

***Francisella tularensis* subsp. *novicida*,  
“Two-Allele” Transposon Mutant Library,  
Plate 27 (tnfn1\_pw060420p03)**

**Catalog No. NR-8061**

**For research use only. Not for human use.**

**Contributor:**

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**Product Description:**

A comprehensive 16508-member transposon mutant library<sup>1</sup> of sequence-defined transposon insertion mutants of *Francisella tularensis* subsp. *novicida*, strain U112 was prepared to allow the systematic identification of virulence determinants and other factors associated with *Francisella* pathogenesis. Genes refractory to insertional inactivation helped define the genes essential for viability of the organism.

To facilitate genome-scale screening using the mutant collection, a “two-allele” single-colony purified sublibrary, made up of approximately two purified mutants per gene, was assembled.

NR-8061 represents Plate 27 (tnfn1\_pw060420p03) of the “two-allele” 3050-member sublibrary. Detailed information for each mutant is shown in Tables 1-3. Information about specific clones may also be accessed through the [Francisella Tularensis Genome Research](#) homepage.

*Francisella tularensis* subsp. *novicida*, strain U112 is excluded from Select Agent status. Please see [CDC Select Agent Program, Notification of Exclusion](#).

**Material Provided:**

Each well of the 96-well plate contains approximately 0.25 mL of bacterial culture in 0.7X Tryptic Soy Broth containing 0.1% L-cysteine and 10 µg/mL kanamycin supplemented with 5% glycerol.

**Note:** Production in the 96-well format has a potential for cross-contamination. Individual mutants should be checked by the recipient prior to use.

**Packaging/Storage:**

NR-8061 was packaged aseptically in 96-well plates. The product is provided frozen and should be stored at -60°C or colder immediately upon arrival. For long-term storage, the vapor phase of a liquid nitrogen freezer is recommended. Freeze-thaw cycles should be avoided.

**Growth Conditions:**

**Media:**

Tryptic Soy Agar containing 0.1% L-cysteine and 10 µg/mL kanamycin

**Incubation:**

Temperature: 37°C

Atmosphere: Aerobic with 5% CO<sub>2</sub>

**Propagation:**

1. Scrape top of frozen well with a pipette tip and streak onto agar plate.
2. Incubate the plate at 37°C for 24–48 hours.

**Citation:**

Acknowledgment for publications should read “The following reagent was obtained through the NIH Biodefense and Emerging Infections Research Resources Repository, NIAID, NIH: *Francisella tularensis* subsp. *novicida*, “Two-Allele” Transposon Mutant Library, Plate 27 (tnfn1\_pw060420p03), NR-8061.”

**Biosafety Level: 2**

Appropriate safety procedures should always be used with this material. Laboratory safety is discussed in the following publication: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health. [Biosafety in Microbiological and Biomedical Laboratories](#). 5th ed. Washington, DC: U.S. Government Printing Office, 2007; see [www.cdc.gov/od/ohs/biosfty/bmbl5/bmbl5toc.htm](http://www.cdc.gov/od/ohs/biosfty/bmbl5/bmbl5toc.htm).

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**References:**

1. Gallagher, L. A., et al. "A Comprehensive Transposon Mutant Library of *Francisella novicida*, A Bioweapon Surrogate." *Proc. Natl. Acad. Sci. USA* 104 (2007): 1009–1014. PubMed: 17215359.

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**Table 1 - Transposon Type and Mutated Gene**

| Strain Name           | Well | Transposon type | Gene | Description   | Function Class   |
|-----------------------|------|-----------------|------|---|--|
| tnfn1_pw060420p03q101 | A01  | T20             | -    | predicted metal-dependent hydrolase   | putative enzymes   |
| tnfn1_pw060420p03q102 | B01  | T20             | ilvB | acetolactate synthase large subunit   | amino acid metabolism - biosynthesis   |
| tnfn1_pw060420p03q103 | C01  | T20             | -    | protein of unknown function   | unknown function - novel   |
| tnfn1_pw060420p03q104 | D01  | T20             | oppA | ABC-type oligopeptide transport system, periplasmic component   | transport  |
| tnfn1_pw060420p03q105 | E01  | T20             | -    | hypothetical membrane protein   | hypothetical - novel   |
| tnfn1_pw060420p03q106 | F01  | T20             | -    | conserved protein of unknown function   | unknown function - conserved   |
| tnfn1_pw060420p03q107 | G01  | T20             | -    | CheB methylesterase/CheR methyltransferase  | signal transduction and regulation   |
| tnfn1_pw060420p03q108 | H01  | T20             | -    | 4Fe-4S ferredoxin   | energy metabolism  |
| tnfn1_pw060420p03q109 | A02  | T20             | -    | membrane fusion protein   | motility, attachment and secretion structure   |
| tnfn1_pw060420p03q110 | B02  | T20             | -    | drug:H+ antiporter-1 (DHA1) family protein  | transport - drugs / antibacterial compounds  |
| tnfn1_pw060420p03q111 | C02  | T20             | -    | conserved protein of unknown function   | unknown function - conserved   |
