Supplementary Information

Identification of Secreted Bacterial Proteins by Non-Canonical Amino Acid Tagging

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Figure S1.

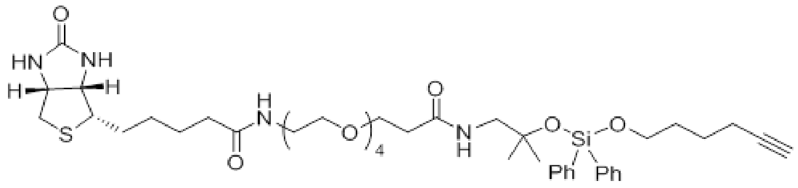
Synthesis of Anl, the Acid-Cleavable Biotin-Alkyne Affinity Enrichment Tag and Copper-Catalyzed Click Reaction

Synthesis of Anl by Copper-Catalyzed Diazo Transfer. The synthesis of Anl was based on a previously published protocol (1); the starting material was Boc-lysin. Briefly, 5.27 g (81.1 mmol) of sodium azide was treated with 2.7 ml (16 mmol) of distilled triflic anhydride in 13 ml of water for 2 hours. The triflic azide product was extracted with 10 ml methylene chloride and added dropwise to a flask containing Boc-Lys-OH (2 g, 8.1 mmol), K_2CO_3 (1.68 g, 12.2 mmol) and $CuSO_4$ (20 mg, 0.08 mmol) in 26 ml of water and 250 ml of methanol. After 20 hours at room temperature the product was extracted with ethyl acetate, redissolved in methylene chloride and purified by silica gel chromatography. After Boc deprotection with hydrochloric acid, the final product was purified by cation exchange chromatography.

Copper-Catalyzed Click Reaction. The copper-catalyzed azide-alkyne coupling reaction, and the synthesis of the requisite THPTA ligand were performed as described previously (2). Labeling was carried out at room temperature for 2 hours, at a final concentration of 0.2-0.5 mg/ml of HeLa lysate proteins, 0.1 mM copper sulfate, 0.5 mM THPTA ligand, 5 mM sodium ascorbate, 5 mM aminoguanidine and 100 µM alkyne probe. EDTA-free protease inhibitor (Roche) was added to all reactions and lysates.

1. Link AJ, Vink MK, & Tirrell DA (2007) Preparation of the functionalizable methionine surrogate azidohomoalanine via copper-catalyzed diazo transfer. *Nat. Protoc.* 2(8):1879-1883.

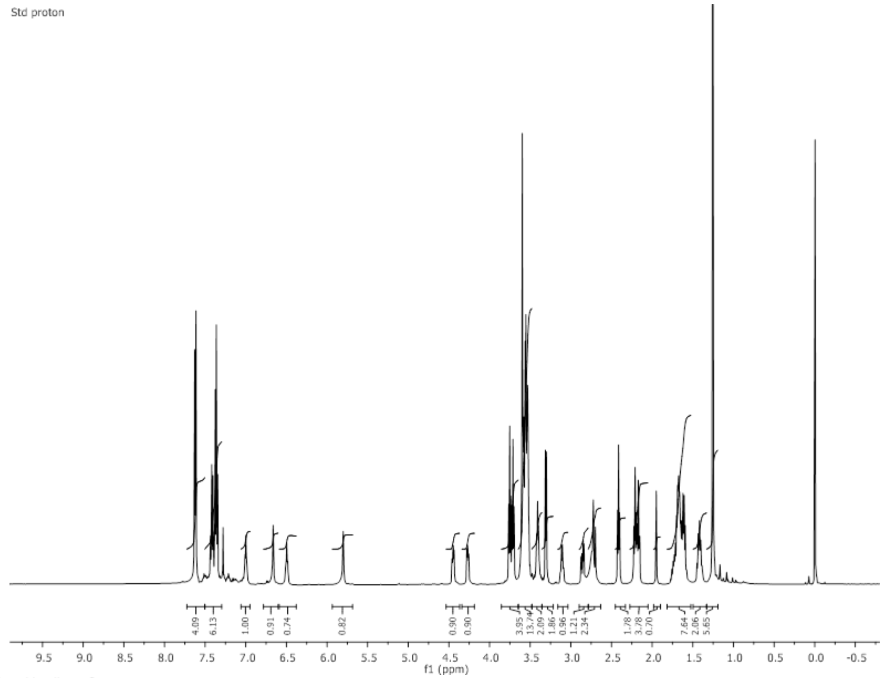
2. Hong V, Presolski SI, Ma C, & Finn MG (2009) Analysis and optimization of copper-catalyzed azide-alkyne cycloaddition for bioconjugation. *Angew. Chem. Int. Ed.* 48(52):9879-9883.



Acid-cleavable biotin-alkyne affinity enrichment tag *N*-(2-(((hex-5-yn-1-yloxy)diphenylsilyl)oxy)-2-methylpropyl)-1-(5-((3a*S*,4*S*,6a*R*)-2-oxohexahydro-1*H*-thieno[3,4-d]imidazol-4-yl)pentanamido)-3,6,9,12-tetraoxapentadecan-15-amide. Synthesis of the acid cleavable alkyne tag was based on our recent work on the analogous acid-sensitive dialkoxydiphenylsilane biotin-azide tag (*45*), with the exception that hex-5-yn-1-ol was used in place of 6-azidohexanol.^{1}H NMR (500 MHz, $CDCl_3$), δ (ppm): 7.72-7.50 (m, 4H), 7.40 (m, 6H), 7.06-6.95 (m, 1H), 6.66 (s, 1H), 6.50 (t, J = 5.65, 5.65 Hz, 1H), 5.80 (s, 1H), 4.53-4.37 (m, 1H), 4.34-4.19 (m, 1H), 3.73 (td, J = 19.58, 6.04, 6.04 Hz, 4H), 3.65-3.48 (m, 14H), 3.48-3.35 (m, 2H), 3.35-3.22 (m, 1H), 3.11 (dd, J = 11.73, 7.06 Hz, 1H), 2.85 (td, J = 16.69, 8.51, 8.51 Hz, 1H), 2.72 (t, J = 10.43, 10.43 Hz, 2H), 2.41 (t, J = 6.01, 6.01 Hz, 2H), 2.27-2.05 (m, 4H), 1.95 (dd, J = 3.09, 2.17 Hz, 1H), 1.81-1.52 (m, 8H), 1.50-1.33 (m, 2H), 1.23 (d, J = 22.65 Hz, 6H); ^{13}C NMR (126 MHz,

$CDCl_3$), δ (ppm): 173.5, 171.2, 164.1, 134.8 (m, 6C), 130.2 (m, 2C), 127.9 (m, 4C), 84.3, 75.7, 70.4 (m, 8C), 68.6, 67.3, 62.6, 61.8, 60.2, 55.7, 50.4, 40.5, 39.1, 37.1, 35.9, 31.3, 28.3, 28.0, 27.6, 25.6, 24.8, 18.1; *m/z* calculated for $C_{43}H_{67}N_7O_9SSi$ $[M+H]^+$: 840.4163, MS found: 863.6 (M+Na). HRMS found: 863.4228.

NMR spectra of acid-cleavable biotin-alkyne tag (top, ^1H NMR spectrum; bottom, ^{13}C NMR spectrum)



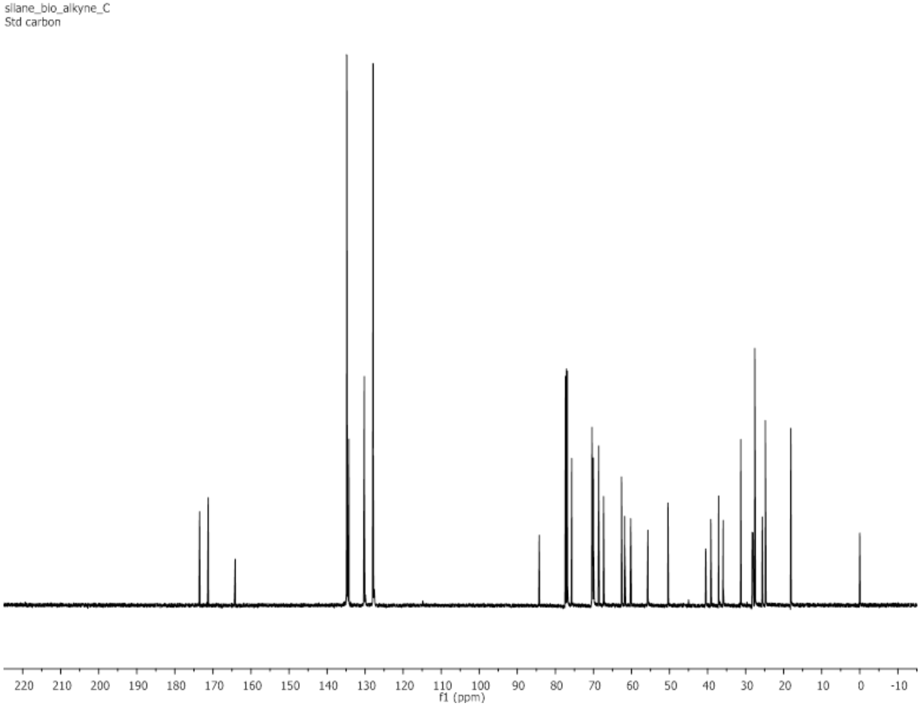
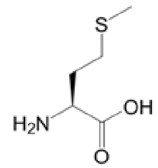


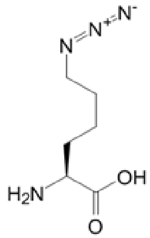
Figure S2.

Mass shifts at methionine positions as a result of Anl incorporation and addition of cleavable tag. Mass modifications associated with replacement of Met by Anl, with reaction of Anl with the biotin-alkyne affinity enrichment tag, and with cleavage of the tag by formic acid are represented. These three mass modifications are included as variable modifications for tandem mass spectrometry.

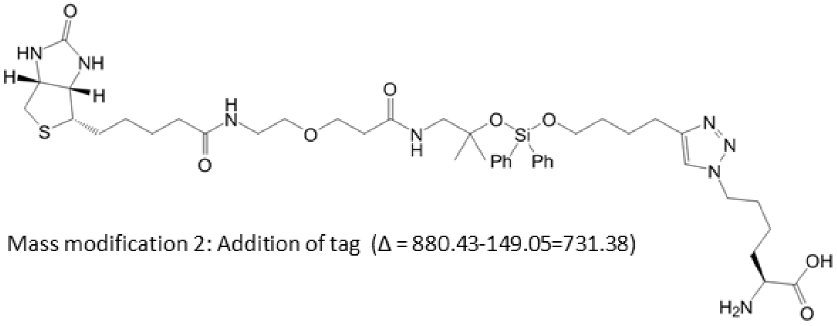
Met



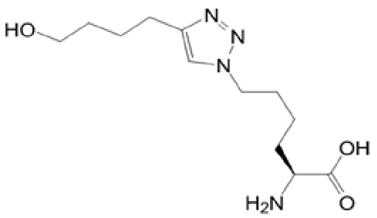
Anl



Mass modification1: Met to Anl (Δ=172.10-149.05=+23.05)



Mass modification 2: Addition of tag (Δ = 880.43-149.05=731.38)



Mass modification 3: Cleaved tagged Anl (Δ = 270.17-149.05=121.12)

Figure S3.

Sequence of the NLL-MetRS expression construct. DNA sequence of the NheI-flanked expression cassette with NLL-MetRS under control of the *E. coli* MetG promoter and followed by its natural *E. coli* transcriptional termination signal. The MetRS sequence is underlined. Mutations L13N, Y260L, H301L are highlighted in green.

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GCTAGCTCTAGAGACGTCCGGCCGGAGCTCCACCGCGGTGGCGGCCGCTCTAGAGTCACTTACTTAACATTTTCCCATTTGGTACTATCTAACC
CCTTTTCACTATTAAGAAGTAATGCCTACTATGACTCAAGTCGCGAAGAAAATTCTGGTGACGTGCGCAAACCCGTACGCTAACGGCTCAATC
CACCTCGGCCATATGCTGGAGCACATCCAGGCTGATGTCTGGGTCCGTTACCAGCGAATGCGCGGCCACGAGGTCAACTTCATCTGCGCCGA
CGATGCCCACGGTACACCGATCATGCTGAAAGCTCAGCAGCTTGGTATCACCCCGGAGCAGATGATTGGCGAAATGAGTCAGGAGCATCAG
ACTGATTTCGCAGGCTTTAACATCAGCTATGACAACTATCACTCGACGCACAGCGAAGAGAACCGCCAGTTGTCAGAACTTATCTACTCTCGCC
TGAAAGAAAACGGTTTTATTAAAAACCGCACCATCTCTCAGCTGTACGATCCGGAAAAAGGCATGTTCCTGCCGGACCGTTTTGTGAAAGGCA
CCTGCCCGAAATGTAAATCCCCGGATCAATACGGCGATAACTGCGAAGTCTGCGGCGCGACCTACAGCCCGACTGAACTGATCGAGCCGAAA
TCGGTGGTTTCTGGCGCTACGCCGGTAATGCGTGATTCTGAACACTTCTTCTTTGATCTGCCCTCTTTCAGCGAAATGTTGCAGGCATGGACCC
GCAGCGGTGCGTTGCAGGAGCAGGTGGCAAATAAAATGCAGGAGTGGTTTGAATCTGGCCTGCAACAGTGGGATATCTCCCGCGACGCCCC
TTACTTCGGTTTTGAAATTCCGAACGCGCCGGGCAAATATTTCTACGTCTGGCTGGACGCACCGATTGGCCTGATGGGTTCTTTCAAGAATCTG
TGCGACAAGCGCGGCGACAGCGTAAGCTTCGATGAATACTGGAAGAAAGACTCCACCGCCGAGCTGTACCACTTCATCGGTAAAGATATTGT
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CGGCGCAAAGATGTCCAAGTCTCGCGGCACCTTTATTAAAGCCAGCACCTGGCTGAATCATTTTGACGCAGACAGCCTGCGTTACTACTACAC
TGCGAAACTCTCTTCGCGCATTGATGATATCGATCTCAACCTGGAAGATTTCGTTCAGCGTGTGAATGCCGATATCGTTAACAAAGTGGTTAA
CCTGGCCTCCCGTAATGCGGGCTTTATCAACAAGCGTTTTGACGGCGTGCTGGCAAGCGAACTGGCTGACCCGCAGTTGTACAAAACCTTCAC
TGATGCCGCTGAAGTGATTGGTGAAGCGTGGGAAAGCCGTGAATTTGGTAAAGCCGTGCGCGAAATCATGGCGCTGGCTGATCTGGCTAAC
CGCTATGTCGATGAACAGGCTCCGTGGGTGGTGGCGAAACAGGAAGGCCGCGATGCCGACCTGCAGGCAATTTGCTCAATGGGCATCAACC
TGTTCCGCGTGCTGATGACTTACCTGAAGCCGGTACTGCCGAAACTGACCGAGCGTGCAGAAGCATTCCTCAATACGGAACTGACCTGGGAT
GGTATCCAGCAACCGCTGCTGGGCCACAAAGTGAATCCGTTCAAGGCGCTGTATAACCGCATCGATATGAGGCAGGTTGAAGCACTGGTGG
AAGCCTCTAAATGAGAAGTAAAAGCCGCTGCCGCGCCGGTAACTGGCCCGCTGGCAGATGATCCGATTCAGGAAACCATCACCTTTGACGAC
TTCGCTAAAGTTGACCTGCGCGTGGCGCTGATTGAAAACGCAGAGTTTGTTGAAGGTTCTGACAAACTGCTGCGCCTGACGCTGGATCTCGG
CGGTGAAAAACGCAATGTCTTCTCCGGTATTCGTTCTGCTTACCCGGATCCGCAGGCACTGATTGGTCGTCACACCATTATGGTGGCTAACCT
GGCACCACGTAAAATGCGCTTCGGTATCTCTGAAGGCATGGTGATGGCTGCCGGTCCTGGCGGGAAAGATATTTTCCTGCTAAGCCCGGATG
CCGGTGCTAAACCGGGTCATCAGGTGAAATAATCCCCCTTCAAGGCGCTGCATCGACAGCCTTTTGCTTTATAAATTCCTAAAGTTGTTTTCTT
GCGATTTTGTCTCTCTCTAACCCGCATAAATACTGGTAGCATCTGCATTCAACTGGATAAAATTACAGGGATGCAGAATGAGACACTTTATCTA
TCAGGACGAAAAATCACATAAATTCAGGGCAGTTGAGCAACAGGGAAACGAGTTGCATATCAGTTGGGGAAAAGTTGGCACCAAAGGCAAA
GCCAGATAAAAAGTTTTTCAGATGCTGCGGCAGCGGCAAAAGCGGAGCCCGACCTCGAGGGGGGGCCCGGTACCCGGCCGGACGTCTCTAG
AGCTAGC
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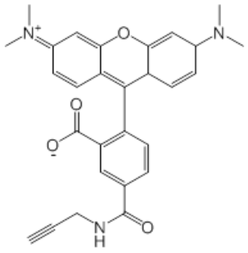
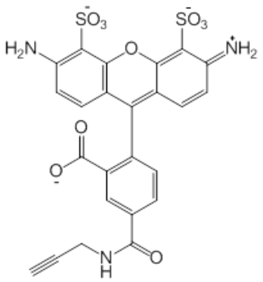
Figure S4.

