by ISLa1 |
| TUM19329_01875         | Fragments of ISLa1 interrupted by ISLa1 |
| TUM19329_01878         | Fragments of ISLa1 interrupted by ISLa1 |
| TUM19329_02272         | Fragments of ISLa1 interrupted by ISLa1 |
| TUM19329_02541         | Fragments of ISLa1 possibly interrupted by other mobile elements |
| TUM19329_02862         | Fragments of ISLa1 possibly interrupted by other mobile elements |
| TUM19329_00070, TUM19329_00071 | Fragments of ISLa5 possibly interrupted by other mobile elements |
| TUM19329_01569, TUM19329_01570 | Fragments of ISLa5 possibly interrupted by other mobile elements |
| TUM19329_02486         | Fragments of ISLa5 interrupted by ISLa1 |
| TUM19329_02722         | Fragments of ISLa5 interrupted by ISLa1 |
| TUM19329_03355         | Fragments of ISLa5 interrupted by ISLa1 |
| TUM19329_00827         | Fragments of ISLa2 interrupted by ISLa1 |
| TUM19329_01256         | Fragments of ISLa2 interrupted by ISLa4 |
| TUM19329_01982         | Fragments of ISLa2 interrupted by ISLa4 |
| TUM19329_01985         | Fragments of ISLa2 interrupted by ISLa4 |
| TUM19329_01992         | Fragments of ISLa2 possibly interrupted by other mobile elements |
| TUM19329_02265         | Fragments of ISLa2 interrupted by ISLa4 |
| TUM19329_02268         | Fragments of ISLa2 interrupted by ISLa4 |
| TUM19329_02417, TUM19329_02420 | Fragments of ISLa2 interrupted by ISLa4 |
| TUM19329_00100         | Fragments of ISLa3 interrupted by ISLa2 |
| TUM19329_02845         | Fragments of ISLa3 possibly interrupted by other mobile elements |
| TUM19329_02979         | Fragments of ISLa3 interrupted by ISLa3 |
| TUM19329_03005         | Fragments of ISLa3 interrupted by ISLa3 |
| TUM19329_03006         | Fragments of ISLa3 interrupted by ISLa3 |
| TUM19329_00108         | Fragments of ISLa1 interrupted by ISLa5 |
| TUM19329_02275         | Fragments of ISLa1 interrupted by ISLa1 |
| TUM19329_02537         | Fragments of ISLa1 possibly interrupted by other mobile elements |
| TUM19329_02900         | Fragments of ISLa3 interrupted by ISLa3 |
| TUM19329_02490         | Fragments of ISLa5 possibly interrupted by other mobile elements |
| TUM19329_03082         | Fragments of ISLa5 possibly interrupted by other mobile elements |
| TUM19329_03352         | Fragments of ISLa5 interrupted by ISLa1 |
Fig. S1

The phylogenetic tree illustrates the relationships among various species of Legionella and Coxiella. Branch support values are indicated as percentages. The tree includes:

- **Legionella species**:
  - L. shakespearei
  - L. quateirensis
  - L. moravica
  - L. worsleiensis
  - TUM19329T
  - L. fallonii
  - L. hackeliae
  - L. jordanis
  - L. micdadei
  - L. lansingensis
  - L. pneumophila
  - L. wadsworthii
  - L. cincinatiensis
  - L. sainthelensi
  - L. longbeachae
  - L. tucsonensis
  - L. bozemanae

- **Coxiella burnetii**
Fig. S2

(a) Growth curve (NaCl)

(b) Growth curve (pH)
Fig. S3

L. jordanis

L. longbeachae

L. sainthelensi

L. cincinnatiensis

L. tucsonensis

L. wadsworthii

L. bozemanae

L. fallonii

TUM19329T

L. hackeliae

L. pneumophila

L. lansingensis

L. micdadei

L. worsleiensis

L. quateirensis

L. moravica

L. shakespearei
Fig. S4