| tnfn1_pw060420p03q112 | D02  | T20             | -    | o-methyltransferase family protein  | putative enzymes   |
| tnfn1_pw060420p03q113 | E02  | T20             | -    | hypothetical membrane protein   | hypothetical - novel   |
| tnfn1_pw060420p03q114 | F02  | T20             | -    | metabolite:H+ symporter (MHS) family  | transport  |
| tnfn1_pw060420p03q115 | G02  | T20             | -    | mechanosensitive ion channel protein  | transport  |
| tnfn1_pw060420p03q116 | H02  | T20             | -    | major facilitator superfamily (MFS) transport protein   | transport  |
| tnfn1_pw060420p03q117 | A03  | T20             | -    | hypothetical protein  | hypothetical - novel   |
| tnfn1_pw060420p03q118 | B03  | T20             | cphA | cyanophycin synthetase  | cell wall / LPS / capsule  |
| tnfn1_pw060420p03q119 | C03  | T20             | -    | oxidoreductase  | putative enzymes   |
| tnfn1_pw060420p03q120 | D03  | T20             | -    | conserved protein of unknown function   | unknown function - conserved   |
| tnfn1_pw060420p03q121 | E03  | T18             | -    | PhoH family protein, putative ATPase  | signal transduction and regulation   |
| tnfn1_pw060420p03q122 | F03  | T20             | -    | conserved protein of unknown function   | unknown function - conserved   |
| tnfn1_pw060420p03q123 | G03  | T20             | -    | hypothetical protein  | hypothetical - novel   |
| tnfn1_pw060420p03q124 | H03  | T20             | -    | hypothetical protein  | hypothetical - novel   |
| tnfn1_pw060420p03q125 | A04  | T20             | iglA | intracellular growth locus protein A  | unknown function - conserved   |
| tnfn1_pw060420p03q126 | B04  | T20             | fumC | fumarate hydratase, class II  | energy metabolism  |
| tnfn1_pw060420p03q127 | C04  | T20             | -    | protein of unknown function, LamB/YcsF family   | unknown function - conserved   |
| tnfn1_pw060420p03q128 | D04  | T20             | -    | protein of unknown function   | unknown function - novel   |
| tnfn1_pw060420p03q129 | E04  | T20             | bcp  | bacterioferritin comigratory protein  | post-translational modification, protein turnover, chaperones - protein modification |
| tnfn1_pw060420p03q130 | F04  | T20             | -    | NAD-dependent aldehyde dehydrogenase  | other metabolism - degradation, utilization, assimilation                            |
| tnfn1_pw060420p03q131 | G04  | <KAN-2>         | -    | protein of unknown function with radical SAM domain   | unknown function - conserved   |
| tnfn1_pw060420p03q132 | H04  | T18             | -    | -   | potentially coding: hypothetical - novel   |
| tnfn1_pw060420p03q133 | A05  | T18             | -    | conserved protein of unknown function   | unknown function - conserved   |
| tnfn1_pw060420p03q134 | B05  | T18             | -    | type I restriction-modification system, subunit R (restriction)                                       | DNA replication, recombination, modification and repair - restriction/modification   |
| tnfn1_pw060420p03q135 | C05  | T18             | gcvH | glycine cleavage system H protein (lipoate-binding)   | amino acid metabolism - degradation, utilization, assimilation                       |
| tnfn1_pw060420p03q136 | D05  | T20             | -    | BNR/Asp-box repeat protein  | putative enzymes   |
| tnfn1_pw060420p03q137 | E05  | T20             | iglD | intracellular growth locus protein D  | unknown function - novel   |
| tnfn1_pw060420p03q138 | F05  | T20             | accD | acetyl-CoA carboxylase, carboxytransferase subunit beta   | fatty acids and lipids metabolism  |
| tnfn1_pw060420p03q139 | G05  | T20             | -    | sugar transferase involved in lipopolysaccharide synthesis  | cell wall / LPS / capsule  |
| tnfn1_pw060420p03q140 | H05  | T20             | hemN | coproporphyrinogen III oxidase, anaerobic dehydrogenase related to short-chain alcohol dehydrogenases | cofactors, prosthetic groups, electron carriers metabolism                           |
| tnfn1_pw060420p03q141 | A06  | T20             | -    |   | putative enzymes   |
| tnfn1_pw060420p03q142 | B06  | T20             | -    | conserved hypothetical protein  | hypothetical - conserved   |
| tnfn1_pw060420p03q143 | C06  | T20             | kpsC | capsule polysaccharide export protein KpsC  | cell wall / LPS / capsule  |
| tnfn1_pw060420p03q144 | D06  | T20             | pilF | Type IV pilus, pilus assembly protein   | motility, attachment and secretion structure   |
| tnfn1_pw060420p03q145 | E06  | T20             | -    | protein of unknown function   | unknown function - conserved   |
| tnfn1_pw060420p03q146 | F06  | T20             | -    | predicted enzyme of enolase superfamily   | putative enzymes   |
| tnfn1_pw060420p03q147 | G06  | T20             | -    | Fe2+/Zn2+ uptake regulator protein  | signal transduction and regulation   |
| tnfn1_pw060420p03q148 | H06  | T20             | -    |   |  |