Alkyne functionalized fluorescent dyes for visualization of Anl labeled proteins. Alkyne functionalized tetramethylrhodamine (TAMRA) or Alexa Fluor 488 dyes are appended to Anl residues by copper catalyzed click reaction.



Alkyne-TAMRA



Alkyne-AlexaFluor 488

Figure S5.

HeLa cell morphology after labeling and infection by various *Y. enterocolitica* strains. HeLa cells were incubated with *Y. enterocolitica* at multiplicity of infection of 100 in the presence of 1 mM Met or 1 mM Anl. Infections with secretion wild type *Yersinia* resulted in a rounded morphology, whereas infections with secretion mutant *Yersinia* did not change HeLa cell morphology. Magnified versions are shown in the insets to the right of each image.

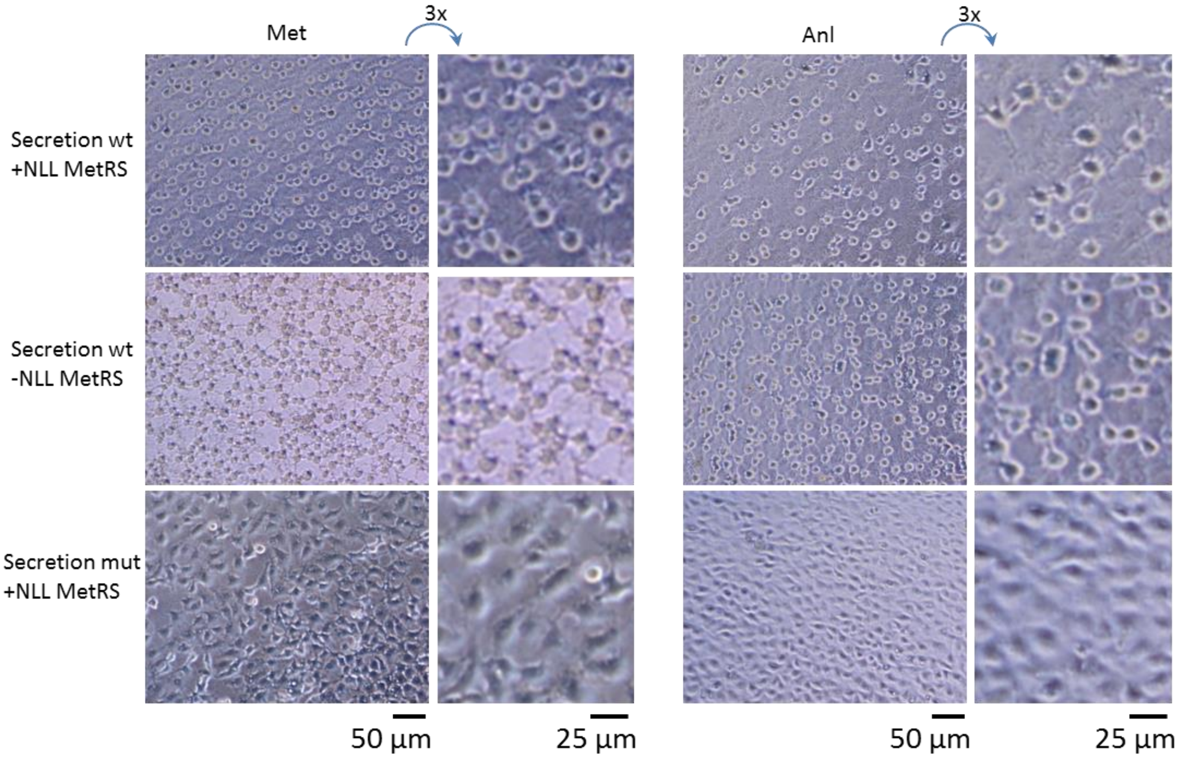
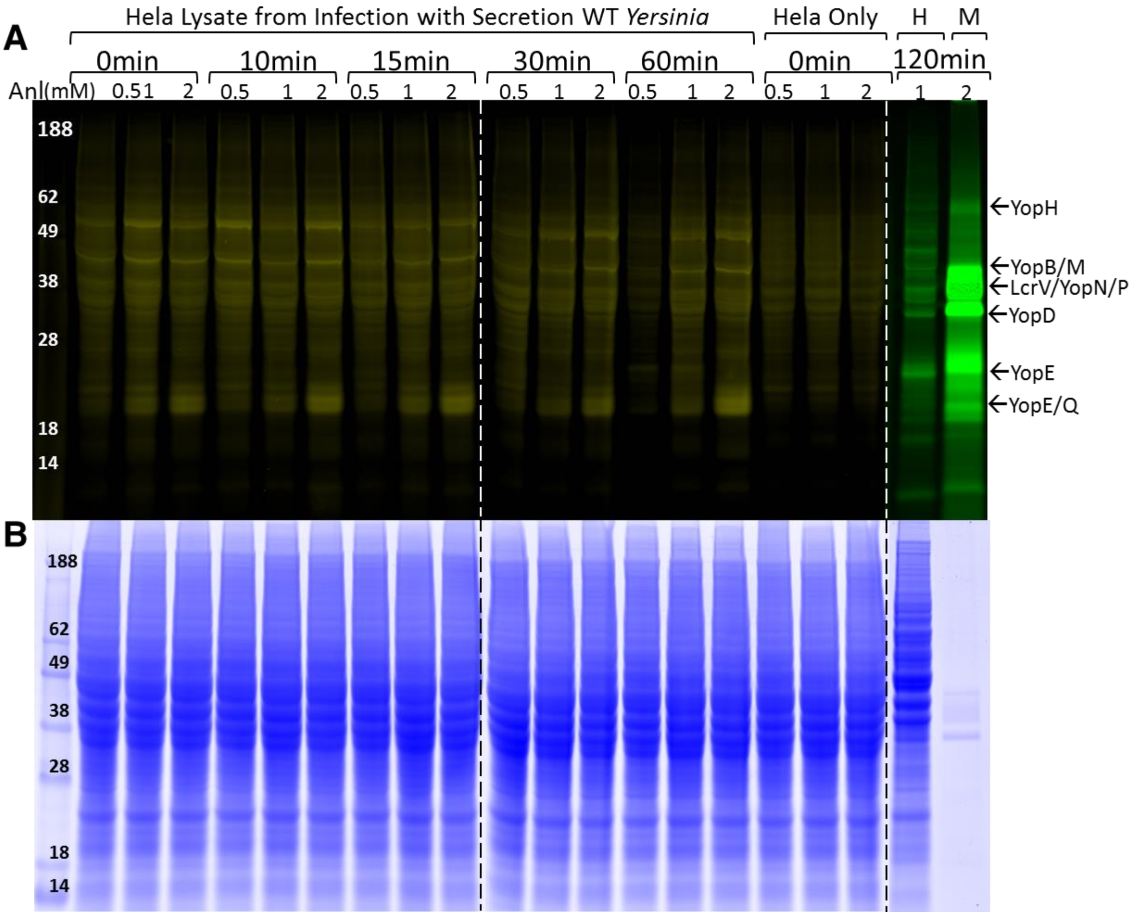


Figure S6.

Identifying infection conditions to increase efficiency of Yop injection into HeLa cells. Optimal conditions for Anl labeling of injected Yops were identified by investigating Anl concentrations of 0.5, 1 and 2 mM, as well as the timing of T3SS activation. *A.* Anl incorporation was detected by labeling with TAMRA alkyne dye and in-gel fluorescence detection. Activation of T3SS machinery was induced by pre-incubation of *Yersinia* at 37 °C for various times (0-60 min) before the start of infection. The labeling control (HeLa only) did not include any *Yersinia* cells. A pre-incubation step at 37 °C for 120 min was included to determine if longer pre-incubation would result in more labeling of injected proteins. Higher Anl concentrations consistently yielded higher levels of labeling with TAMRA dye, and longer pre-incubation at 37 °C resulted in more efficient injection. Secretion of Yops under LCR conditions (M) is included as a basis of comparison for the expected position of Yops *B.* Colloidal blue staining of the same gels shows equal protein loading across different conditions. Pre-incubation of *Yersinia* at 37 °C increases the efficiency of injection of labeled T3SS substrates. *C.* T3SS secretion competent *Y. enterocolitica* were pre-incubated at 37 °C for 1-5 hours before start of infection of HeLa cells. Infections were carried out in media containing 0.5, 1, 2 or 4 mM Anl. *D.* Colloidal blue dye staining of the same samples shows equal loading of HeLa lysates. H: HeLa lysates after infection with secretion WT *Yersinia*. M: Media secreted Yops under LCR conditions. Positions corresponding to different Yops are indicated to the right of the image.



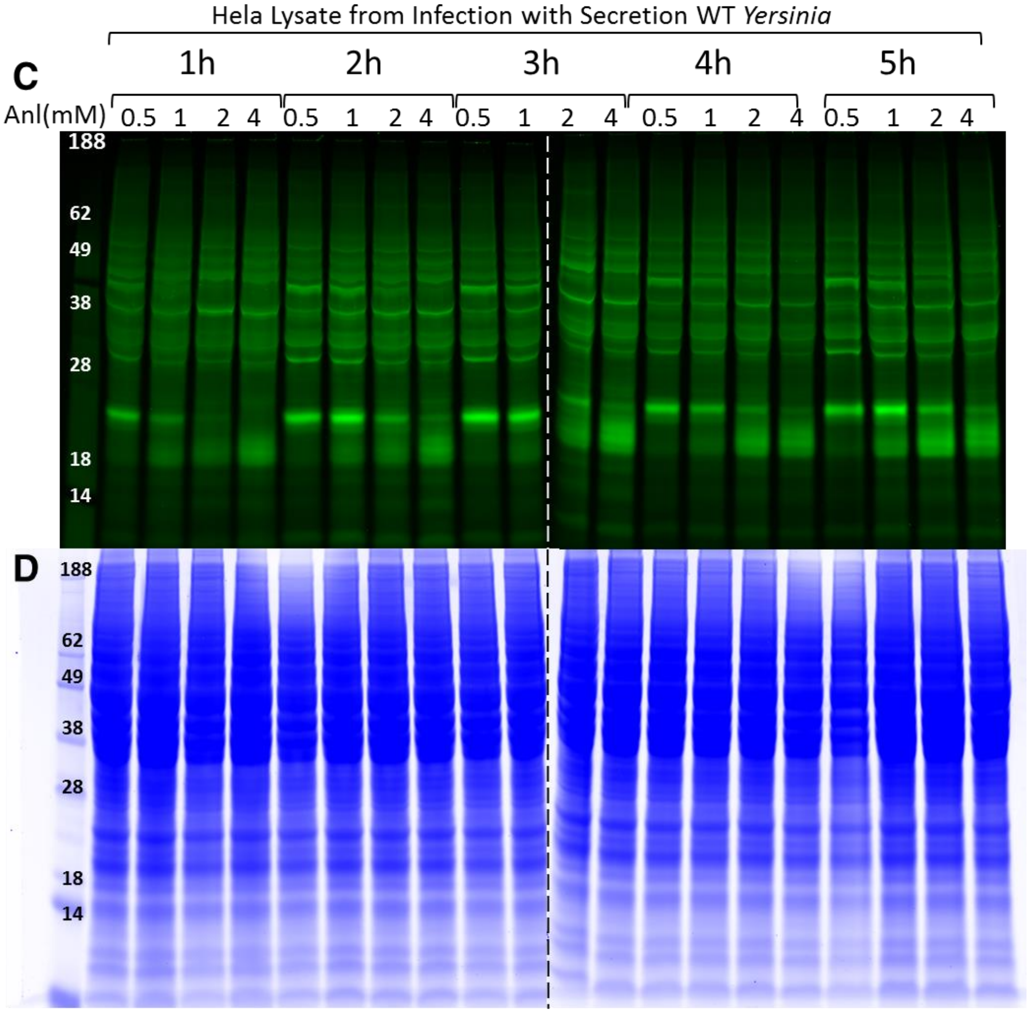

Hela Lysate from Infection with Secretion WT *Yersinia*
C
1h
2h
3h
4h
5h
Anl(mM)
0.5 1 2 4 0.5 1 2 4 0.5 1 2 4 0.5 1 2 4 0.5 1 2 4
188
62
49
38
28
18
14
D
188
62
49
38
28
18
14

Figure S7.

Selective lysis of HeLa cells in the presence of intact *Y. enterocolitica.* Digitonin was used as a detergent to disrupt the HeLa cell membrane but not the bacterial envelope. Co-cultures of HeLa and *Yersinia* cells were lysed with various concentrations of digitonin in PBS. Briefly, 6-well plates containing 1.5 x 10^6 HeLa cells and *Yersinia* at MOI of 100 were lysed for 20 min at room temperature. After lysis of HeLa cells, *Yersinia* cells were removed by centrifugation at 15000 rcf and the remaining supernatant proteins were precipitated with chloroform/methanol. The proteins were resuspended in 1% SDS and electrophoresed on a 12% polyacrylamide gel and stained with colloidal blue. Efficient lysis of HeLa cells was observed with digitonin concentrations as low as 0.025% v/w. In the absence of HeLa cells and presence of *Yersinia*, no protein could be observed after incubation with digitonin, indicating lack of *Yersinia* lysis. Western blot analysis with antibody specific for *Yersinia* RpoA confirmed the lack of bacterial lysis. A small amount of non-specific binding was observed with this antibody under all conditions, including those with no bacteria. *Yersinia* lysis with 2% SDS served as a positive control for RpoA labeling. Western blot analysis with an antibody specific to α-tubulin was used as a loading control to show the extent of HeLa cell lysis. Western blots probed with α-tubulin antibody confirmed that 0.05% digitonin is sufficient for HeLa cell lysis. Digitonin concentrations are given as weight per volume of PBS.