**Table 1 - Transposon Type and Mutated Gene**

| Strain Name           | Well | Transposon type | Gene  | Description  | Function Class  |
|-----------------------|------|-----------------|-------|--|---|
| tnfn1_pw060420p03q149 | A07  | T20             | nupC1 | nucleoside permease NUP family protein                                     | transport   |
| tnfn1_pw060420p03q150 | B07  | T20             | -     | conserved hypothetical membrane protein                                    | hypothetical - conserved  |
| tnfn1_pw060420p03q151 | C07  | T20             | -     | allophanate hydrolase subunit 1  | other metabolism - degradation, utilization, assimilation                           |
| tnfn1_pw060420p03q152 | D07  | T20             | -     | hypothetical protein   | Potentially coding: hypothetical - novel  |
| tnfn1_pw060420p03q153 | E07  | T20             | mdaB  | NADPH-quinone reductase (modulator of drug activity B)                     | putative enzymes  |
| tnfn1_pw060420p03q154 | F07  | T20             | cyoD  | cytochrome bo terminal oxidase subunit IV                                  | energy metabolism   |
| tnfn1_pw060420p03q155 | G07  | T20             | -     | SAICAR synthetase/phosphoribosylamine-glycine ligase                       | nucleotides and nucleosides metabolism  |
| tnfn1_pw060420p03q156 | H07  | T20             | hrpA  | HrpA-like helicase   | DNA replication, recombination, modification and repair                             |
| tnfn1_pw060420p03q157 | A08  | T20             | -     | HAM1-like protein, possible xanthosine triphosphate pyrophosphatase        | putative enzymes  |
| tnfn1_pw060420p03q158 | B08  | T20             | cydC  | ABC-type transport ATP-binding protein CydC                                | transport   |
| tnfn1_pw060420p03q159 | C08  | T20             | ribD  | pyrimidine reductase/pyrimidine deaminase                                  | cofactors, prosthetic groups, electron carriers metabolism                          |
| tnfn1_pw060420p03q160 | D08  | T20             | -     | protein of unknown function  | unknown function - novel  |
| tnfn1_pw060420p03q161 | E08  | T20             | -     |  |   |
| tnfn1_pw060420p03q162 | F08  | T20             | -     | hypothetical protein   | hypothetical - novel  |
| tnfn1_pw060420p03q163 | G08  | T20             | -     | oxidoreductase   | putative enzymes  |
| tnfn1_pw060420p03q164 | H08  | T20             | -     | cytochrome b561 family protein   | cofactors, prosthetic groups, electron carriers metabolism                          |
| tnfn1_pw060420p03q165 | A09  | T20             | -     |  |   |
| tnfn1_pw060420p03q166 | B09  | T20             | sucD  | succinyl-CoA synthetase, alpha subunit                                     | energy metabolism   |
| tnfn1_pw060420p03q167 | C09  | T20             | -     | protein of unknown function  | unknown function - novel  |
| tnfn1_pw060420p03q168 | D09  | T20             | -     | conserved protein of unknown function                                      | unknown function - conserved  |
| tnfn1_pw060420p03q169 | E09  | T20             | -     | hypothetical protein   | hypothetical - novel  |
| tnfn1_pw060420p03q170 | F09  | T20             | -     | protein of unknown function  | unknown function - novel  |
| tnfn1_pw060420p03q171 | G09  | T20             | -     | membrane fusion protein  | motility, attachment and secretion structure  |
| tnfn1_pw060420p03q172 | H09  | T20             | clpX  | ATP-dependent Clp protease subunit X                                       | post-translational modification, protein turnover, chaperones - protein degradation |
| tnfn1_pw060420p03q173 | A10  | T20             | -     | abortive infection bacteriophage resistance protein                        | mobile and extrachromosomal element functions - phage or plasmid related proteins   |
| tnfn1_pw060420p03q174 | B10  | T20             | -     | putative rhodanese, sulfurtransferase                                      | putative enzymes  |
| tnfn1_pw060420p03q175 | C10  | T20             | -     | membrane protein of unknown function                                       | unknown function - novel  |
| tnfn1_pw060420p03q176 | D10  | T20             | -     | GTP binding translational elongation factor Tu and G family protein        | putative enzymes  |
| tnfn1_pw060420p03q177 | E10  | T20             | -     | conserved protein of unknown function                                      | unknown function - conserved  |
| tnfn1_pw060420p03q178 | F10  | T20             | gpsA  | glycerol-3-phosphate-dehydrogenase-[NAD+]                                  | fatty acids and lipids metabolism   |
| tnfn1_pw060420p03q179 | G10  | T20             | -     | phosphosugar binding protein   | cell wall / LPS / capsule   |
| tnfn1_pw060420p03q180 | H10  | T20             | fopA  | OmpA family protein  | cell wall / LPS / capsule   |
| tnfn1_pw060420p03q181 | A11  | T20             | -     | Na+/H+ antiporter  | transport   |
| tnfn1_pw060420p03q182 | B11  | T20             | -     | hypothetical protein   | hypothetical - novel  |
| tnfn1_pw060420p03q183 | C11  | T20             | -     | D-isomer specific 2-hydroxyacid dehydrogenase                              | energy metabolism   |
| tnfn1_pw060420p03q184 | D11  | T20             | serB  | phosphoserine phosphatase  | amino acid metabolism - biosynthesis  |
| tnfn1_pw060420p03q185 | E11  | <KAN-2>         | -     | protein of unknown function  | unknown function - novel  |
| tnfn1_pw060420p03q186 | F11  | <KAN-2>         | -     | hydrolase, HD superfamily  | putative enzymes  |
| tnfn1_pw060420p03q187 | G11  | <KAN-2>         | -     | ribonuclease PH  | translation, ribosomal structure and biogenesis                                     |
| tnfn1_pw060420p03q188 | H11  | <KAN-2>         | -     | protein of unknown function  | unknown function - novel  |
| tnfn1_pw060420p03q189 | A12  | T18             | -     | membrane fusion protein  | motility, attachment and secretion structure  |
| tnfn1_pw060420p03q190 | B12  | <KAN-2>         | -     |  |   |
| tnfn1_pw060420p03q191 | C12  | <KAN-2>         | bfr   | bacterioferritin   | energy metabolism   |
| tnfn1_pw060420p03q192 | D12  | <KAN-2>         | -     | prophage repressor protein   | signal transduction and regulation  |
| tnfn1_pw060420p03q193 | E12  | <KAN-2>         | tspO  | tryptophan-rich sensory protein  | signal transduction and regulation  |
| tnfn1_pw060420p03q194 | F12  | T20             | -     | conserved protein of unknown function                                      | unknown function - conserved  |
| tnfn1_pw060420p03q195 | G12  | T20             | potH  | ATP-binding cassette putrescine uptake system, membrane protein, subunit H | transport   |
| tnfn1_pw060420p03q196 | H12  | T20             | fumC  | fumarate hydratase, class II   | energy metabolism   |

| Table 2 - Sequencing and Insertion Location |      |  |  |  |            |              |               |  |                        |  |
|---|------|--|--|--|------------|--------------|---------------|--|------------------------|--|
| Strain Name                                 | Well | Sequence confirmation (C, Confirmed; U, unconfirmed) | Effective Genome Position of Insertion | Direction of insertion (F, forward relative to genome; R, reverse) | Locus Tag  | ORF left end | ORF right end | Direction of ORF (F, forward relative to genome; R, reverse) | Length of ORF (codons) | Effective position of insertion in ORF [nucleotide of insertion(length of ORF in nucleotides)] |
| tnfn1_pw060420p03q101                       | A01  | C  | 756424                                 | F  | FTN_0711   | 756324       | 756980        | F  | 219                    | 101(657)   |
| tnfn1_pw060420p03q102                       | B01  | C  | 1099582                                | F  | FTN_1042   | 1098981      | 1100675       | R  | 565                    | 1094(1695)   |
| tnfn1_pw060420p03q103                       | C01  | C  | 114880                                 | R  | FTN_0103   | 113788       | 116088        | R  | 767                    | 1209(2301)   |
| tnfn1_pw060420p03q104                       | D01  | U  | 1691924                                | F  | FTN_1593   | 1691111      | 1692784       | R  | 558                    | 861(1674)  |
| tnfn1_pw060420p03q105                       | E01  | C  | 1539752                                | F  | FTN_1450   | 1539655      | 1540053       | R  | 133                    | 302(399)   |
| tnfn1_pw060420p03q106                       | F01  | C  | 1068545                                | R  | FTN_1009   | 1068039      | 1069043       | F  | 335                    | 507(1005)  |
| tnfn1_pw060420p03q107                       | G01  | U  | 459175                                 | F  | FTN_0455   | 458374       | 461271        | F  | 966                    | 802(2898)  |
| tnfn1_pw060420p03q108                       | H01  | C  | 830174                                 | F  | FTN_0773   | 829606       | 830691        | R  | 362                    | 518(1086)  |
| tnfn1_pw060420p03q109                       | A02  | C  | 1349015                                | R  | FTN_1276   | 1348690      | 1349712       | F  | 341                    | 326(1023)  |
| tnfn1_pw060420p03q110                       | B02  | C  | 827054                                 | R  | FTN_0770   | 826604       | 827803        | R  | 400                    | 750(1200)  |
| tnfn1_pw060420p03q111                       | C02  | U  | 992023                                 | R  | FTN_0931   | 991793       | 992749        | F  | 319                    | 231(957)   |
| tnfn1_pw060420p03q112                       | D02  | C  | 1121599                                | R  | FTN_1062   | 1121319      | 1121990       | R  | 224                    | 392(672)   |
| tnfn1_pw060420p03q113                       | E02  | C  | 504472                                 | F  | FTN_0498   | 504268       | 505494        | F  | 409                    | 205(1227)  |
| tnfn1_pw060420p03q114                       | F02  | C  | 929195                                 | R  | FTN_0875   | 928929       | 930158        | F  | 410                    | 267(1230)  |
| tnfn1_pw060420p03q115                       | G02  | C  | 591994                                 | F  | FTN_0566   | 591956       | 593071        | F  | 372                    | 39(1116)   |
| tnfn1_pw060420p03q116                       | H02  | C  | 881855                                 | F  | FTN_0824   | 881019       | 882230        | R  | 404                    | 376(1212)  |
| tnfn1_pw060420p03q117                       | A03  | C  | 850808                                 | F  | FTN_0793   | 850477       | 851043        | F  | 189                    | 332(567)   |
| tnfn1_pw060420p03q118                       | B03  | C  | 1176368                                | F  | FTN_1112   | 1174118      | 1176937       | R  | 940                    | 570(2820)  |
| tnfn1_pw060420p03q119                       | C03  | C  | 1108533                                | R  | FTN_1049   | 1107723      | 1108898       | F  | 392                    | 811(1176)  |
| tnfn1_pw060420p03q120                       | D03  | C  | 1628219                                | F  | FTN_1531   | 1627995      | 1628675       | R  | 227                    | 457(681)   |
| tnfn1_pw060420p03q121                       | E03  | C  | 1124139                                | R  | FTN_1064   | 1123547      | 1124527       | F  | 327                    | 593(981)   |
| tnfn1_pw060420p03q122                       | F03  | C  | 1404283                                | R  | FTN_1326   | 1403644      | 1404786       | R  | 381                    | 504(1143)  |
| tnfn1_pw060420p03q123                       | G03  | C  | 1887955                                | F  | FTN_1758   | 1887821      | 1888438       | F  | 206                    | 135(618)   |
| tnfn1_pw060420p03q124                       | H03  | C  | 1187730                                | F  | FTN_1124   | 1187659      | 1187901       | F  | 81                     | 72(243)  |
| tnfn1_pw060420p03q125                       | A04  | C  | 1399632                                | F  | FTN_1324   | 1399172      | 1399723       | R  | 184                    | 92(552)  |
| tnfn1_pw060420p03q126                       | B04  | C  | 241870                                 | F  | FTN_0220   | 241817       | 243205        | F  | 463                    | 54(1389)   |
| tnfn1_pw060420p03q127                       | C04  | C  | 99756                                  | F  | FTN_0088   | 99479        | 100174        | F  | 232                    | 278(696)   |
| tnfn1_pw060420p03q128                       | D04  | C  | 1079992                                | F  | FTN_1022   | 1079866      | 1080159       | F  | 98                     | 127(294)   |
| tnfn1_pw060420p03q129                       | E04  | C  | 1885515                                | R  | FTN_1756   | 1885175      | 1885651       | F  | 159                    | 341(477)   |
| tnfn1_pw060420p03q130                       | F04  | C  | 1017386                                | R  | FTN_0963   | 1016699      | 1018192       | R  | 498                    | 807(1494)  |
| tnfn1_pw060420p03q131                       | G04  | C  | 1005147                                | R  | FTN_0947   | 1004368      | 1005477       | R  | 370                    | 331(1110)  |
| tnfn1_pw060420p03q132                       | H04  | C  | 9125                                   | R  | -          | 8981         | 9148          | R  | 56                     | 24(168)  |
| tnfn1_pw060420p03q133                       | A05  | C  | 1555204                                | R  | FTN_1466   | 1554488      | 1555576       | R  | 363                    | 373(1089)  |
| tnfn1_pw060420p03q134                       | B05  | C  | 755130                                 | R  | FTN_0710   | 753221       | 756328        | F  | 1036                   | 1910(3108)   |
| tnfn1_pw060420p03q135                       | C05  | C  | 516458                                 | R  | FTN_0506   | 516080       | 516460        | F  | 127                    | 379(381)   |
| tnfn1_pw060420p03q136                       | D05  | C  | 500398                                 | F  | FTN_0495   | 499997       | 501112        | R  | 372                    | 715(1116)  |
| tnfn1_pw060420p03q137                       | E05  | U  | 1396792                                | R  | FTN_1321   | 1395775      | 1396968       | R  | 398                    | 177(1194)  |
| tnfn1_pw060420p03q138                       | F05  | C  | 280802                                 | F  | FTN_0272   | 279916       | 280815        | F  | 300                    | 887(900)   |
| tnfn1_pw060420p03q139                       | G05  | C  | 1292111                                | R  | FTN_1220   | 1290818      | 1292209       | R  | 464                    | 99(1392)   |
| tnfn1_pw060420p03q140                       | H05  | C  | 1738786                                | R  | FTN_1626   | 1738188      | 1739327       | F  | 380                    | 599(1140)  |
| tnfn1_pw060420p03q141                       | A06  | C  | 362429                                 | R  | FTN_0359   | 362380       | 363099        | F  | 240                    | 50(720)  |
| tnfn1_pw060420p03q142                       | B06  | C  | 1430594                                | F  | FTN_1351   | 1430157      | 1430870       | F  | 238                    | 438(714)   |
| tnfn1_pw060420p03q143                       | C06  | C  | 1285990                                | R  | FTN_1215   | 1284955      | 1286112       | R  | 386                    | 123(1158)  |
| tnfn1_pw060420p03q144                       | D06  | C  | 1004124                                | F  | FTN_0946   | 1003473      | 1004375       | R  | 301                    | 252(903)   |
| tnfn1_pw060420p03q145                       | E06  | C  | 1262272                                | R  | FTN_1187   | 1261659      | 1262360       | R  | 234                    | 89(702)  |
| tnfn1_pw060420p03q146                       | F06  | C  | 743455                                 | R  | FTN_0700   | 743228       | 744295        | F  | 356                    | 228(1068)  |
| tnfn1_pw060420p03q147                       | G06  | C  | 936643                                 | R  | FTN_0881   | 936452       | 936880        | F  | 143                    | 192(429)   |
| tnfn1_pw060420p03q148                       | H06  | U  | 27031                                  | F  | intergenic |              |               |  |                        |  |

The Effective Genome Position of Insertion indicates the effective insertion position that is most likely to be functionally relevant in light of the 9-bp Tn5 target-site duplication and the direction of transcription of the predicted gene of insertion. E.g., for genes oriented to the right, the value reported indicates the genomic position of the nucleotide immediately adjacent to the left end of the insertion element when accounting for the 9-bp target site duplication.