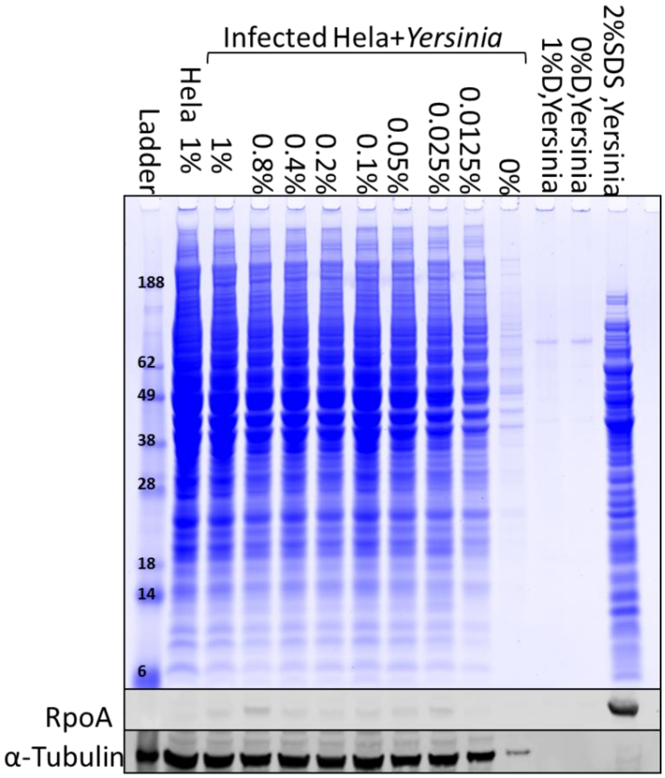
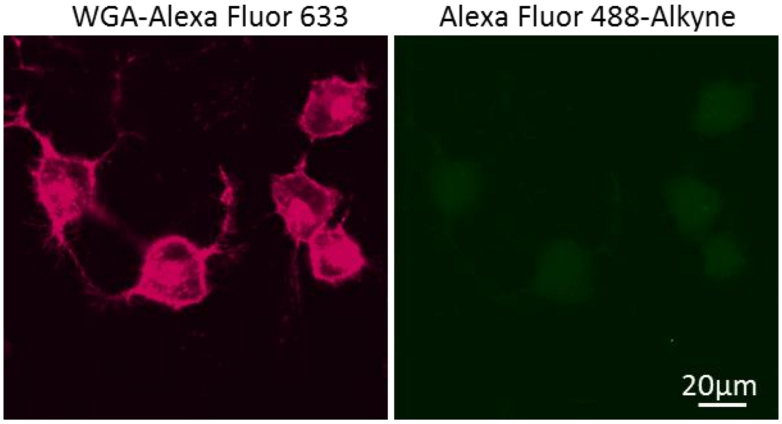


Figure S8.

Control conditions for detection of labeled proteins in absence of Anl incorporation. The images in this section are labeling controls for the infection studies shown in Fig. 3*D, E* of the main text. The images were obtained from infections in 1 mM Anl with secretion wild type *Y. enterocolitica* lacking the NLL-MetRS. Anl residues were labeled with alkyne-functionalized AlexaFluor 488; the resulting fluorescence is shown in green. AlexaFluor 633 conjugated to wheat germ agglutinin (WGA) labels membranes of HeLa cells; the corresponding fluorescence is shown in red. In the absence of NLL-MetRS, Anl is not incorporated into *Yersinia* proteins; therefore there is no labeling with alkyne-functionalized AlexaFluor 488.



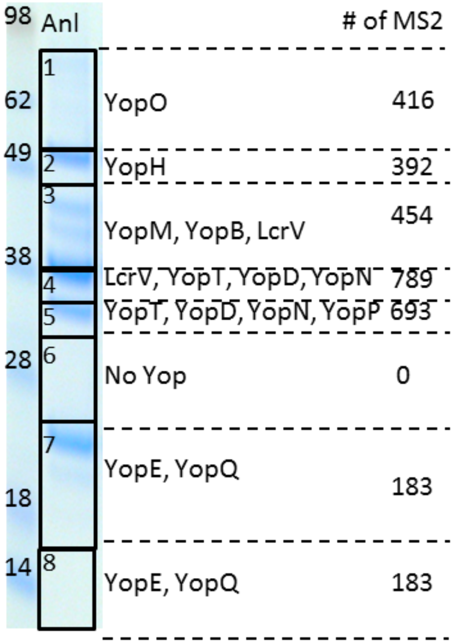
The wild-type MetRS does not activate Anl to any appreciable extent; however the NLL-MetRS does activate Met. We have previously measured the kinetics of amino acid activation by NLL-MetRS; k_{cat}/K_m is 350±70 $M^{-1}s^{-1}$ for Met and 410±80 $M^{-1}s^{-1}$ for Anl. See Ref. 6 of the main text for measurement of the catalytic efficiency of MetRS variants. As shown in Figure 3*A* lane 5 of the main text, labeling in absence of NLL-MetRS is negligible. This is also evident in the images above as bacteria lacking the NLL-MetRS are not labeled, even in the presence of Anl. The Optimem medium contains about 100 μM Met; infections were performed in 1 mM Anl,

Figure S9.

Directed mass spectrometry search for gel-extracted peptides derived from Yops secreted under LCR conditions. A directed mass spectrometric search was used to determine the Met positions occupied by Anl in each Yop. Yops were secreted under LCR conditions in the presence of 1 mM Anl in 19-amino acid M9 medium supplemented with 25 µM Met and lacking calcium chloride. Secreted proteins were precipitated by chloroform/methanol treatment, resuspended in 1% SDS in PBS, electrophoresed on a 12% bis-tris acrylamide gel and stained with colloidal blue. The resulting bands were cut out, and in-gel tryptic digestion was performed for each gel fragment. To help identify peptides corresponding to each Yop, an m/z inclusion list for expected peptide ions was generated taking into account up to two missed cleavages by trypsin as well as fixed carbamidomethyl modification of cysteine and variable oxidation of Met. Replacement of Met by Anl was included as a variable modification. This inclusion list was used to perform directed LC-MS/MS experiments on an LTQ-FT Ultra mass spectrometer (Thermo Fisher Scientific) equipped with a nanoelectrospray ion source (Thermo Fisher Scientific) connected to an EASY-nLC II (Thermo Fisher Scientific).

A. Image of the cut out gel fragments with the total number of identified spectra shown for each fragment. The corresponding Yop positions are indicated next to the image. *B.* The total number of Met positions based on the protein sequence for each Yop and the molecular weight is listed. *C.* The number of identified spectra for each Yop is shown for each extracted gel section, the order of the gel slices correspond to decreasing molecular weight of protein.

a.



b.

Name of protein	MW	# Met
YopO	81280	18
YopH	50940	13
YopB	41916	15
YopM	41339	4
LcrV	37296	7
YopT	36082	8
YopD	33232	13
YopN	32925	5
YopP	32418	8
YopE	23016	9
YopQ	20829	4

c.

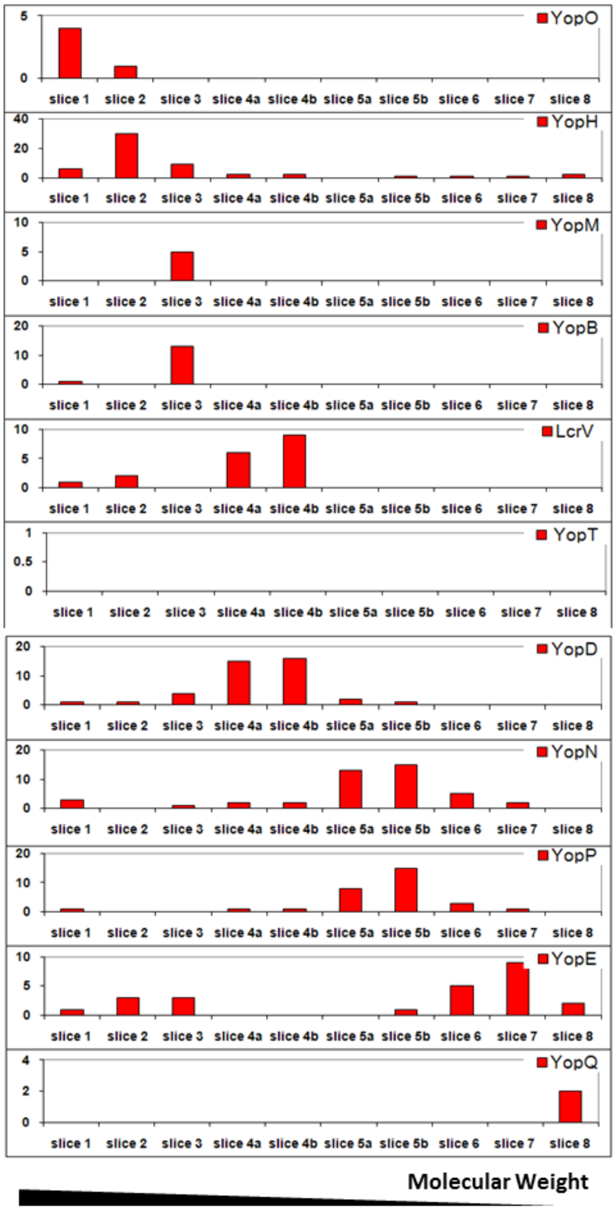


Figure S10.

Detection of residue-specific incorporation of Anl in Yops. Directed mass spectrometry was performed based on an expected peptide ion list (see Fig. S9 for details) from gel-extracted Yops from proteins secreted under LCR conditions An example of this analysis for YopH is illustrated here showing the sequence coverage obtained in presence or absence of Anl labeling

A. Highlighted sequences depict coverage by LC-MS/MS; modified Met residues are highlighted in green indicating oxidation of methionine in the "+Methionine" condition and incorporation of Anl in the "+Azidonorleucine" condition. Small differences were observed between the sequence coverages obtained for Met- and Anl-treated samples. *B.* The Met positions at which Anl was observed are shown for YopH as a function of residue position along the sequence. Black boxes are positions at which Anl was observed, and the frequencies at which Met and Anl were observed are shown for each position. *C.* A representative spectrum from an LC-MS/MS analysis on a precursor ion of the M^{+23}TQQVGLGDGIM$^{+16(ox)}$ADM^{+23}YTLTIR peptide is shown, with y-ions shown in blue and b-ions shown in red. A mass increment of 16 amu indicates that the Met at position 328 is oxidized. Anl is incorporated at positions 307 and 331, as indicated by mass shifts of 23 amu each. This mass shift corresponds to replacement of Met by Anl (Fig S2). A similar analysis was performed for each Yop.

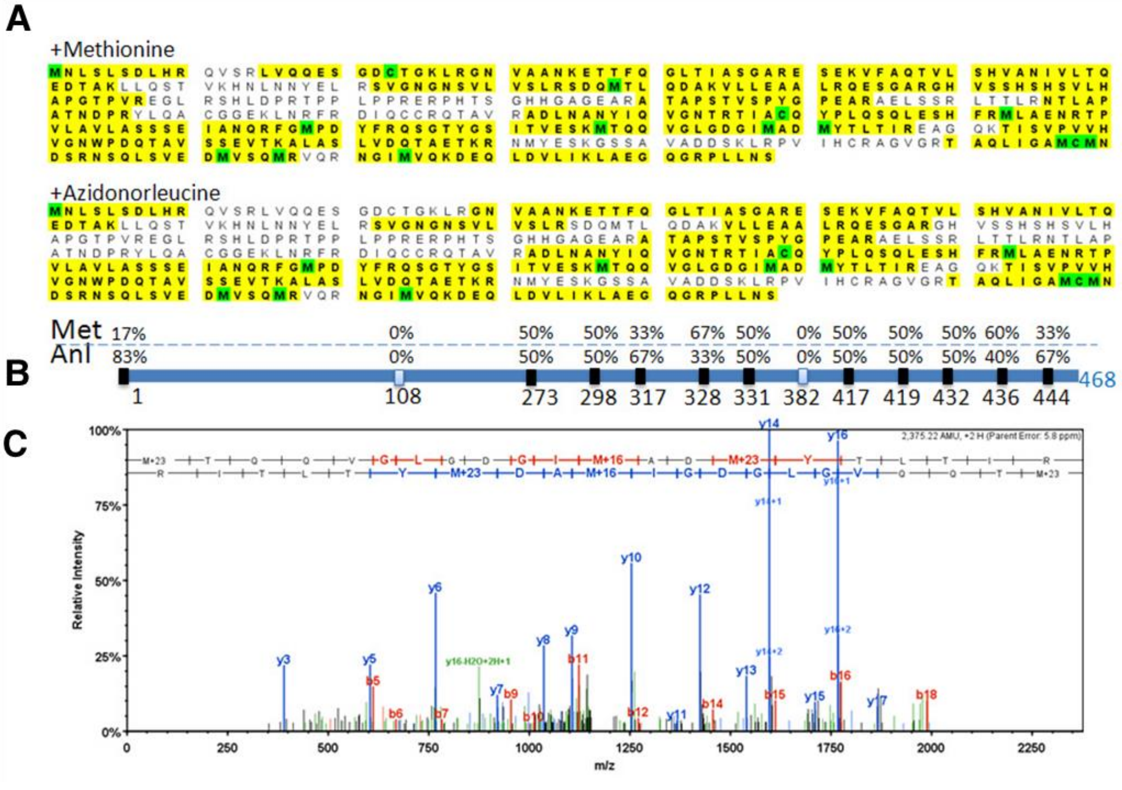


Figure S11.

Identifying the pattern of residue-specific replacement of methionine by azidonorleucine in Yops as a function of protein molecular weight and number of methionines. Directed mass spectrometry was used to determine the total number of Met positions at which Anl incorporation was observed. *A.* The number of Met positions as a function of molecular weight for each Yop is plotted to show the number of methionines contained in sequence of each Yop. *B.* The experimentally observed number of Anl residues (replacement of methionine) for each Yop as identified by MS. *C.* The sequence coverage observed by MS for each Yop. Sequence coverage is represented in yellow, and the position of each Met is represented as a circle. Black circles represent detection of Anl at a given Met position. These results were obtained from secretion of Yops under LCR conditions. The extent of labeling and observed sequence coverage may differ from those of Yops injected in HeLa cell infection.

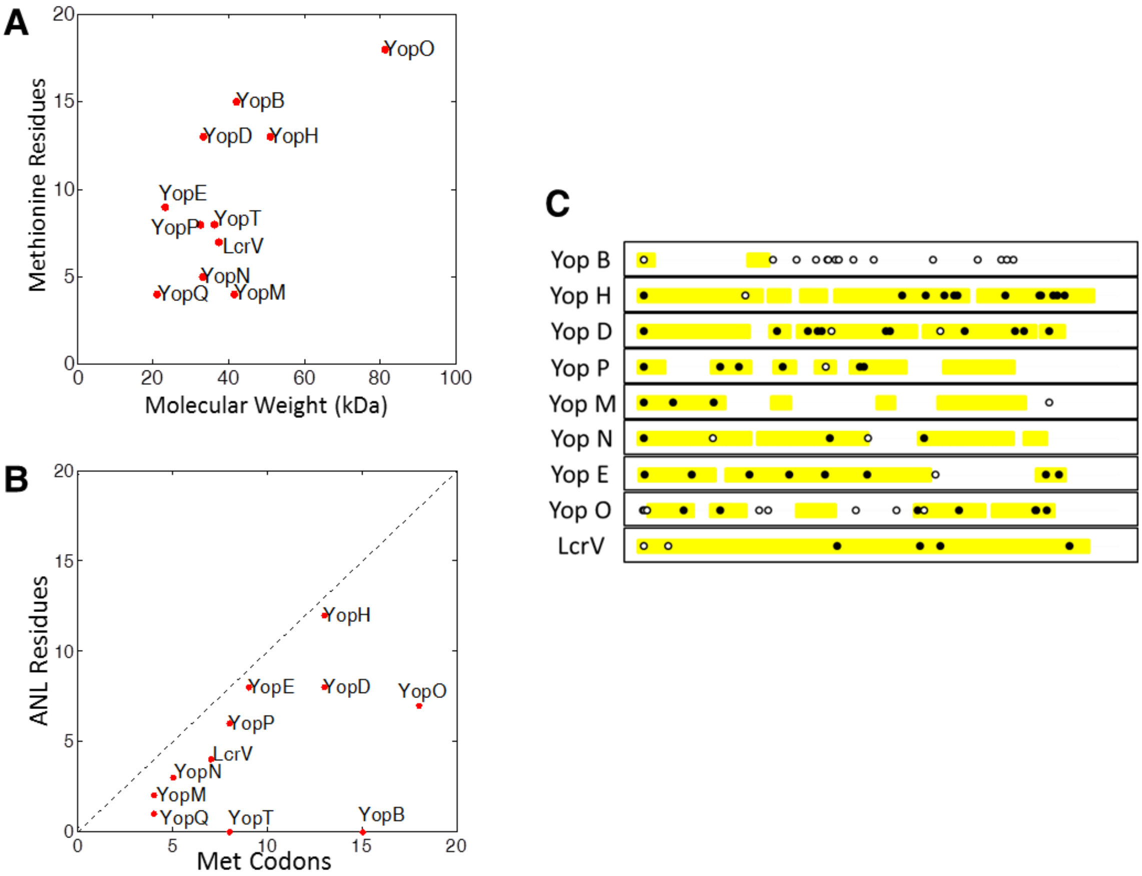


Figure S12.

Detection of biotin after click reaction of alkyne-biotin probe to proteins containing Anl. HeLa infections and secretion of Yops under LCR conditions were performed as described in the methods section of the main text. Proteins were treated with the biotin-alkyne affinity tag (structure **4** in the main text) and biotinylation was detected by western blot with a streptavidin Alexa fluor-633 conjugate antibody. Image below shows biotin labeling in injected HeLa cell lysates as well as proteins secreted under LCR conditions. Biotinylated horseradish peroxidase (HRP) was used as positive control for labeling.

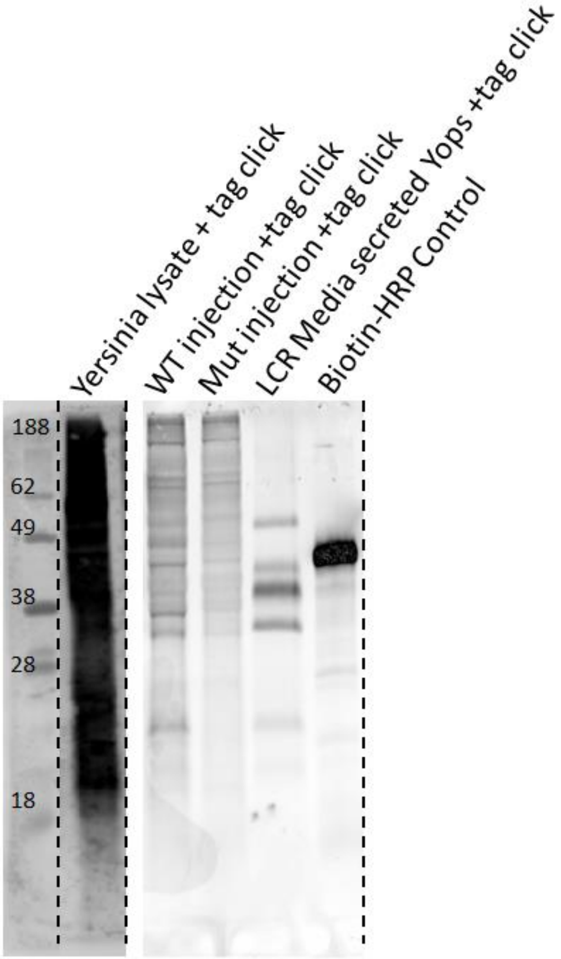


Figure S13.

Affinity enrichment of injected *Y. enterocolitica* proteins from infected HeLa cell lysates. *A.* Infected HeLa cell lysates were treated with probe **4** and affinity purified on a streptavidin column. Flow-through (FT) and elution (EL) fractions were stained with colloidal blue. *B.* Western blot detection of YopE and mammalian α-tubulin in the same fractions as those represented in *A*. YopE was enriched from HeLa infections with T3SS-Wt *Yersinia*. Lack of α-tubulin in the elution fractions confirmed efficient removal of HeLa cell proteins.

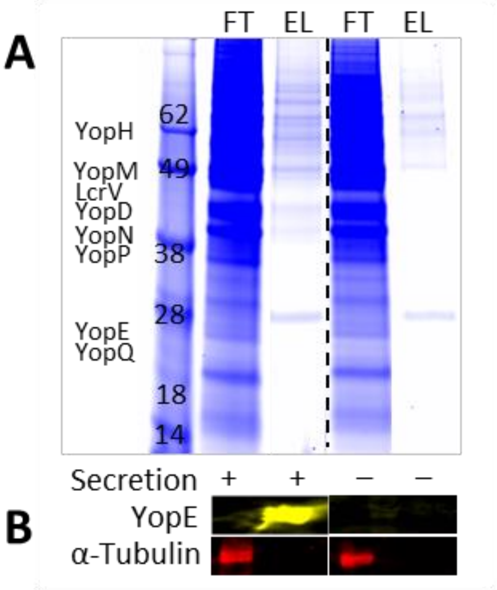
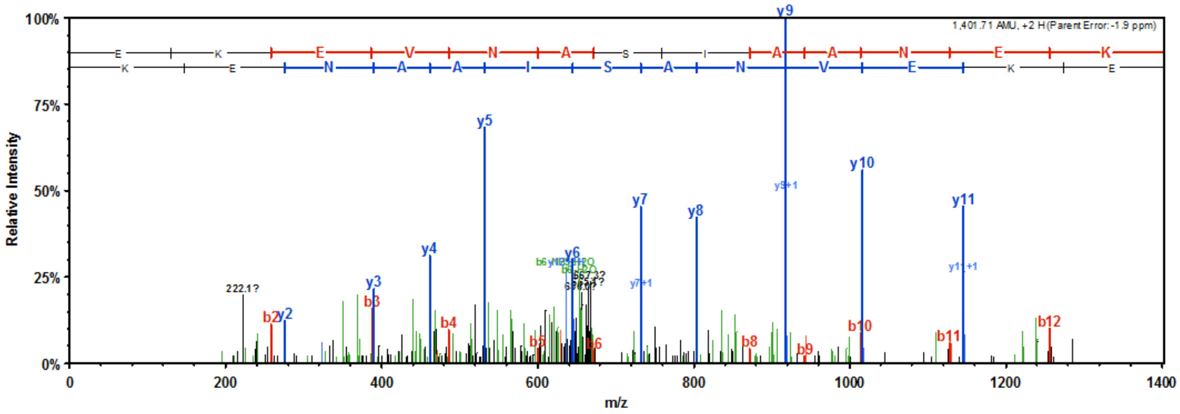


Figure S14.

Comparison of MS/MS spectra from Yops secreted under LCR conditions and Yops injected into HeLa cells. *A.* Tandem mass spectrum corresponding to a peptide from YopD from proteins secreted under LCR conditions. *B.* Tandem mass spectrum identified from infected HeLa cell lysates and corresponding to the same peptide sequence as in *A*. Both samples were gel extracted and desalted on C18 ziptip columns. A doubly charged m/z 701.86 amu peptide ion corresponding to the sequence “EKEVNASIAANEK” gave a precursor mass of 1401.71 (theoretical value 1401.7172). The y- and b-ions are color coded blue and red, respectively, along with the matching peptide sequence on top of each spectrum. Spectra were obtained on a nanoLC-Thermo Fisher Scientific LTQ-FT spectrometer with the peptide mass range set to 200-1700 amu.

A

YopD peptide from media secretion
peptide:(K)EKEVNASIAANEK(Q)



B

YopD peptide purified from Hela lysate
peptide:(K)EKEVNASIAANEK(Q)

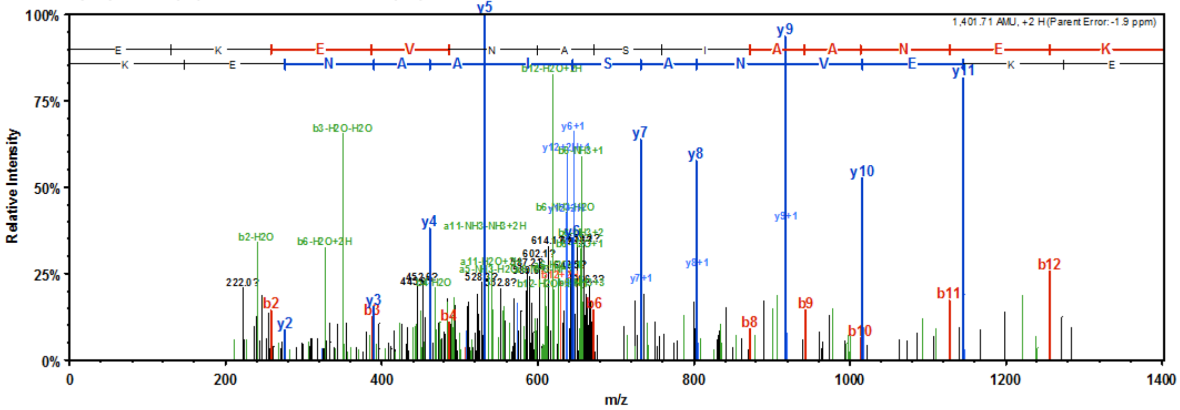


Figure S15.

Representative MS/MS spectra from Yops peptides identified after enrichment of inected proteins from HeLa cell lysates. The sequence of the peptide is shown on top of each spectrum. The y- and b-ions are color coded blue and red, respectively, along with the matching peptide sequence. A mass modification of M+121 amu at each Met position indicates the mass addition resulting from attachment and cleavage of the biotin-alkyne tag.

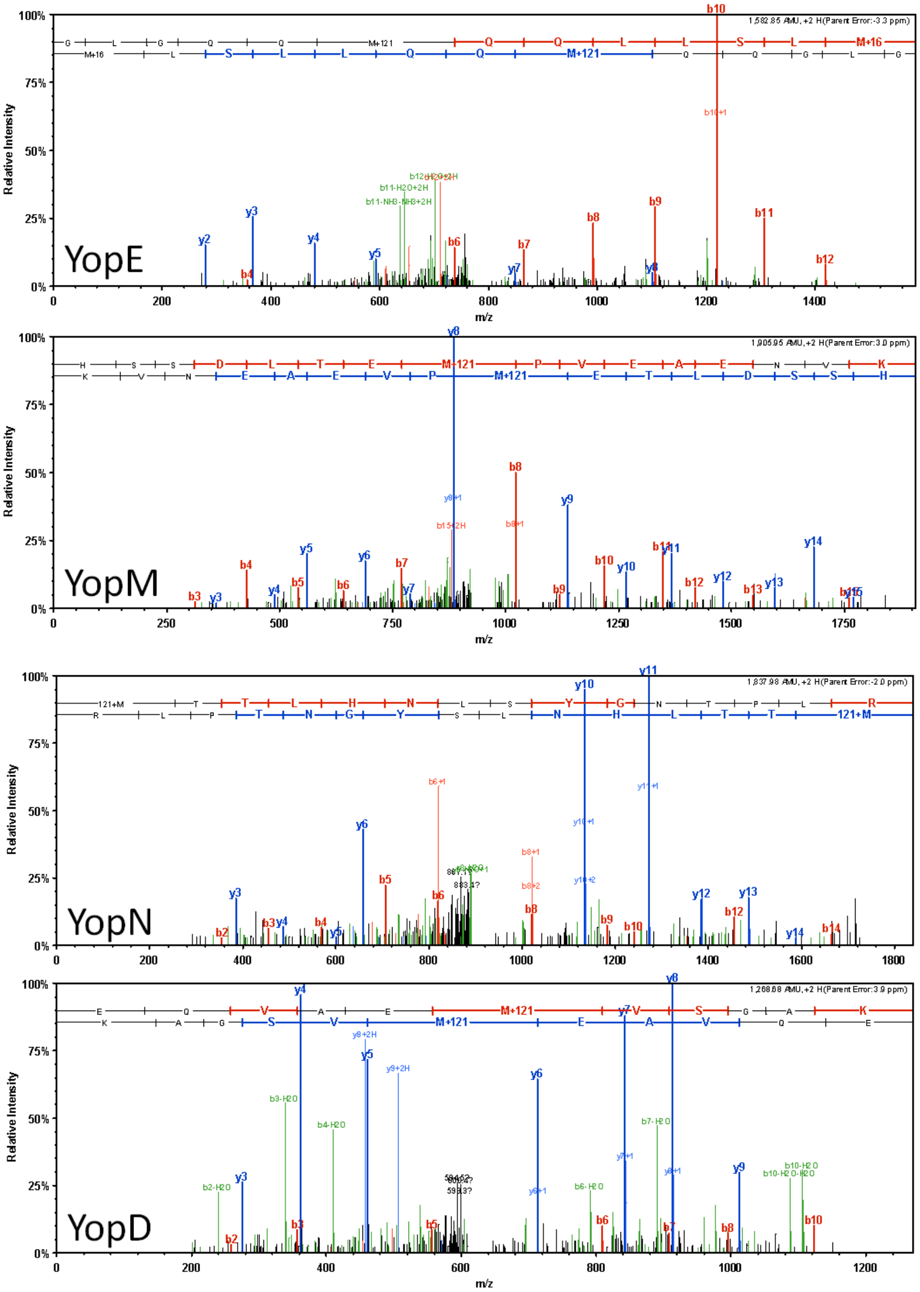


Figure S16.

Identification of secreted *Yersinia* proteins during infection. Infection medium was removed after the completion of HeLa infections, and proteins were precipitated with chloroform-methanol. Anl labeled proteins were tagged with probe **4**, enriched on a streptavidin column and analyzed by LC-MS. The secreted proteins identified here correspond to infections in Fig. 3*F* of main text. Three independent replicates were performed. The color-code next to the protein names indicates the number of identifications of each protein across experimental replicates. Venn diagram shows proteins detected in infections with T3SS-Wt *Yersinia* or the T3SS-Mut strain.

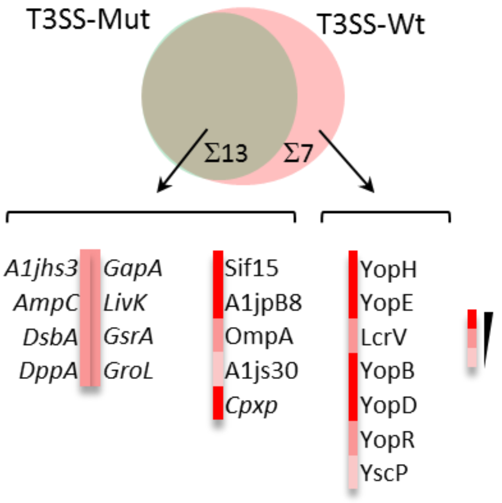


Figure S17.

Anl labeling of intracellular and extracellular bacteria in the absence of gentamicin. Infections corresponding to Fig. 4*A* of the main text were carried out using identical conditions; infections were carried out in the absence of gentamicin. Extracellular bacteria incorporated Anl into newly synthesized proteins and can be readily observed outside HeLa cells. In the image below, confocal fluorescence microscopy shows labeling of Anl residues with alkyne-AlexaFluor 488 (green). HeLa cell membranes were labeled with AlexaFluor633-WGA conjugate (red).