## Product Information Sheet for NR-8061

**Table 2 - Sequencing and Insertion Location**

| Strain Name           | Well | Sequence confirmation (C, Confirmed; U, unconfirmed) | Effective Genome Position of Insertion | Direction of insertion (F, forward relative to genome; R, reverse) | Locus Tag  | ORF left end | ORF right end | Direction of ORF (F, forward relative to genome; R, reverse) | Length of ORF (codons) | Effective position of insertion in ORF [nucleotide of insertion(length of ORF in nucleotides)] |
|-----------------------|------|--|--|--|------------|--------------|---------------|--|------------------------|--|
| tnfn1_pw060420p03q149 | A07  | C  | 1701514                                | F  | FTN_1600   | 1701111      | 1702307       | R  | 399                    | 794(1197)  |
| tnfn1_pw060420p03q150 | B07  | U  | 1160172                                | F  | FTN_1098   | 1159530      | 1160402       | R  | 291                    | 231(873)   |
| tnfn1_pw060420p03q151 | C07  | C  | 99222                                  | R  | FTN_0087   | 98862        | 99476         | F  | 205                    | 361(615)   |
| tnfn1_pw060420p03q152 | D07  | C  | 396313                                 | R  | -          | 396244       | 396372        | R  | 43                     | 60(129)  |
| tnfn1_pw060420p03q153 | E07  | C  | 896585                                 | F  | FTN_0840   | 896313       | 896900        | F  | 196                    | 273(588)   |
| tnfn1_pw060420p03q154 | F07  | C  | 220211                                 | R  | FTN_0198   | 220165       | 220494        | F  | 110                    | 47(330)  |
| tnfn1_pw060420p03q155 | G07  | C  | 419847                                 | F  | FTN_0420   | 418362       | 420671        | F  | 770                    | 1486(2310)   |
| tnfn1_pw060420p03q156 | H07  | C  | 1514173                                | R  | FTN_1432   | 1513195      | 1517211       | R  | 1339                   | 3039(4017)   |
| tnfn1_pw060420p03q157 | A08  | C  | 1557013                                | F  | FTN_1468   | 1556744      | 1557319       | F  | 192                    | 270(576)   |
| tnfn1_pw060420p03q158 | B08  | C  | 679018                                 | F  | FTN_0641   | 677863       | 679509        | R  | 549                    | 492(1647)  |
| tnfn1_pw060420p03q159 | C08  | C  | 125430                                 | F  | FTN_0114   | 124591       | 125655        | R  | 355                    | 226(1065)  |
| tnfn1_pw060420p03q160 | D08  | C  | 949575                                 | R  | FTN_0893   | 949331       | 949918        | F  | 196                    | 245(588)   |
| tnfn1_pw060420p03q161 | E08  | C  | 745052                                 | F  | intergenic |              |               |  |                        |  |
| tnfn1_pw060420p03q162 | F08  | C  | 13729                                  | R  | FTN_0016   | 13110        | 13781         | R  | 224                    | 53(672)  |
| tnfn1_pw060420p03q163 | G08  | C  | 1466221                                | F  | FTN_1388   | 1466005      | 1466622       | F  | 206                    | 217(618)   |
| tnfn1_pw060420p03q164 | H08  | C  | 1883113                                | F  | FTN_1754   | 1883079      | 1883585       | F  | 169                    | 35(507)  |
| tnfn1_pw060420p03q165 | A09  | C  | 381253                                 | R  | intergenic |              |               |  |                        |  |
| tnfn1_pw060420p03q166 | B09  | C  | 624329                                 | R  | FTN_0593   | 623591       | 624460        | R  | 290                    | 132(870)   |
| tnfn1_pw060420p03q167 | C09  | C  | 765157                                 | R  | FTN_0714   | 760571       | 766126        | F  | 1852                   | 4587(5556)   |
| tnfn1_pw060420p03q168 | D09  | C  | 36576                                  | R  | FTN_0034   | 33580        | 36951         | R  | 1124                   | 376(3372)  |
| tnfn1_pw060420p03q169 | E09  | C  | 376186                                 | F  | FTN_0374   | 376108       | 376314        | F  | 69                     | 79(207)  |
| tnfn1_pw060420p03q170 | F09  | C  | 1837706                                | F  | FTN_1713   | 1837164      | 1837808       | R  | 215                    | 103(645)   |
| tnfn1_pw060420p03q171 | G09  | C  | 1809083                                | R  | FTN_1692   | 1808552      | 1809619       | R  | 356                    | 537(1068)  |
| tnfn1_pw060420p03q172 | H09  | C  | 1116377                                | F  | FTN_1056   | 1115895      | 1117145       | R  | 417                    | 769(1251)  |
| tnfn1_pw060420p03q173 | A10  | C  | 749899                                 | F  | FTN_0705   | 749168       | 750076        | F  | 303                    | 732(909)   |
| tnfn1_pw060420p03q174 | B10  | C  | 847655                                 | R  | FTN_0789   | 847645       | 848631        | R  | 329                    | 977(987)   |
| tnfn1_pw060420p03q175 | C10  | C  | 444615                                 | R  | FTN_0444   | 443654       | 445324        | F  | 557                    | 962(1671)  |
| tnfn1_pw060420p03q176 | D10  | C  | 1228628                                | R  | FTN_1157   | 1227077      | 1228891       | F  | 605                    | 1552(1815)   |
| tnfn1_pw060420p03q177 | E10  | C  | 935828                                 | R  | FTN_0880   | 935096       | 936310        | R  | 405                    | 483(1215)  |
| tnfn1_pw060420p03q178 | F10  | C  | 396746                                 | F  | FTN_0397   | 396549       | 397544        | F  | 332                    | 198(996)   |
| tnfn1_pw060420p03q179 | G10  | C  | 1142950                                | R  | FTN_1080   | 1142674      | 1143699       | R  | 342                    | 750(1026)  |
| tnfn1_pw060420p03q180 | H10  | U  | 809021                                 | F  | FTN_0756   | 808202       | 809377        | F  | 392                    | 820(1176)  |
| tnfn1_pw060420p03q181 | A11  | C  | 126244                                 | F  | FTN_0115   | 126046       | 127293        | F  | 416                    | 199(1248)  |
| tnfn1_pw060420p03q182 | B11  | U  | 1478182                                | R  | FTN_1399   | 1477955      | 1478668       | R  | 238                    | 487(714)   |
| tnfn1_pw060420p03q183 | C11  | C  | 1846535                                | R  | FTN_1719   | 1846033      | 1847178       | R  | 382                    | 644(1146)  |
| tnfn1_pw060420p03q184 | D11  | C  | 796523                                 | R  | FTN_0742   | 796240       | 796887        | F  | 216                    | 284(648)   |
| tnfn1_pw060420p03q185 | E11  | C  | 78840                                  | R  | FTN_0065   | 78558        | 78869         | R  | 104                    | 30(312)  |
| tnfn1_pw060420p03q186 | F11  | U  | 435716                                 | F  | FTN_0437   | 435345       | 435932        | F  | 196                    | 372(588)   |
| tnfn1_pw060420p03q187 | G11  | C  | 387043                                 | F  | FTN_0387   | 386852       | 387556        | F  | 235                    | 192(705)   |
| tnfn1_pw060420p03q188 | H11  | U  | 1888731                                | R  | FTN_1759   | 1888512      | 1888901       | R  | 130                    | 171(390)   |
| tnfn1_pw060420p03q189 | A12  | C  | 774422                                 | F  | FTN_0718   | 773937       | 774791        | R  | 285                    | 370(855)   |
| tnfn1_pw060420p03q190 | B12  | C  | 1639711                                | R  | intergenic |              |               |  |                        |  |
| tnfn1_pw060420p03q191 | C12  | C  | 1487842                                | F  | FTN_1410   | 1487622      | 1488059       | F  | 146                    | 221(438)   |
| tnfn1_pw060420p03q192 | D12  | C  | 1446148                                | F  | FTN_1363   | 1446038      | 1446688       | F  | 217                    | 111(651)   |
| tnfn1_pw060420p03q193 | E12  | C  | 825449                                 | R  | FTN_0768   | 825148       | 825621        | R  | 158                    | 173(474)   |
| tnfn1_pw060420p03q194 | F12  | C  | 1645750                                | R  | FTN_1548   | 1645390      | 1646757       | F  | 456                    | 361(1368)  |
| tnfn1_pw060420p03q195 | G12  | C  | 792095                                 | R  | FTN_0738   | 791393       | 792307        | R  | 305                    | 213(915)   |
| tnfn1_pw060420p03q196 | H12  | C  | 242749                                 | F  | FTN_0220   | 241817       | 243205        | F  | 463                    | 933(1389)  |