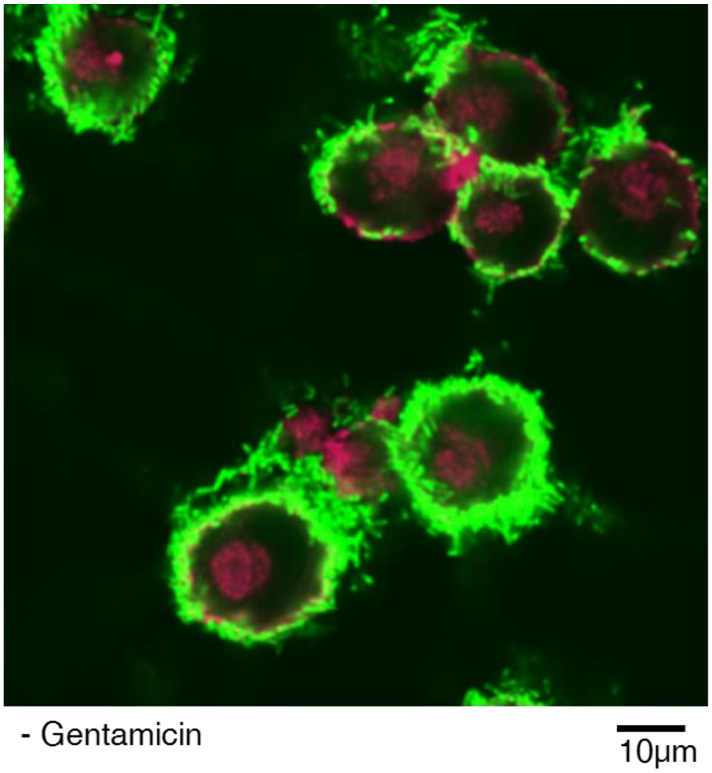
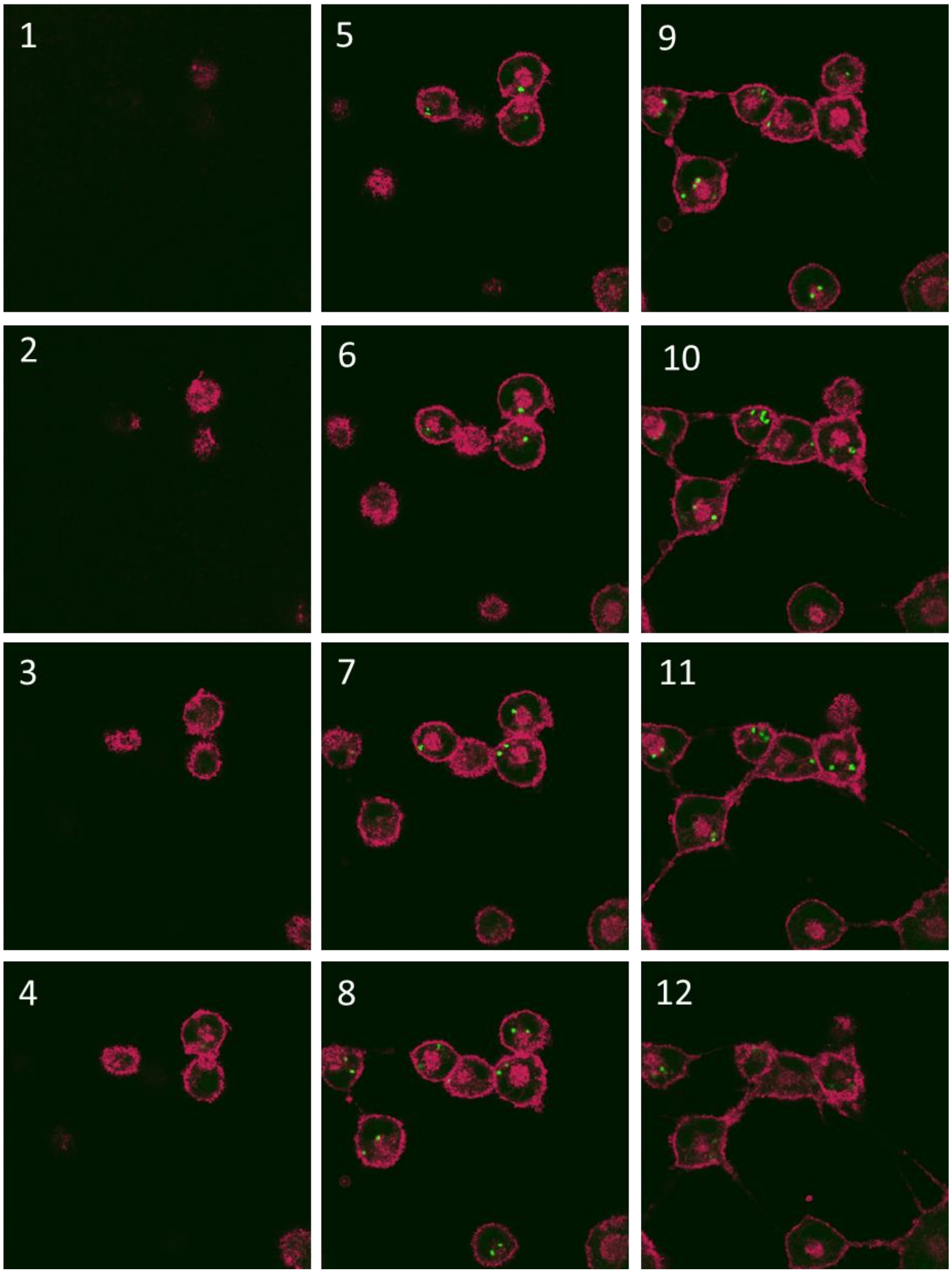


Figure S18.

Fluorescence confocal microscopy shows internalized *Yersinia* inside infected HeLa cells. Confocal planes from top to bottom of HeLa cell samples are numbered 1-12. AlexaFluor 633 conjugated to WGA was used to label the membranes of HeLa cells; the associated fluorescence is shown in red. Anl-labeled proteins were treated with alkyne-functionalized AlexaFluor 488; the associated fluorescence is shown in green. *A*. Gentamicin was added in this experiment to kill extracellular bacteria before Anl incorporation. Internalized *Yersinia* can be observed inside infected HeLa cells. See intracellular labeling video S1.

A



B. Gentamicin was not added in this experiment, and labeling was performed as described above. Both extracellular and intracellular bacteria have incorporated Anl into newly synthesized proteins and are labeled with alkyne-functionalized AlexaFluor 488 (green). See intracellular and extracellular labeling video S2.

B

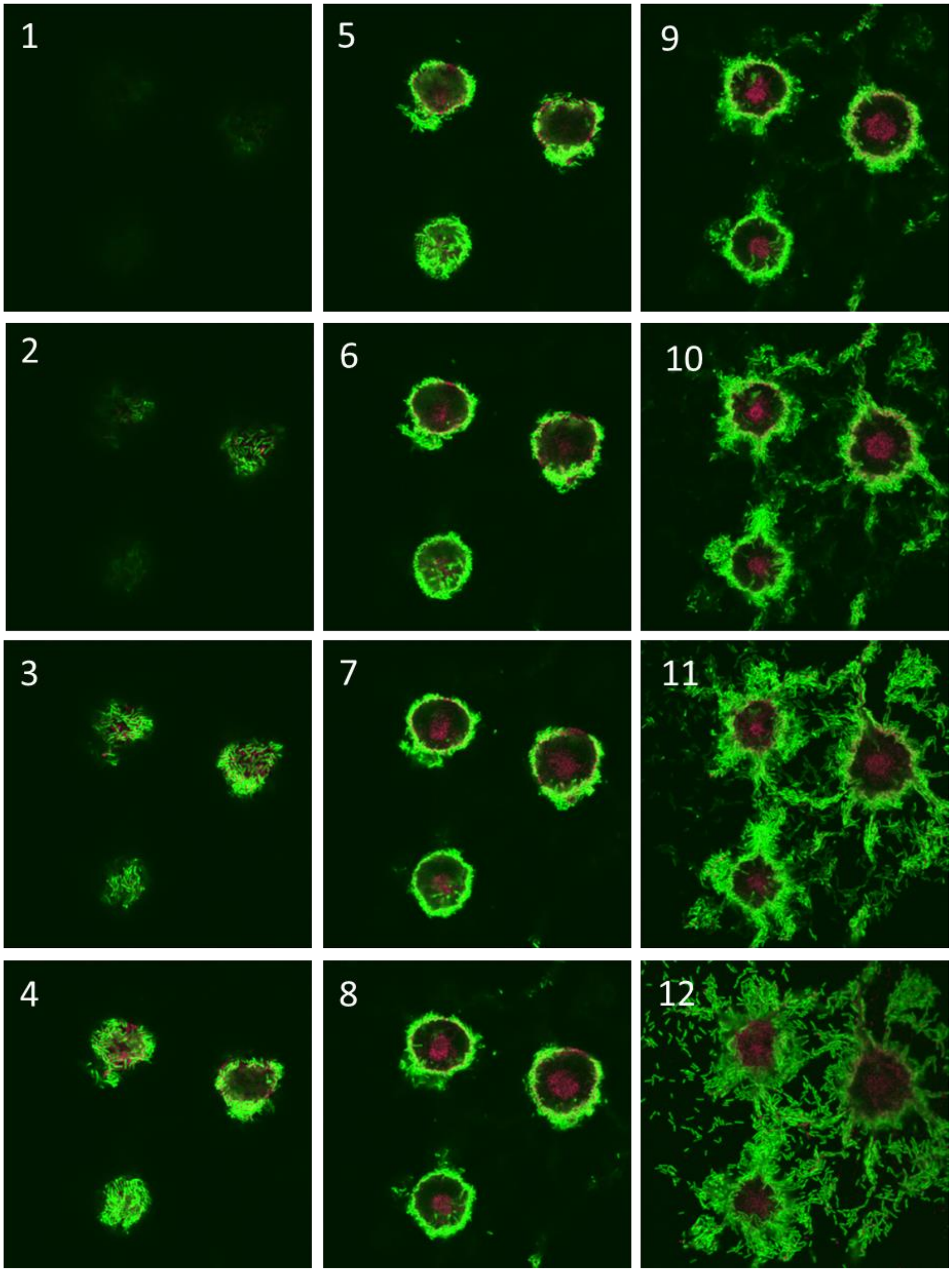


Figure S19.

Comparison of injected proteins in HeLa cells in presence or absence of gentamicin. Lysates of HeLa cells from infections corresponding to Fig 4*B* of the main text were analyzed by shotgun MS. Both infection mixtures were labeled with Anl for the same duration under identical conditions (except for the presence or absence of gentamicin). Anl labeled proteins were enriched using probe **4** before MS identification. Venn diagram shows the T3SS substrates identified under the two conditions, showing that intracellular *Yersinia* (+gent) injected a subset of Yops.

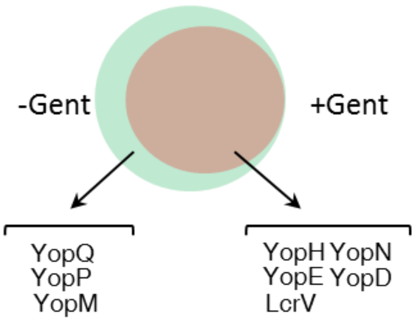


Table S1.

Proteins identified in infections with secretion wild type and secretion mutant *Y. enterocolitica*. Peptides were fractionated on a 15 cm reversed phase analytical column (75 µm ID) in-house packed with 3 µm C18 beads (ReproSil-Pur C18-AQ medium; Dr. Maisch GmbH) with a 60-minute gradient from 5% to 28% acetonitrile in 0.2% formic acid, over 50 minutes, followed by 10 minutes at 80 % acetonitrile in 0.2% formic acid, at a flow rate of 350 nl per minute.

The mass spectrometers were operated in data-dependent mode automatically switching between full-scan MS and tandem MS acquisition. Survey full scan mass spectra were acquired after accumulation of 500,000 ions, with a resolution of 60,000 (Orbitrap) and 50,000 (LTQ-FT) at 400 m/z. The top ten most intense ions from the survey scan were isolated and, after the accumulation of 5000 ions, fragmented in the linear ion trap by collision induced dissociation. Preview scan mode was enabled in the Orbitrap but not in the LTQ-FT. Precursor ion charge state screening was enabled and singly charged and unassigned charge states were rejected. The dynamic exclusion list was enabled with a relative mass window of 10 ppm and early expiration turned on.

T3SS substrates in HeLa infections were identified by a bottom up shotgun approach. MGF files were generated from Thermo RAW files using ReAdW4Mascot2 (v. 20090305a). The MGF files were searched using Mascot software (Matrix science, v2.2.06). The files were searched against the *Y. enterocolitica* proteome (5109 sequences, Uniprot) and a set of common contaminants (262 sequences). A decoy database consisting of the target protein sequences reversed was constructed to estimate the false discovery rate. The database search included mass modifications associated with Anl tagging (outlined in Fig. S2), as well as fixed carbamidomethyl modification of cysteine (+57.0214), variable oxidation of methionine (+15.9949) and N-terminal acetylation. A precursor tolerance of 10 ppm and fragment tolerance of 0.5 Da were used. Trypsin was the specified digestion enzyme and up to two missed cleavages were allowed. Scaffold software (Proteome software v3) was used to generate the list of identified proteins, using 99.9% protein probability, minimum of 2 peptides per protein and 95% peptide probability (Table S1) as thresholds for acceptance. Each identified protein was present in at least three independent infections. MS analysis was performed on a nanoLC LTQ-FT mass spectrometer. MS data were analyzed by Mascot and Scaffold software packages.

All identified proteins had a false discovery rate of less than 1%. The criterion for inclusion of a protein found in the HeLa cell lysate was that it was observed in at least three different samples (of a total of six infections). The number of times a proteins was present was counted independently for secretion WT and secretion Mut infections; the larger of the two numbers is reported by the color code. For proteins secreted into the medium, the protein had to be present in two different samples (in a total of three infections) to be included in the Venn diagram. If a protein was observed in both the secretion WT and Mut infections in any of these samples, it was considered to be present in the joint distribution. YopQ was observed once in the secretion WT infection in HeLa cells and YscP was observed once in the secreted fraction isolated from infection with secretion WT *Yersinia*. YopE was observed once in the HeLa fraction of infections with secretion Mut *Yersinia*, but because it was present in every sample of injected proteins with secretion WT *Yersinia* it was retained in the secretion WT fraction in Fig.

3*F*. A1js30 was observed in three independent HeLa injections as reported in Fig. 3*F*. A1js30 was observed in only one of the samples of secreted proteins; although it did not meet the standard for inclusion in the secreted proteins, we included it to show that this protein may be present in the infection medium. Experiments are listed in reverse chronological order in the table below. Proteins identified in each experiment are sorted from highest to lowest based on the number of identified peptides and listed as such in the table. For time-series measurements using pulse-Anl labeling, three replicates were performed for early and intermediate time-points of 60 and 120 minutes respectively and identification was based on at least one observation of T3SS substrates across the samples. For the 210 minute sample we used the same list of proteins as that identified for Fig. 3*F* of the paper because these experiments used identical Anl labeling windows and infections. Variations in the numbers of identified proteins were observed as we improved our enrichment methods and instrument settings. Final enrichment methods and instrument settings are reported in the methods section.

Secretion Wt Injected Proteins 1	Accession Number
Yop effector YopE OS=Yersinia enterocolitica GN=yopE PE=4 SV=1	Q7BRY7_YEREN
Yop effector YopH OS=Yersinia enterocolitica GN=yopH PE=4 SV=1	Q7BRY8_YEREN
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
YopN OS=Yersinia enterocolitica GN=yopN PE=4 SV=1	O68333_YEREN
Elongation factor Tu A (Fragment) OS=Yersinia enterocolitica GN=tufA PE=4 SV=1	B6RBB1_YEREN
Yop effector YopP OS=Yersinia enterocolitica GN=yopP PE=4 SV=1	O52162_YEREN
Chaperone protein htpG OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=htpG PE=3 SV=1	HTPG_YERE8
Chaperone protein dnaK OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dnaK PE=2 SV=1	DNAK_YERE8
Enolase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=eno PE=3 SV=1	ENO_YERE8
Attachment invasion locus protein OS=Yersinia enterocolitica GN=ail PE=4 SV=1	D7PM19_YEREN
Yop effector YopM OS=Yersinia enterocolitica GN=yopM PE=4 SV=1	P74988_YEREN
Elongation factor G OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fusA PE=3 SV=1	A1JS54_YERE8
Elongation factor Ts OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tsf PE=3 SV=1	EFTS_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3039 PE=3 SV=1	A1JP43_YERE8
Elongation factor Tu 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tuf1 PE=3 SV=1	EFTU1_YERE8
50S ribosomal protein L1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplA PE=3 SV=1	RL1_YERE8
Glyceraldehyde 3-phosphate dehydrogenase A OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gapA PE=3 SV=1	A1JQH1_YERE8
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Virulence-associated V antigen OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=lcrV PE=4 SV=1	A1JU73_YERE8
Trigger factor OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tig PE=3 SV=1	TIG_YERE8
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Adhesin yadA OS=Yersinia enterocolitica GN=yadA PE=1 SV=1	YADA1_YEREN
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Cell division protein ftsZ OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ftsZ PE=3 SV=1	A1JJJ8_YERE8
Methionyl-tRNA synthetase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=metG PE=3 SV=1	SYM_YERE8
Secretion Wt Injected Proteins 2	Accession Number

60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
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Elongation factor Tu 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tuf1 PE=3 SV=1	EFTU1_YERE8
Yop effector YopH OS=Yersinia enterocolitica GN=yopH PE=4 SV=1	Q7BRY8_YEREN
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Elongation factor Ts OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tsf PE=3 SV=1	EFTS_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3039 PE=3 SV=1	A1JP43_YERE8
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Transaldolase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tal PE=3 SV=1	TAL_YERE8
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Secretion Wt Injected Proteins 3	Accession Number
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Yop effector YopE OS=Yersinia enterocolitica GN=yopE PE=4 SV=1	Q7BRY7_YEREN
Yop effector YopH OS=Yersinia enterocolitica GN=yopH PE=4 SV=1	Q7BRY8_YEREN
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YopD OS=Yersinia enterocolitica GN=yopD PE=4 SV=1	C5IZG7_YEREN
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Elongation factor Tu A (Fragment) OS=Yersinia enterocolitica GN=tufA PE=4 SV=1	B6RBB1_YEREN
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Aldehyde-alcohol dehydrogenase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=adhE PE=4 SV=1	A1JQ89_YERE8
Fructose-bisphosphate aldolase class II OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fbaA PE=4 SV=1	A1JPQ8_YERE8
ATP synthase subunit alpha OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=atpA PE=3 SV=1	ATPA_YERE8
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3-oxoacyl-[acyl-carrier protein] reductase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fabG PE=3 SV=1	A1JN73_YERE8
Transaldolase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tal PE=3 SV=1	TAL_YERE8
Methionyl-tRNA synthetase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=metG PE=3 SV=1	SYM_YERE8
LcrV OS=Yersinia enterocolitica GN=lcrV PE=4 SV=1	O87495_YEREN
YopN OS=Yersinia enterocolitica GN=yopN PE=4 SV=1	O68333_YEREN
DNA protection during starvation protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dps PE=3 SV=1	DPS_YERE8
30S ribosomal protein S1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsA PE=4 SV=1	A1JMI7_YERE8
DNA-directed RNA polymerase subunit alpha OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpoA PE=3 SV=1	RPOA_YERE8
PTS system, mannose-specific IIAB component OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=manX PE=4 SV=1	A1JMB5_YERE8
Deoxyribose-phosphate aldolase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=deoC PE=3 SV=1	DEOC_YERE8
50S ribosomal protein L10 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplJ PE=3 SV=1	RL10_YERE8
Attachment invasion locus protein OS=Yersinia enterocolitica GN=ail PE=4 SV=1	D7PM19_YEREN
Phosphoribosylaminoimidazole-succinocarboxamide synthase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=purC PE=3 SV=1	PUR7_YERE8
30S ribosomal protein S3 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsC PE=3 SV=1	RS3_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3039 PE=3 SV=1	A1JP43_YERE8
Branched-chain amino acid-binding protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=livK PE=3 SV=1	A1JIC6_YERE8
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30S ribosomal protein S5 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsE PE=3 SV=1	RS5_YERE8
Phosphate acetyltransferase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=pta PE=4 SV=1	A1JLD1_YERE8

50S ribosomal protein L1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplA PE=3 SV=1	RL1_YERE8
50S ribosomal protein L4 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplD PE=3 SV=1	RL4_YERE8
50S ribosomal protein L9 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplI PE=3 SV=1	RL9_YERE8
Putative inner membrane protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2442 PE=4 SV=1	A1JRX6_YERE8
50S ribosomal protein L3 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplC PE=3 SV=1	RL3_YERE8
Global stress requirement protein GsrA OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gsrA PE=3 SV=1	A1JJQ8_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2166 PE=3 SV=1	A1JPB8_YERE8
Secreted thiol:disulfide interchange protein DsbA OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dsbA PE=3 SV=1	A1JHT2_YERE8
Pyruvate kinase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=pykF PE=3 SV=1	A1JPB0_YERE8
Virulence plasmid protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yopQ PE=4 SV=1	A1JU64_YERE8
PTS sytem, enzyme I component OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ptsI PE=3 SV=1	A1JL94_YERE8
Probable alcohol dehydrogenase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2821 PE=3 SV=1	A1JU12_YERE8
Oligopeptidase A OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=opdA PE=3 SV=1	A1JSQ3_YERE8
ATP synthase subunit beta OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=atpD PE=3 SV=1	ATPB_YERE8
Yop effector YopP OS=Yersinia enterocolitica GN=yopP PE=4 SV=1	O52162_YEREN
Beta-lactamase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ampC PE=4 SV=1	A1JRW9_YERE8
DNA-directed RNA polymerase subunit beta' OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpoC PE=3 SV=1	RPOC_YERE8
Glutathione S-transferase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gst PE=4 SV=1	A1JNU4_YERE8
30S ribosomal protein S4 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsD PE=3 SV=1	RS4_YERE8
50S ribosomal protein L11 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplK PE=3 SV=1	RL11_YERE8
50S ribosomal protein L2 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplB PE=3 SV=1	RL2_YERE8
Uridylate kinase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=pyrH PE=3 SV=1	PYRH_YERE8
Adenylate kinase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=adk PE=3 SV=1	KAD_YERE8
Acetate kinase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ackA PE=3 SV=1	A1JLD2_YERE8
DNA-binding protein Hns OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=hns PE=4 SV=1	A1JQA0_YERE8
Transketolase 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tktA PE=4 SV=1	A1JPR2_YERE8
GMP synthase [glutamine-hydrolyzing] OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=guaA PE=3 SV=1	GUAA_YERE8
Peptidyl-prolyl cis-trans isomerase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ppiB PE=3 SV=1	A1JNQ1_YERE8
50S ribosomal protein L15 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplO PE=3 SV=1	RL15_YERE8
Protein tolB OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tolB PE=3 SV=1	TOLB_YERE8
Malate dehydrogenase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=mdh PE=3 SV=1	MDH_YERE8
30S ribosomal protein S7 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsG PE=3 SV=1	RS7_YERE8
Cell division protein ftsZ OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ftsZ PE=3 SV=1	A1JJJ8_YERE8
30S ribosomal protein S9 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsI PE=3 SV=1	RS9_YERE8
DnaK suppressor protein homologue OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dksA PE=4 SV=1	A1JJP2_YERE8
50S ribosomal protein L17 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplQ PE=3 SV=1	RL17_YERE8
Translation initiation factor IF-3 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=infC PE=3 SV=1	IF3_YERE8
10 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groS PE=3 SV=1	CH10_YERE8
DNA-directed RNA polymerase subunit beta OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpoB PE=3 SV=1	RPOB_YERE8

6-phosphofructokinase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=pfkA PE=3 SV=1	K6PF_YERE8
Outer membrane protein C, porin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=meoA PE=3 SV=1	A1JLE1_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yrbC PE=3 SV=1	A1JRA6_YERE8
Putative D-ribose-binding periplasmic protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rbsB PE=3 SV=1	A1JHS3_YERE8
Cationic 19 kDa outer membrane protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ompH PE=3 SV=1	A1JP72_YERE8
Adhesin yadA OS=Yersinia enterocolitica GN=yadA PE=1 SV=1	YADA1_YEREN
UPF0234 protein YE3147 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3147 PE=3 SV=1	Y3147_YERE8
Putative uncharacterized protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE1738 PE=4 SV=1	A1JLU4_YERE8
Yop effector YopM OS=Yersinia enterocolitica GN=yopM PE=4 SV=1	P74988_YEREN
Cysteine synthase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=cysK PE=3 SV=1	A1JL97_YERE8
Single-stranded DNA-binding protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ssb PE=4 SV=1	A1JRR5_YERE8
30S ribosomal protein S8 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsH PE=3 SV=1	RS8_YERE8
UPF0304 protein YE1336 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE1336 PE=3 SV=1	Y1336_YERE8
Galactose-binding protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=mglB PE=3 SV=1	A1JU06_YERE8
NADH:flavin oxidoreductase / NADH oxidase family protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2152 PE=4 SV=1	A1JP27_YERE8
cAMP-regulatory protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=crp PE=4 SV=1	A1JS98_YERE8
Uracil phosphoribosyltransferase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=upp PE=3 SV=1	UPP_YERE8
Putative stringent starvation protein A OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=sspA PE=4 SV=1	A1JR91_YERE8
Putative lipoprotein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE1703 PE=4 SV=1	A1JME2_YERE8
PTS system, glucose-specific IIA component OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=crr PE=4 SV=1	A1JL89_YERE8
Ribose-phosphate pyrophosphokinase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=prsA PE=3 SV=1	A1JRV4_YERE8
UPF0082 protein YE2395 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2395 PE=3 SV=1	Y2395_YERE8
Biotin carboxylase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=accC PE=4 SV=1	A1JRK3_YERE8
D-lactate dehydrogenase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ldhA PE=4 SV=1	A1JN94_YERE8
Thioredoxin reductase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=trxB PE=3 SV=1	A1JME7_YERE8
Putative lipoprotein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE1719 PE=3 SV=1	A1JLF7_YERE8
Heat-shock chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=hslO PE=3 SV=1	A1JSE6_YERE8
Protease OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=degQ PE=3 SV=1	A1JR98_YERE8
Asparaginyl-tRNA synthetase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=asnS PE=3 SV=1	SYN_YERE8
Seryl-tRNA synthetase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=serS PE=3 SV=1	SYS_YERE8
Transcription antitermination protein nusG OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=nusG PE=3 SV=1	A1JIH5_YERE8
Phosphoheptose isomerase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gmhA PE=3 SV=1	GMHA_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3737 PE=3 SV=1	A1JR88_YERE8
Putative NAD(P)H-dependent FMN reductase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ssuE PE=3 SV=1	A1JT96_YERE8
50S ribosomal protein L16 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplP PE=3 SV=1	RL16_YERE8
Triosephosphate isomerase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tpiA PE=3 SV=1	TPIS_YERE8
ABC transporter protein, ATP-binding component OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE0584 PE=4 SV=1	A1JJB0_YERE8
Peptidoglycan-associated lipoprotein Pal OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=pal PE=3	A1JRK6_YERE8

SV=1	
Bifunctional purine biosynthesis protein purH OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=purH PE=3 SV=1	PUR9_YERE8
Secretion Wt Injected Proteins 4	Accession Number
Translocator protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yopD PE=4 SV=1	A1JU70_YERE8
Yop effector YopE OS=Yersinia enterocolitica GN=yopE PE=4 SV=1	Q7BRY7_YEREN
Type III secretion outer membrane protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yopN PE=4	A1JU81_YERE8
Yop effector YopH OS=Yersinia enterocolitica GN=yopH PE=4 SV=1	Q7BRY8_YEREN
Virulence-associated V antigen OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=lcrV PE=4 SV=1	A1JU73_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3039 PE=3 SV=1	A1JP43_YERE8
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
Chaperone protein dnaK OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dnaK PE=2 SV=1	DNAK_YERE8
Yop type III secretion system effector protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yopM PE=4	A1JU68_YERE8
Secretion Wt Injected Proteins 5	Accession Number
Yop effector YopE OS=Yersinia enterocolitica GN=yopE PE=4 SV=1	Q7BRY7_YEREN
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
Yop effector YopH OS=Yersinia enterocolitica GN=yopH PE=4 SV=1	Q7BRY8_YEREN
Virulence-associated V antigen OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=lcrV PE=4 SV=1	A1JU73_YERE8
Translocator protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yopD PE=4 SV=1	A1JU70_YERE8
YopN OS=Yersinia enterocolitica GN=yopN PE=4 SV=1	O68333_YEREN
Yop effector YopM OS=Yersinia enterocolitica GN=yopM PE=4 SV=1	P74988_YEREN
Secretion Wt Injected Proteins 6	Accession Number
LcrV OS=Yersinia enterocolitica GN=lcrV PE=4 SV=1	O87495_YEREN
Yop effector YopE OS=Yersinia enterocolitica GN=yopE PE=4 SV=1	Q7BRY7_YEREN
YopD OS=Yersinia enterocolitica GN=yopD PE=4 SV=1	C5IZG7_YEREN
YopN OS=Yersinia enterocolitica GN=yopN PE=4 SV=1	O68333_YEREN
Yop effector YopH OS=Yersinia enterocolitica GN=yopH PE=4 SV=1	Q7BRY8_YEREN
Yop effector YopM OS=Yersinia enterocolitica GN=yopM PE=4 SV=1	P74988_YEREN
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
Secretion Mut Injected Proteins 1	Accession Number
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
Elongation factor Tu 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tuf1 PE=3 SV=1	EFTU1_YERE8
Chaperone protein dnaK OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dnaK PE=2 SV=1	DNAK_YERE8
Chaperone protein htpG OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=htpG PE=3 SV=1	HTPG_YERE8
Enolase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=eno PE=3 SV=1	ENO_YERE8
Clp ATPase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=clpB PE=3 SV=1	A1JK85_YERE8
Glyceraldehyde 3-phosphate dehydrogenase A OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gapA PE=3 SV=1	A1JQH1_YERE8
50S ribosomal protein L1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplA PE=3 SV=1	RL1_YERE8
Branched-chain amino acid-binding protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=livK PE=3 SV=1	A1JIC6_YERE8
Global stress requirement protein GsrA OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gsrA PE=3 SV=1	A1JJQ8_YERE8
Elongation factor G OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fusA PE=3 SV=1	A1JS54_YERE8