The Effective Genome Position of Insertion indicates the effective insertion position that is most likely to be functionally relevant in light of the 9-bp Tn5 target-site duplication and the direction of transcription of the predicted gene of insertion. E.g., for genes oriented to the right, the value reported indicates the genomic position of the nucleotide immediately adjacent to the left end of the insertion element when accounting for the 9-bp target site duplication.

**Table 3 - Sequence Mapping Quality Metrics**

| Strain Name           | Well | Junction information | Position in sequence read of last vector nucleotide | Length of match to transposon | Transposon match score | Average phred score for transposon match | Genome position information | Length of match to genome | Genome match score | Average phred score for genome match |
|-----------------------|------|----------------------|---|-------------------------------|------------------------|--|-----------------------------|---------------------------|--------------------|--------------------------------------|
| tnfn1_pw060420p03q101 | A01  | EXACT(0)             | 156   | 152                           | 120                    | 34                                       | EXACT(0)                    | 200                       | 181                | 48                                   |
| tnfn1_pw060420p03q102 | B01  | EXACT(0)             | 156   | 153                           | 111                    | 30                                       | EXACT(0)                    | 200                       | 192                | 54                                   |
| tnfn1_pw060420p03q103 | C01  | EXACT(0)             | 158   | 153                           | 129                    | 34                                       | EXACT(0)                    | 200                       | 190                | 55                                   |
| tnfn1_pw060420p03q104 | D01  | EXACT(0)             | 156   | 153                           | 116                    | 33                                       | EXACT(0)                    | 200                       | 191                | 54                                   |
| tnfn1_pw060420p03q105 | E01  | EXACT(0)             | 156   | 139                           | 86                     | 21                                       | EXACT(0)                    | 200                       | 185                | 47                                   |
| tnfn1_pw060420p03q106 | F01  | EXACT(0)             | 156   | 145                           | 129                    | 36                                       | EXACT(0)                    | 200                       | 191                | 49                                   |
| tnfn1_pw060420p03q107 | G01  | EXACT(0)             | 157   | 152                           | 138                    | 40                                       | EXACT(0)                    | 200                       | 195                | 51                                   |
| tnfn1_pw060420p03q108 | H01  | EXACT(0)             | 157   | 145                           | 119                    | 37                                       | EXACT(0)                    | 199                       | 121                | 25                                   |
| tnfn1_pw060420p03q109 | A02  | EXACT(0)             | 156   | 152                           | 120                    | 28                                       | EXACT(0)                    | 200                       | 188                | 56                                   |
| tnfn1_pw060420p03q110 | B02  | EXACT(0)             | 158   | 153                           | 118                    | 31                                       | EXACT(0)                    | 200                       | 176                | 48                                   |
| tnfn1_pw060420p03q111 | C02  | EXACT(0)             | 156   | 152                           | 118                    | 28                                       | EXACT(0)                    | 200                       | 186                | 51                                   |
| tnfn1_pw060420p03q112 | D02  | EXACT(0)             | 155   | 145                           | 128                    | 35                                       | EXACT(0)                    | 200                       | 195                | 41                                   |
| tnfn1_pw060420p03q113 | E02  | EXACT(0)             | 155   | 152                           | 122                    | 35                                       | EXACT(0)                    | 200                       | 184                | 28                                   |
| tnfn1_pw060420p03q114 | F02  | EXACT(0)             | 155   | 145                           | 128                    | 36                                       | EXACT(0)                    | 201                       | 153                | 43                                   |
| tnfn1_pw060420p03q115 | G02  | EXACT(0)             | 156   | 152                           | 133                    | 37                                       | EXACT(0)                    | 200                       | 180                | 56                                   |
| tnfn1_pw060420p03q116 | H02  | EXACT(0)             | 156   | 145                           | 111                    | 20                                       | EXACT(0)                    | 200                       | 192                | 46                                   |
| tnfn1_pw060420p03q117 | A03  | EXACT(0)             | 157   | 145                           | 98                     | 24                                       | EXACT(0)                    | 200                       | 189                | 50                                   |
| tnfn1_pw060420p03q118 | B03  | EXACT(0)             | 157   | 153                           | 131                    | 40                                       | EXACT(0)                    | 200                       | 186                | 57                                   |
| tnfn1_pw060420p03q119 | C03  | EXACT(0)             | 157   | 145                           | 118                    | 23                                       | EXACT(0)                    | 200                       | 171                | 40                                   |
| tnfn1_pw060420p03q120 | D03  | EXACT(0)             | 157   | 152                           | 126                    | 35                                       | EXACT(0)                    | 200                       | 184                | 56                                   |
| tnfn1_pw060420p03q121 | E03  | EXACT(0)             | 122   | 81                            | 60                     | 21                                       | ESTIMATE(5)                 | 192                       | 157                | 24                                   |
| tnfn1_pw060420p03q122 | F03  | EXACT(0)             | 161   | 155                           | 132                    | 34                                       | EXACT(0)                    | 197                       | 189                | 52                                   |