Elongation factor Ts OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tsf PE=3 SV=1	EFTS_YERE8
3-oxoacyl-[acyl-carrier-protein] synthase I OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fabB PE=3 SV=1	A1JKM0_YERE8
Ribosome-recycling factor OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=frr PE=3 SV=1	RRF_YERE8
Elongation factor Tu A (Fragment) OS=Yersinia enterocolitica GN=tufA PE=4 SV=1	B6RBB1_YEREN
Trigger factor OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tig PE=3 SV=1	TIG_YERE8
Primosomal protein n' OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=priA PE=4 SV=1	A1JI12_YERE8
Methionyl-tRNA synthetase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=metG PE=3 SV=1	SYM_YERE8
ATP-dependent protease ATPase subunit HslU OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=hslU PE=3 SV=1	HSLU_YERE8
Putative alkyl hydroperoxide reductase subunit c OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ahpC PE=4 SV=1	A1JNT6_YERE8
50S ribosomal protein L10 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplJ PE=3 SV=1	RL10_YERE8
3-oxoacyl-[acyl-carrier protein] reductase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fabG PE=3 SV=1	A1JN73_YERE8
Putative D-ribose-binding periplasmic protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rbsB PE=3 SV=1	A1JHS3_YERE8
PTS sytem, enzyme I component OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ptsI PE=3 SV=1	A1JL94_YERE8
Aldehyde-alcohol dehydrogenase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=adhE PE=4 SV=1	A1JQ89_YERE8
Secretion Mut Injected Proteins 2	Accession Number
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
Elongation factor Tu 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tuf1 PE=3 SV=1	EFTU1_YERE8
Chaperone protein dnaK OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dnaK PE=2 SV=1	DNAK_YERE8
Chaperone protein htpG OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=htpG PE=3 SV=1	HTPG_YERE8
Elongation factor G OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fusA PE=3 SV=1	A1JS54_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3039 PE=3 SV=1	A1JP43_YERE8
Methionyl-tRNA synthetase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=metG PE=3 SV=1	SYM_YERE8
Trigger factor OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tig PE=3 SV=1	TIG_YERE8
Enolase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=eno PE=3 SV=1	ENO_YERE8
Elongation factor Tu A (Fragment) OS=Yersinia enterocolitica GN=tufA PE=4 SV=1	B6RBB1_YEREN
Glyceraldehyde 3-phosphate dehydrogenase A OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gapA PE=3 SV=1	A1JQH1_YERE8
3-oxoacyl-[acyl-carrier protein] reductase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fabG PE=3 SV=1	A1JN73_YERE8
Elongation factor Ts OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tsf PE=3 SV=1	EFTS_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2166 PE=3 SV=1	A1JPB8_YERE8
Branched-chain amino acid-binding protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=livK PE=3 SV=1	A1JIC6_YERE8
3-oxoacyl-[acyl-carrier-protein] synthase I OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fabB PE=3 SV=1	A1JKM0_YERE8
Secretion Mut Injected Proteins 3	Accession Number
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
Elongation factor Tu 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tuf1 PE=3 SV=1	EFTU1_YERE8
Chaperone protein dnaK OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dnaK PE=2 SV=1	DNAK_YERE8
Clp ATPase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=clpB PE=3 SV=1	A1JK85_YERE8
Chaperone protein htpG OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=htpG PE=3 SV=1	HTPG_YERE8
Glyceraldehyde 3-phosphate dehydrogenase A OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gapA PE=3 SV=1	A1JQH1_YERE8

Elongation factor Ts OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tsf PE=3 SV=1	EFTS_YERE8
Elongation factor G OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fusA PE=3 SV=1	A1JS54_YERE8
Putative alkyl hydroperoxide reductase subunit c OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ahpC PE=4 SV=1	A1JNT6_YERE8
Enolase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=eno PE=3 SV=1	ENO_YERE8
Flagellar hook-associated protein 2 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fliD PE=4 SV=1	A1JSR2_YERE8
Elongation factor Tu A (Fragment) OS=Yersinia enterocolitica GN=tufA PE=4 SV=1	B6RBB1_YEREN
Trigger factor OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tig PE=3 SV=1	TIG_YERE8
FliC OS=Yersinia enterocolitica GN=fliC PE=4 SV=1	C9EHF4_YEREN
30S ribosomal protein S1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsA PE=4 SV=1	A1JMI7_YERE8
ATP-dependent protease ATPase subunit HslU OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=hslU PE=3 SV=1	HSLU_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3039 PE=3 SV=1	A1JP43_YERE8
Aldehyde-alcohol dehydrogenase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=adhE PE=4 SV=1	A1JQ89_YERE8
Ribosome-recycling factor OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=frr PE=3 SV=1	RRF_YERE8
3-oxoacyl-[acyl-carrier protein] reductase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fabG PE=3 SV=1	A1JN73_YERE8
ATP synthase subunit beta OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=atpD PE=3 SV=1	ATPB_YERE8
ATP synthase subunit alpha OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=atpA PE=3 SV=1	ATPA_YERE8
30S ribosomal protein S3 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsC PE=3 SV=1	RS3_YERE8
3-oxoacyl-[acyl-carrier-protein] synthase I OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fabB PE=3 SV=1	A1JKM0_YERE8
DNA-directed RNA polymerase subunit alpha OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpoA PE=3 SV=1	RPOA_YERE8
Global stress requirement protein GsrA OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gsrA PE=3 SV=1	A1JJQ8_YERE8
Protease OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=degQ PE=3 SV=1	A1JR98_YERE8
50S ribosomal protein L3 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplC PE=3 SV=1	RL3_YERE8
Fructose-bisphosphate aldolase class II OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fbaA PE=4 SV=1	A1JPQ8_YERE8
Formate acetyltransferase 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=pflB PE=1 SV=1	A1JMG9_YERE8
Methionyl-tRNA synthetase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=metG PE=3 SV=1	SYM_YERE8
Transaldolase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tal PE=3 SV=1	TAL_YERE8
Adhesin, Ail protein OS=Yersinia enterocolitica (type O:3) GN=ail PE=4 SV=1	Q70AM3_YEREN
30S ribosomal protein S5 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsE PE=3 SV=1	RS5_YERE8
50S ribosomal protein L4 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplD PE=3 SV=1	RL4_YERE8
50S ribosomal protein L9 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplI PE=3 SV=1	RL9_YERE8
Putative inner membrane protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2442 PE=4 SV=1	A1JRX6_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=cpxP PE=3 SV=1	A1JHZ1_YERE8
PTS sytem, enzyme I component OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ptsI PE=3 SV=1	A1JL94_YERE8
PTS system, mannose-specific IIAB component OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=manX PE=4 SV=1	A1JMB5_YERE8
DNA protection during starvation protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dps PE=3 SV=1	DPS_YERE8
Deoxyribose-phosphate aldolase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=deoC PE=3 SV=1	DEOC_YERE8
50S ribosomal protein L1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplA PE=3 SV=1	RL1_YERE8
Protein recA OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=recA PE=3 SV=1	RECA_YERE8

50S ribosomal protein L10 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplJ PE=3 SV=1	RL10_YERE8
50S ribosomal protein L17 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplQ PE=3 SV=1	RL17_YERE8
Branched-chain amino acid-binding protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=livK PE=3 SV=1	A1JIC6_YERE8
50S ribosomal protein L5 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplE PE=3 SV=1	RL5_YERE8
30S ribosomal protein S2 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsB PE=3 SV=1	RS2_YERE8
Serine hydroxymethyltransferase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=glyA PE=3 SV=1	GLYA_YERE8
DNA-directed RNA polymerase subunit beta' OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpoC PE=3 SV=1	RPOC_YERE8
Malate dehydrogenase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=mdh PE=3 SV=1	MDH_YERE8
30S ribosomal protein S4 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsD PE=3 SV=1	RS4_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2166 PE=3 SV=1	A1JPB8_YERE8
Probable alcohol dehydrogenase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2821 PE=3 SV=1	A1JU12_YERE8
Translation initiation factor IF-3 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=infC PE=3 SV=1	IF3_YERE8
Primosomal protein n' OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=priA PE=4 SV=1	A1JI12_YERE8
Pyruvate kinase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=pykF PE=3 SV=1	A1JPB0_YERE8
Cell division protein ftsZ OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ftsZ PE=3 SV=1	A1JJJ8_YERE8
Yop effector YopE OS=Yersinia enterocolitica GN=yopE PE=4 SV=1	Q7BRY7_YEREN
Beta-lactamase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ampC PE=4 SV=1	A1JRW9_YERE8
Dihydrolipoyl dehydrogenase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=lpdA PE=3 SV=1	A1JJM0_YERE8
Asparaginyl-tRNA synthetase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=asnS PE=3 SV=1	SYN_YERE8
Uridylate kinase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=pyrH PE=3 SV=1	PYRH_YERE8
Putative membrane protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=hflK PE=4 SV=1	A1JIR7_YERE8
Ribose-phosphate pyrophosphokinase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=prsA PE=3 SV=1	A1JRV4_YERE8
UPF0234 protein YE3147 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3147 PE=3 SV=1	Y3147_YERE8
50S ribosomal protein L2 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplB PE=3 SV=1	RL2_YERE8
Triosephosphate isomerase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tpiA PE=3 SV=1	TPIS_YERE8
50S ribosomal protein L11 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplK PE=3 SV=1	RL11_YERE8
Peptidyl-prolyl cis-trans isomerase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ppiB PE=3 SV=1	A1JNQ1_YERE8
Seryl-tRNA synthetase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=serS PE=3 SV=1	SYS_YERE8
30S ribosomal protein S7 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsG PE=3 SV=1	RS7_YERE8
Outer membrane porin protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2463 PE=4 SV=1	A1JS30_YERE8
Dihydrolipoamide acetyltransferase component of pyruvate dehydrogenase complex OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=aceF PE=3 SV=1	A1JJL9_YERE8
Flagellar hook-associated protein 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=flgK PE=3 SV=1	A1JSZ7_YERE8
Secretion Mut Injected Proteins 4	Accession Number
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
Elongation factor Tu 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tuf1 PE=3 SV=1	EFTU1_YERE8
Enolase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=eno PE=3 SV=1	ENO_YERE8
Glyceraldehyde 3-phosphate dehydrogenase A OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gapA PE=3	A1JQH1_YERE8
Chaperone protein dnaK OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dnaK PE=2 SV=1	DNAK_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=cpxP PE=3 SV=1	A1JHZ1_YERE8

Outer membrane porin protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2463 PE=4 SV=1	A1JS30_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2166 PE=3 SV=1	A1JPB8_YERE8
Secretion Mut Injected Proteins 5	Accession Number
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
Elongation factor Tu 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tuf1 PE=3 SV=1	EFTU1_YERE8
Enolase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=eno PE=3 SV=1	ENO_YERE8
Chaperone protein dnaK OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dnaK PE=2 SV=1	DNAK_YERE8
Glyceraldehyde 3-phosphate dehydrogenase A OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gapA PE=3	A1JQH1_YERE8
Outer membrane porin protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2463 PE=4 SV=1	A1JS30_YERE8
Attachment invasion locus protein OS=Yersinia enterocolitica GN=ail PE=4 SV=1	D7PM19_YEREN
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2166 PE=3 SV=1	A1JPB8_YERE8
Secretion Mut Injected Proteins 6	Accession Number
Chaperone protein dnaK OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dnaK PE=2 SV=1	DNAK_YERE8
Attachment invasion locus protein OS=Yersinia enterocolitica GN=ail PE=4 SV=1	D7PM19_YEREN
Pulsed Anl labeling, 0-30 min	Accession Number
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
Elongation factor Tu 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tuf1 PE=3 SV=1	EFTU1_YERE8
Major outer membrane lipoprotein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=lpp PE=3 SV=1	A1JPB4_YERE8
30S ribosomal protein S3 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsC PE=3 SV=1	RS3_YERE8
50S ribosomal protein L1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplA PE=3 SV=1	RL1_YERE8
Putative uncharacterized protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3042 PE=4 SV=1	A1JNW8_YERE8
Elongation factor Tu A (Fragment) OS=Yersinia enterocolitica GN=tufA PE=4 SV=1	B6RBB1_YEREN
Elongation factor Tu (Fragment) OS=Yersinia enterocolitica GN=tuf PE=4 SV=1	D1MWR3_YEREN
Elongation factor Ts OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tsf PE=3 SV=1	EFTS_YERE8
Flagellar basal-body rod protein flgB OS=Yersinia enterocolitica GN=flgB PE=3 SV=3	FLGB_YEREN
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE1132 PE=3 SV=1	A1JL02_YERE8
YopD OS=Yersinia enterocolitica GN=yopD PE=4 SV=1	D0FH99_YEREN
Preprotein translocase subunit secY OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=secY PE=3 SV=1	A1JS07_YERE8
Citrate lyase acyl carrier protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=citD PE=3 SV=1	CITD_YERE8
DNA-binding protein Hns OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=hns PE=4 SV=1	A1JQA0_YERE8
Pseudouridine synthase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rluA PE=3 SV=1	A1JJF9_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3439 PE=3 SV=1	A1JPV0_YERE8
Pulsed Anl labeling, 30-60 min	Accession Number
Outer membrane virulence protein yopE OS=Yersinia enterocolitica GN=yopE PE=2 SV=1	YOPE_YEREN
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
Tyrosine-protein phosphatase yopH OS=Yersinia enterocolitica GN=yopH PE=1 SV=1	YOPH_YEREN
Major outer membrane lipoprotein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=lpp PE=3 SV=1	A1JPB4_YERE8
Elongation factor Tu 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tuf1 PE=3 SV=1	EFTU1_YERE8
30S ribosomal protein S3 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsC PE=3 SV=1	RS3_YERE8
2,3-bisphosphoglycerate-dependent phosphoglycerate mutase OS=Yersinia enterocolitica serotype O:8 / biotype 1B	GPMA_YERE8

(strain 8081) GN=gpmA PE=3 SV=1	
Elongation factor Tu (Fragment) OS=Yersinia enterocolitica GN=tuf PE=4 SV=1	D1MWR3_YEREN
Elongation factor Tu A (Fragment) OS=Yersinia enterocolitica GN=tufA PE=4 SV=1	B6RBB1_YEREN
Pseudouridine synthase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rluA PE=3 SV=1	A1JJF9_YERE8
Putative uncharacterized protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3042 PE=4 SV=1	A1JNW8_YERE8
Primosomal protein n' OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=priA PE=4 SV=1	A1JI12_YERE8
Translocator protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yopD PE=4 SV=1	A1JU70_YERE8
50S ribosomal protein L15 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplO PE=3 SV=1	RL15_YERE8
Pulsed Anl labeling, 60-90 min	Accession Number
Tyrosine-protein phosphatase yopH OS=Yersinia enterocolitica GN=yopH PE=1 SV=1	YOPH_YEREN
Outer membrane virulence protein yopE OS=Yersinia enterocolitica GN=yopE PE=2 SV=1	YOPE_YEREN
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
YopD OS=Yersinia enterocolitica GN=yopD PE=4 SV=1	D0FH99_YEREN
Yop effector YopP OS=Yersinia enterocolitica GN=yopP PE=4 SV=1	O52162_YEREN
Elongation factor Tu 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tuf1 PE=3 SV=1	EFTU1_YERE8
Elongation factor Tu 2 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tuf2 PE=3 SV=1	EFTU2_YERE8
30S ribosomal protein S3 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsC PE=3 SV=1	RS3_YERE8
YopN OS=Yersinia enterocolitica GN=yopN PE=4 SV=1	O68333_YEREN
Type III secretion outer membrane protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yopN PE=4 SV=1	A1JU81_YERE8
Chaperone protein dnaK OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dnaK PE=2 SV=1	DNAK_YERE8
Elongation factor Tu (Fragment) OS=Yersinia enterocolitica GN=tuf PE=4 SV=1	D1MWR3_YEREN
50S ribosomal protein L1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplA PE=3 SV=1	RL1_YERE8
Glyceraldehyde 3-phosphate dehydrogenase A OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gapA PE=3 SV=1	A1JQH1_YERE8
30S ribosomal protein S5 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsE PE=3 SV=1	RS5_YERE8
Pseudouridine synthase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rluA PE=3 SV=1	A1JJF9_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3039 PE=3 SV=1	A1JP43_YERE8
Elongation factor Ts OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tsf PE=3 SV=1	EFTS_YERE8
Flagellar basal-body rod protein flgB OS=Yersinia enterocolitica GN=flgB PE=3 SV=3	FLGB_YEREN
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE1132 PE=3 SV=1	A1JL02_YERE8
30S ribosomal protein S8 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsH PE=3 SV=1	RS8_YERE8
Major outer membrane lipoprotein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=lpp PE=3 SV=1	A1JPB4_YERE8
Putative prophage integrase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE0993 PE=4 SV=1	A1JKH9_YERE8
PduX OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=pduX PE=4 SV=1	A1JSN3_YERE8
Yop effector YopM OS=Yersinia enterocolitica GN=yopM PE=4 SV=1	P74988_YEREN
Putative methyl-accepting chemotaxis protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=aer PE=4 SV=1	A1JLQ5_YERE8
50S ribosomal protein L5 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplE PE=3 SV=1	RL5_YERE8
Arginine transport system permease protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=artM PE=3 SV=1	A1JM76_YERE8
Primosomal protein n' OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=priA PE=4 SV=1	A1JI12_YERE8
Pulsed Anl labeling, 90-180 min	Accession Number