| tnfn1_pw060420p03q123 | G03  | EXACT(0)             | 155   | 145                           | 113                    | 26                                       | EXACT(0)                    | 200                       | 178                | 45                                   |
| tnfn1_pw060420p03q124 | H03  | EXACT(0)             | 157   | 145                           | 124                    | 35                                       | EXACT(0)                    | 179                       | 165                | 46                                   |
| tnfn1_pw060420p03q125 | A04  | EXACT(0)             | 158   | 150                           | 126                    | 35                                       | EXACT(0)                    | 200                       | 185                | 54                                   |
| tnfn1_pw060420p03q126 | B04  | EXACT(0)             | 158   | 152                           | 133                    | 34                                       | EXACT(0)                    | 200                       | 195                | 55                                   |
| tnfn1_pw060420p03q127 | C04  | EXACT(0)             | 156   | 152                           | 129                    | 35                                       | EXACT(0)                    | 200                       | 177                | 44                                   |
| tnfn1_pw060420p03q128 | D04  | EXACT(0)             | 156   | 145                           | 118                    | 39                                       | EXACT(0)                    | 200                       | 151                | 35                                   |
| tnfn1_pw060420p03q129 | E04  | EXACT(0)             | 158   | 152                           | 134                    | 37                                       | EXACT(0)                    | 200                       | 193                | 50                                   |
| tnfn1_pw060420p03q130 | F04  | EXACT(0)             | 158   | 153                           | 139                    | 35                                       | EXACT(0)                    | 200                       | 195                | 55                                   |
| tnfn1_pw060420p03q131 | G04  | EXACT(0)             | 122   | 119                           | 86                     | 21                                       | EXACT(0)                    | 200                       | 195                | 50                                   |
| tnfn1_pw060420p03q132 | H04  | EXACT(0)             | 122   | 107                           | 66                     | 17                                       | EXACT(0)                    | 200                       | 170                | 32                                   |
| tnfn1_pw060420p03q133 | A05  | EXACT(0)             | 208   | 103                           | 74                     | 20                                       | EXACT(0)                    | 200                       | 188                | 39                                   |
| tnfn1_pw060420p03q134 | B05  | EXACT(0)             | 123   | 112                           | 98                     | 26                                       | EXACT(0)                    | 200                       | 191                | 51                                   |
| tnfn1_pw060420p03q135 | C05  | EXACT(0)             | 125   | 120                           | 97                     | 23                                       | EXACT(0)                    | 200                       | 196                | 53                                   |
| tnfn1_pw060420p03q136 | D05  | EXACT(0)             | 155   | 142                           | 108                    | 30                                       | EXACT(0)                    | 200                       | 189                | 50                                   |
| tnfn1_pw060420p03q137 | E05  | EXACT(0)             | 155   | 150                           | 97                     | 25                                       | EXACT(0)                    | 200                       | 179                | 44                                   |
| tnfn1_pw060420p03q138 | F05  | EXACT(0)             | 155   | 145                           | 94                     | 17                                       | EXACT(0)                    | 200                       | 183                | 39                                   |
| tnfn1_pw060420p03q139 | G05  | EXACT(0)             | 157   | 153                           | 124                    | 34                                       | EXACT(0)                    | 200                       | 182                | 55                                   |
| tnfn1_pw060420p03q140 | H05  | EXACT(0)             | 157   | 154                           | 133                    | 34                                       | EXACT(0)                    | 200                       | 183                | 58                                   |
| tnfn1_pw060420p03q141 | A06  | EXACT(0)             | 156   | 153                           | 129                    | 39                                       | EXACT(0)                    | 199                       | 151                | 42                                   |
| tnfn1_pw060420p03q142 | B06  | EXACT(0)             | 160   | 159                           | 132                    | 31                                       | EXACT(0)                    | 200                       | 191                | 52                                   |
| tnfn1_pw060420p03q143 | C06  | EXACT(0)             | 158   | 153                           | 110                    | 20                                       | EXACT(0)                    | 200                       | 184                | 46                                   |
| tnfn1_pw060420p03q144 | D06  | EXACT(0)             | 158   | 154                           | 136                    | 32                                       | EXACT(0)                    | 200                       | 183                | 46                                   |
| tnfn1_pw060420p03q145 | E06  | EXACT(0)             | 154   | 144                           | 119                    | 37                                       | EXACT(0)                    | 200                       | 167                | 37                                   |
| tnfn1_pw060420p03q146 | F06  | EXACT(0)             | 157   | 153                           | 131                    | 33                                       | EXACT(0)                    | 200                       | 195                | 55                                   |
| tnfn1_pw060420p03q147 | G06  | EXACT(0)             | 159   | 153                           | 140                    | 36                                       | EXACT(0)                    | 200                       | 190                | 51                                   |
| tnfn1_pw060420p03q148 | H06  | EXACT(0)             | 155   | 144                           | 107                    | 36                                       | EXACT(0)                    | 200                       | 186                | 56                                   |

**Table 3 - Sequence Mapping Quality Metrics**

| Strain Name           | Well | Junction information | Position in sequence read of last vector nucleotide | Length of match to transposon | Transposon match score | Average phred score for transposon match | Genome position information | Length of match to genome | Genome match score | Average phred score for genome match |
|-----------------------|------|----------------------|---|-------------------------------|------------------------|--|-----------------------------|---------------------------|--------------------|--------------------------------------|
| tnfn1_pw060420p03q149 | A07  | EXACT(0)             | 158   | 152                           | 122                    | 33                                       | EXACT(0)                    | 200                       | 181                | 46                                   |
| tnfn1_pw060420p03q150 | B07  | EXACT(0)             | 156   | 145                           | 136                    | 39                                       | EXACT(0)                    | 200                       | 182                | 51                                   |
| tnfn1_pw060420p03q151 | C07  | EXACT(0)             | 155   | 145                           | 76                     | 19                                       | EXACT(0)                    | 200                       | 191                | 54                                   |
| tnfn1_pw060420p03q152 | D07  | EXACT(0)             | 159   | 159                           | 142                    | 37                                       | EXACT(0)                    | 200                       | 192                | 46                                   |
| tnfn1_pw060420p03q153 | E07  | EXACT(0)             | 158   | 152                           | 131                    | 30                                       | EXACT(0)                    | 200                       | 194                | 52                                   |
| tnfn1_pw060420p03q154 | F07  | EXACT(0)             | 155   | 145                           | 131                    | 41                                       | EXACT(0)                    | 200                       | 193                | 45                                   |
| tnfn1_pw060420p03q155 | G07  | EXACT(0)             | 157   | 152                           | 127                    | 36                                       | EXACT(0)                    | 200                       | 199                | 51                                   |
| tnfn1_pw060420p03q156 | H07  | EXACT(0)             | 158   | 153                           | 139                    | 40                                       | EXACT(0)                    | 200                       | 178                | 52                                   |
| tnfn1_pw060420p03q157 | A08  | EXACT(0)             | 155   | 145                           | 122                    | 34                                       | ESTIMATE(65)                | 135                       | 123                | 31                                   |
| tnfn1_pw060420p03q158 | B08  | EXACT(0)             | 156   | 152                           | 133                    | 45                                       | EXACT(0)                    | 200                       | 191                | 59                                   |
| tnfn1_pw060420p03q159 | C08  | EXACT(0)             | 156   | 145                           | 117                    | 34                                       | EXACT(0)                    | 200                       | 194                | 49                                   |
| tnfn1_pw060420p03q160 | D08  | EXACT(0)             | 154   | 139                           | 125                    | 36                                       | EXACT(0)                    | 200                       | 188                | 45                                   |
| tnfn1_pw060420p03q161 | E08  | EXACT(0)             | 157   | 142                           | 81                     | 20                                       | EXACT(0)                    | 200                       | 170                | 48                                   |
| tnfn1_pw060420p03q162 | F08  | EXACT(0)             | 158   | 152                           | 135                    | 36                                       | EXACT(0)                    | 200                       | 169                | 57                                   |
| tnfn1_pw060420p03q163 | G08  | EXACT(0)             | 158   | 153                           | 138                    | 38                                       | EXACT(0)                    | 200                       | 184                | 57                                   |
| tnfn1_pw060420p03q164 | H08  | EXACT(0)             | 157   | 153                           | 134                    | 36                                       | EXACT(0)                    | 200                       | 189                | 43                                   |
| tnfn1_pw060420p03q165 | A09  | EXACT(0)             | 155   | 152                           | 121                    | 34                                       | EXACT(0)                    | 200                       | 194                | 55                                   |
| tnfn1_pw060420p03q166 | B09  | EXACT(0)             | 157   | 145                           | 126                    | 29                                       | EXACT(0)                    | 200                       | 193                | 48                                   |
| tnfn1_pw060420p03q167 | C09  | EXACT(0)             | 156   | 152                           | 130                    | 38                                       | EXACT(0)                    | 200                       | 191                | 56                                   |
| tnfn1_pw060420p03q168 | D09  | EXACT(0)             | 154   | 145                           | 113                    | 29                                       | EXACT(0)                    | 200                       | 186                | 53                                   |
| tnfn1_pw060420p03q169 | E09  | EXACT(0)             | 158   | 152                           | 131                    | 36                                       | EXACT(0)                    | 200                       | 191                | 55                                   |
| tnfn1_pw060420p03q170 | F09  | EXACT(0)             | 156   | 145                           | 136                    | 37                                       | EXACT(0)                    | 200                       | 185                | 52                                   |
| tnfn1_pw060420p03q171 | G09  | EXACT(0)             | 156   | 152                           | 122                    | 32                                       | EXACT(0)                    | 200                       | 193                | 54                                   |
| tnfn1_pw060420p03q172 | H09  | EXACT(0)             | 156   | 139                           | 114                    | 39                                       | EXACT(0)                    | 200                       | 195                | 58                                   |
| tnfn1_pw060420p03q173 | A10  | EXACT(0)             | 158   | 114                           | 90                     | 25                                       | EXACT(0)                    | 200                       | 176                | 40                                   |
| tnfn1_pw060420p03q174 | B10  | EXACT(0)             | 156   | 152                           | 126                    | 33                                       | EXACT(0)                    | 200                       | 181                | 56                                   |
| tnfn1_pw060420p03q175 | C10  | EXACT(0)             | 154   | 139                           | 122                    | 38                                       | EXACT(0)                    | 200                       | 189                | 57                                   |
| tnfn1_pw060420p03q176 | D10  | EXACT(0)             | 157   | 150                           | 121                    | 33                                       | EXACT(0)                    | 200                       | 195                | 50                                   |
| tnfn1_pw060420p03q177 | E10  | EXACT(0)             | 158   | 153                           | 128                    | 31                                       | EXACT(0)                    | 200                       | 181                | 55                                   |
| tnfn1_pw060420p03q178 | F10  | EXACT(0)             | 155   | 139                           | 121                    | 34                                       | EXACT(0)                    | 200                       | 188                | 54                                   |
| tnfn1_pw060420p03q179 | G10  | EXACT(0)             | 157   | 148                           | 118                    | 35                                       | EXACT(0)                    | 200                       | 189                | 57                                   |
| tnfn1_pw060420p03q180 | H10  | EXACT(0)             | 157   | 151                           | 120                    | 37                                       | EXACT(0)                    | 200                       | 190                | 47                                   |
| tnfn1_pw060420p03q181 | A11  | EXACT(0)             | 156   | 142                           | 99                     | 21                                       | EXACT(0)                    | 200                       | 187                | 51                                   |
| tnfn1_pw060420p03q182 | B11  | EXACT(0)             | 157   | 152                           | 136                    | 39                                       | EXACT(0)                    | 200                       | 185                | 51                                   |
| tnfn1_pw060420p03q183 | C11  | EXACT(0)             | 160   | 153                           | 127                    | 32                                       | EXACT(0)                    | 200                       | 181                | 57                                   |
| tnfn1_pw060420p03q184 | D11  | EXACT(0)             | 154   | 145                           | 107                    | 28                                       | EXACT(0)                    | 200                       | 181                | 50                                   |
| tnfn1_pw060420p03q185 | E11  | EXACT(0)             | 122   | 119                           | 106                    | 35                                       | EXACT(0)                    | 200                       | 185                | 56                                   |
| tnfn1_pw060420p03q186 | F11  | EXACT(0)             | 120   | 120                           | 105                    | 38                                       | EXACT(0)                    | 200                       | 184                | 50                                   |
| tnfn1_pw060420p03q187 | G11  | EXACT(0)             | 123   | 120                           | 104                    | 32                                       | EXACT(0)                    | 200                       | 198                | 54                                   |
| tnfn1_pw060420p03q188 | H11  | EXACT(0)             | 120   | 120                           | 101                    | 27                                       | EXACT(0)                    | 200                       | 193                | 40                                   |
| tnfn1_pw060420p03q189 | A12  | EXACT(0)             | 216   | 101                           | 81                     | 20                                       | EXACT(0)                    | 200                       | 185                | 50                                   |
| tnfn1_pw060420p03q190 | B12  | EXACT(0)             | 120   | 120                           | 105                    | 38                                       | EXACT(0)                    | 200                       | 199                | 52                                   |
| tnfn1_pw060420p03q191 | C12  | EXACT(0)             | 120   | 112                           | 96                     | 34                                       | EXACT(0)                    | 200                       | 184                | 50                                   |
| tnfn1_pw060420p03q192 | D12  | EXACT(0)             | 120   | 112                           | 102                    | 32                                       | EXACT(0)                    | 200                       | 195                | 45                                   |
| tnfn1_pw060420p03q193 | E12  | EXACT(0)             | 121   | 120                           | 105                    | 37                                       | EXACT(0)                    | 200                       | 177                | 43                                   |
| tnfn1_pw060420p03q194 | F12  | EXACT(0)             | 156   | 145                           | 134                    | 36                                       | EXACT(0)                    | 200                       | 189                | 48                                   |
| tnfn1_pw060420p03q195 | G12  | EXACT(0)             | 157   | 138                           | 106                    | 22                                       | EXACT(0)                    | 200                       | 177                | 49                                   |
| tnfn1_pw060420p03q196 | H12  | EXACT(0)             | 155   | 116                           | 113                    | 38                                       | EXACT(0)                    | 200                       | 194                | 56                                   |