Tyrosine-protein phosphatase yopH OS=Yersinia enterocolitica GN=yopH PE=1 SV=1	YOPH_YEREN
Outer membrane virulence protein yopE OS=Yersinia enterocolitica GN=yopE PE=2 SV=1	YOPE_YEREN
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
Protein yopD OS=Yersinia enterocolitica GN=yopD PE=4 SV=1	YOPD_YEREN
Putative outer membrane virulence protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YEP0053 PE=3 SV=1	A1JUA9_YERE8
Translocator protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yopD PE=4 SV=1	A1JU70_YERE8
Yop effector YopP OS=Yersinia enterocolitica GN=yopP PE=4 SV=1	O52162_YEREN
YopN OS=Yersinia enterocolitica GN=yopN PE=4 SV=1	O68333_YEREN
Elongation factor Tu 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tuf1 PE=3 SV=1	EFTU1_YERE8
Type III secretion system effector protein (Putative targeted effector protein) OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yopJ PE=4 SV=1	A1JUC5_YERE8
Type III secretion outer membrane protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yopN PE=4 SV=1	A1JU81_YERE8
Yop effector YopM OS=Yersinia enterocolitica GN=yopM PE=4 SV=1	P74988_YEREN
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=cpxP PE=3 SV=1	A1JHZ1_YERE8
Attachment invasion locus protein (Fragment) OS=Yersinia enterocolitica (type O:3) GN=ail PE=4 SV=1	Q4ZJF6_YEREN
Protein yopQ OS=Yersinia enterocolitica GN=yopQ PE=4 SV=1	YOPQ_YEREN
Protein kinase YopO OS=Yersinia enterocolitica GN=yopO PE=4 SV=1	O85239_YEREN
Chaperone protein htpG OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=htpG PE=3 SV=1	HTPG_YERE8
Chaperone protein dnaK OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dnaK PE=2 SV=1	DNAK_YERE8
Major outer membrane lipoprotein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=lpp PE=3 SV=1	A1JPB4_YERE8
Elongation factor Tu A (Fragment) OS=Yersinia enterocolitica GN=tufA PE=4 SV=1	B6RBB1_YEREN
2,3-bisphosphoglycerate-dependent phosphoglycerate mutase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gpmA PE=3 SV=1	GPMA_YERE8
ORF protein (Fragment) OS=Yersinia enterocolitica GN=ORF PE=4 SV=1	Q56881_YEREN
Protein yopB OS=Yersinia enterocolitica GN=yopB PE=4 SV=1	YOPB_YEREN
Virulence-associated V antigen OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=lcrV PE=4 SV=1	A1JU73_YERE8
Regulatory protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yscM2 PE=4 SV=1	A1JUC6_YERE8
30S ribosomal protein S3 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsC PE=3 SV=1	RS3_YERE8
Peptidoglycan-associated lipoprotein Pal OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=pal PE=3 SV=1	A1JRK6_YERE8
Outer membrane porin protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2463 PE=4 SV=1	A1JS30_YERE8
50S ribosomal protein L1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplA PE=3 SV=1	RL1_YERE8
Global stress requirement protein GsrA OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gsrA PE=3 SV=1	A1JJQ8_YERE8
Enolase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=eno PE=3 SV=1	ENO_YERE8
Putative alkyl hydroperoxide reductase subunit c OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ahpC PE=4 SV=1	A1JNT6_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3039 PE=3 SV=1	A1JP43_YERE8
Yop proteins translocation protein M OS=Yersinia enterocolitica GN=yscM PE=2 SV=1	YSCM_YEREN
Pseudouridine synthase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rluA PE=3 SV=1	A1JJF9_YERE8
Protein tolB OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tolB PE=3 SV=1	TOLB_YERE8
Elongation factor Ts OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tsf PE=3 SV=1	EFTS_YERE8
Putative transcription accessory protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=teX PE=4 SV=1	A1JSG5_YERE8

DNA-directed RNA polymerase subunit beta' OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpoC PE=3 SV=1	RPOC_YERE8
Gluconate utilization system Gnt-I transcriptional repressor OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gntR PE=4 SV=1	A1JSK2_YERE8
LysR-family transcriptional regulatory protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3720 PE=4 SV=1	A1JR54_YERE8
Ni/Fe-hydrogenase 2 b-type cytochrome subunit OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=hybB PE=4 SV=1	A1JQK5_YERE8
PduX OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=pduX PE=4 SV=1	A1JSN3_YERE8
Putative methyl-accepting chemotaxis protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=aer PE=4 SV=1	A1JLQ5_YERE8
Recombinase OS=Yersinia enterocolitica GN=ORF2 PE=4 SV=1	Q70W49_YEREN
Probable terminase, ATPase subunit OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gpP PE=4 SV=1	A1JNI4_YERE8
Protease OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=degQ PE=3 SV=1	A1JR98_YERE8
Glyceraldehyde 3-phosphate dehydrogenase A OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gapA PE=3 SV=1	A1JQH1_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yacK PE=3 SV=1	A1JJN0_YERE8
Secretion Wt Injected Proteins Gentamicin	Accession Number
Yop effector YopE OS=Yersinia enterocolitica GN=yopE PE=4 SV=1	Q7BRY7_YEREN
Yop effector YopH OS=Yersinia enterocolitica GN=yopH PE=4 SV=1	Q7BRY8_YEREN
LcrV OS=Yersinia enterocolitica GN=lcrV PE=4 SV=1	O87495_YEREN
Elongation factor Tu 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tuf1 PE=3 SV=1	EFTU1_YERE8
Translocator protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yopD PE=4 SV=1	A1JU70_YERE8
Chaperone protein dnaK OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dnaK PE=2 SV=1	DNAK_YERE8
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
Chaperone protein htpG OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=htpG PE=3 SV=1	HTPG_YERE8
YopN OS=Yersinia enterocolitica GN=yopN PE=4 SV=1	O68333_YEREN
Elongation factor Tu A (Fragment) OS=Yersinia enterocolitica GN=tufA PE=4 SV=1	B6RBB1_YEREN
Elongation factor G OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fusA PE=3 SV=1	A1JS54_YERE8
Methionyl-tRNA synthetase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=metG PE=3 SV=1	SYM_YERE8
Secretion Wt Media Secreted Proteins 1	Accession Number
YopD OS=Yersinia enterocolitica GN=yopD PE=4 SV=1	C5IZG7_YEREN
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2166 PE=3 SV=1	A1JPB8_YERE8
Yop effector YopE OS=Yersinia enterocolitica GN=yopE PE=4 SV=1	Q7BRY7_YEREN
Putative outer membrane porin A protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ompA PE=3 SV=1	A1JMT3_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=cpxP PE=3 SV=1	A1JHZ1_YERE8
LcrV OS=Yersinia enterocolitica GN=lcrV PE=4 SV=1	O87495_YEREN
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2930 PE=3 SV=1	A1JRP4_YERE8
Protein tolB OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tolB PE=3 SV=1	TOLB_YERE8
Putative D-ribose-binding periplasmic protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rbsB PE=3 SV=1	A1JHS3_YERE8
Arginine-binding periplasmic protein 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=artI PE=3 SV=1	A1JM82_YERE8
Branched-chain amino acid-binding protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=livK PE=3 SV=1	A1JIC6_YERE8
Secreted thiol:disulfide interchange protein DsbA OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dsbA PE=3 SV=1	A1JHT2_YERE8
Yop effector YopH OS=Yersinia enterocolitica GN=yopH PE=4 SV=1	Q7BRY8_YEREN

Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3039 PE=3 SV=1	A1JP43_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3727 PE=3 SV=1	A1JR71_YERE8
Iron(III)-binding periplasmic protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yfuA PE=3 SV=1	A1JLH5_YERE8
YopB OS=Yersinia enterocolitica GN=yopB PE=4 SV=1	C5IZG6_YEREN
Putrescine-binding periplasmic protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=potF PE=3 SV=1	A1JM59_YERE8
Outer-membrane lipoprotein carrier protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=lolA PE=3 SV=1	LOLA_YERE8
Cationic 19 kDa outer membrane protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ompH PE=3 SV=1	A1JP72_YERE8
Peptidoglycan-associated lipoprotein Pal OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=pal PE=3 SV=1	A1JRK6_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2080 PE=3 SV=1	A1JN51_YERE8
Periplasmic dipeptide transport protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dppA PE=3 SV=1	A1JSV0_YERE8
Secretion Wt Media Secreted Proteins 2	Accession Number
YopD OS=Yersinia enterocolitica GN=yopD PE=4 SV=1	C5IZG7_YEREN
Yop effector YopH OS=Yersinia enterocolitica GN=yopH PE=4 SV=1	Q7BRY8_YEREN
Beta-lactamase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ampC PE=4 SV=1	A1JRW9_YERE8
LcrV OS=Yersinia enterocolitica GN=lcrV PE=4 SV=1	O87495_YEREN
Yop effector YopE OS=Yersinia enterocolitica GN=yopE PE=4 SV=1	Q7BRY7_YEREN
YopB OS=Yersinia enterocolitica GN=yopB PE=4 SV=1	C5IZG6_YEREN
Branched-chain amino acid-binding protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=livK PE=3 SV=1	A1JIC6_YERE8
Putative type III secretion protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yscH PE=3 SV=1	A1JU99_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=cpxP PE=3 SV=1	A1JHZ1_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2166 PE=3 SV=1	A1JPB8_YERE8
YscP OS=Yersinia enterocolitica (type O:2.3) GN=yscP PE=4 SV=1	B6DX70_YEREN
Secreted thiol:disulfide interchange protein DsbA OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dsbA PE=3 SV=1	A1JHT2_YERE8
Periplasmic dipeptide transport protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dppA PE=3 SV=1	A1JSV0_YERE8
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
Elongation factor Tu 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tuf1 PE=3 SV=1	EFTU1_YERE8
Maltose-binding periplasmic protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=malE PE=3 SV=1	A1JRV3_YERE8
Periplasmic oligopeptide-binding protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=oppA PE=3 SV=1	A1JQ72_YERE8
Putative D-ribose-binding periplasmic protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rbsB PE=3 SV=1	A1JHS3_YERE8
Secretion Wt Media Secreted Proteins 3	Accession Number
YopD OS=Yersinia enterocolitica GN=yopD PE=4 SV=1	C5IZG7_YEREN
Yop effector YopH OS=Yersinia enterocolitica GN=yopH PE=4 SV=1	Q7BRY8_YEREN
Yop effector YopE OS=Yersinia enterocolitica GN=yopE PE=4 SV=1	Q7BRY7_YEREN
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=cpxP PE=3 SV=1	A1JHZ1_YERE8
Beta-lactamase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ampC PE=4 SV=1	A1JRW9_YERE8
Global stress requirement protein GsrA OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gsrA PE=3 SV=1	A1JJQ8_YERE8
YopB OS=Yersinia enterocolitica GN=yopB PE=4 SV=1	C5IZG6_YEREN

Putative outer membrane porin A protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ompA PE=3 SV=1	A1JMT3_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3039 PE=3 SV=1	A1JP43_YERE8
Putative type III secretion protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=yscH PE=3 SV=1	A1JU99_YERE8
Protease OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=degQ PE=3 SV=1	A1JR98_YERE8
50S ribosomal protein L9 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplI PE=3 SV=1	RL9_YERE8
3-oxoacyl-[acyl-carrier-protein] synthase I OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fabB PE=3 SV=1	A1JKM0_YERE8
Outer membrane porin protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2463 PE=4 SV=1	A1JS30_YERE8
50S ribosomal protein L1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplA PE=3 SV=1	RL1_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2166 PE=3 SV=1	A1JPB8_YERE8
Secretion Mut Media Secreted Proteins 1	Accession Number
Branched-chain amino acid-binding protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=livK PE=3 SV=1	A1JIC6_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=cpxP PE=3 SV=1	A1JHZ1_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2166 PE=3 SV=1	A1JPB8_YERE8
Putative outer membrane porin A protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=ompA PE=3 SV=1	A1JMT3_YERE8
Protein tolB OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tolB PE=3 SV=1	TOLB_YERE8
Putative D-ribose-binding periplasmic protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rbsB PE=3 SV=1	A1JHS3_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE3039 PE=3 SV=1	A1JP43_YERE8
Secreted thiol:disulfide interchange protein DsbA OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=dsbA PE=3 SV=1	A1JHT2_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=YE2930 PE=3 SV=1	A1JRP4_YERE8
Osmotically inducible protein Y OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=osmY PE=3 SV=1	A1JJ93_YERE8
Putrescine-binding periplasmic protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=potF PE=3 SV=1	A1JM59_YERE8
Secretion Mut Media Secreted Proteins 2	Accession Number
FliC OS=Yersinia enterocolitica GN=fliC PE=4 SV=1	C9EHF4_YEREN
Flagellar hook-associated protein 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=flgK PE=3 SV=1	A1JSZ7_YERE8
Flagellar hook-associated protein 2 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fliD PE=4 SV=1	A1JSR2_YERE8
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8
Global stress requirement protein GsrA OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gsrA PE=3 SV=1	A1JJQ8_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=cpxP PE=3 SV=1	A1JHZ1_YERE8
3-oxoacyl-[acyl-carrier protein] reductase OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fabG PE=3 SV=1	A1JN73_YERE8
3-oxoacyl-[acyl-carrier-protein] synthase I OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=fabB PE=3 SV=1	A1JKM0_YERE8
50S ribosomal protein L9 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplI PE=3 SV=1	RL9_YERE8
Glyceraldehyde 3-phosphate dehydrogenase A OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gapA PE=3 SV=1	A1JQH1_YERE8
Elongation factor Tu A (Fragment) OS=Yersinia enterocolitica GN=tufA PE=4 SV=1	B6RBB1_YEREN
50S ribosomal protein L10 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rplJ PE=3 SV=1	RL10_YERE8
FliC3 OS=Yersinia enterocolitica GN=fliC3 PE=4 SV=1	C9EHF3_YEREN
30S ribosomal protein S3 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=rpsC PE=3 SV=1	RS3_YERE8
Secretion Mut Media Secreted Proteins 3	Accession Number
60 kDa chaperonin OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=groL PE=3 SV=1	CH60_YERE8

Global stress requirement protein GsrA OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gsrA PE=3 SV=1	A1JJQ8_YERE8
Putative exported protein OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=cpxP PE=3 SV=1	A1JHZ1_YERE8
Elongation factor Tu 1 OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=tuf1 PE=3 SV=1	EFTU1_YERE8
Glyceraldehyde 3-phosphate dehydrogenase A OS=Yersinia enterocolitica serotype O:8 / biotype 1B (strain 8081) GN=gapA PE=3 SV=1	A1JQH1_YERE8