## Supplementary Information

# Transcriptome analysis of Xanthomonas fragariae in strawberry leaves 

Joanna Puławska ${ }^{1, *}$, Monika Kałużna ${ }^{1}$, Wojciech Warabieda ${ }^{1}$, Joël F. Pothier ${ }^{2}$, Michael Gétaz ${ }^{2}$, Jan M. van der Wolf ${ }^{3}$

${ }^{1}$ Research Institute of Horticulture, Department of Phytopathology, 96-100 Skierniewice, Poland
${ }^{2}$ Environmental Genomics and Systems Biology Research Group, Institute for Natural Resource Sciences, Zurich University of Applied Sciences (ZHAW), Wädenswil, Switzerland
${ }^{3}$ Wageningen University \& Research, Wageningen, The Netherlands
*Corresponding author: joanna.pulawska@inhort.pl

Table S1. Metrics of RNA-seq data.

| Sample | Total reads | Number of mapped reads to Xf genome ${ }^{1}$ | \% of mapped reads to $X f$ genome | Unmapped reads to $X f$ genome | \% of <br> reads aligned to rRNA operon | Mapping to genes ${ }^{2}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | Mean <br> read length (bp) | Total read length (bp) |
| Xf-bact-1 | 4,770,496 | 4,553,963 | 95.46 | 216,533 | 0.53 | 162.19 | 738,586,546 |
| Xf-bact-2 | 6,399,558 | 6,059,845 | 94.69 | 339,713 | 6.37 | 161.69 | 989,760,152 |
| Xf-in <br> planta-1 | 5,625,304 | 5,091,623 | 90.51 | 800,879 | 0.32 | 165.28 | 854,782,067 |
| $\begin{gathered} \text { Xf-in } \\ \text { planta-2 } \end{gathered}$ | 6,121,370 | 5,500,747 | 89.86 | 719,953 | 0.40 | 152.42 | 848,151,476 |
| Xf-in <br> planta-3 | 6,554,258 | 5,835,096 | 89.03 | 719,162 | 0.31 | 177.34 | 1,049,304,221 |

1 Genbank accession numbers LT853880 and LT853881
2 Used in RNA-seq analysis.

Table S2. Differentially expressed genes of $X$. fragariae IPO 3485 genes between Wilbrink's medium and 15 days after inoculation of strawberry cv. Elsanta leaves









| NBC2815_01468 | NBC2815_01468 | -4.25 | $9.05 \mathrm{E}-15$ | ubiquinol cytochrome C oxidoreductase cytochrome B subunit |
| :---: | :---: | :---: | :---: | :---: |
| petC | NBC2815_01469 | -2.91 | 8.26E-12 | ubiquinol cytochrome C oxidoreductase, cytochrome C 1 subunit |
| sspA | NBC2815_01470 | -3.12 | 4.68E-14 | stringent starvation protein a |
| NBC2815_01471 | NBC2815_01471 | -1.60 | 4.09E-03 | CIPXP protease specificity-enhancing factor |
| NBC2815_01472 | NBC2815_01472 | 1.90 | 9.47E-04 | Hypothetical Protein |
| Ihr1 | NBC2815_01473 | 3.39 | 1.51E-11 | ATP-dependent DNA helicase |
| NBC2815_01474 | NBC2815_01474 | 3.08 | 3.49E-13 | 3-methyladenine DNA glycosylase |
| NBC2815_01477 | NBC2815_01477 | -2.97 | $6.03 \mathrm{E}-11$ | virulence regulator |
| NBC2815_01485 | NBC2815_01485 | -2.44 | 7.36E-08 | signal peptidase I |
| NBC2815_01486 | NBC2815_01486 | -3.94 | $6.27 \mathrm{E}-14$ | Hypothetical Protein |
| era | NBC2815_01488 | -2.32 | 1.90E-08 | GTP-binding protein Era |
| reco | NBC2815_01489 | -1.54 | 3.71E-02 | DNA repair protein RecO |
| rumA | NBC2815_01491 | -3.00 | 3.09E-11 | 23 S rRNA 5-methyluridine methyltransferase |
| NBC2815_01492 | NBC2815_01492 | -3.21 | 2.59E-08 | adenylate cyclase /EC_number="4.6.1.1 |
| deod | NBC2815_01497 | -1.73 | 1.48E-04 | 5'-methylthioadenosine phosphorylase |
| scof | NBC2815_01498 | -4.38 | 3.14E-17 | cold shock protein |
| NBC2815_01500 | NBC2815_01500 | 1.68 | 7.62E-04 | helicase-like protein |
| NBC2815_01501 | NBC2815_01501 | 2.61 | $1.33 \mathrm{E}-08$ | ATP-dependent DNA ligase /EC_number="6.5.1.1 |
| NBC2815_01502 | NBC2815_01502 | 3.60 | 6.98E-09 | hypothetical protein |
| NBC2815_01503 | NBC2815_01503 | 3.53 | 3.11E-13 | mRNA 3 '-end processing factor |
| NBC2815_01504 | NBC2815_01504 | 5.44 | 1.12E-34 | Hypothetical Protein |
| NBC2815_01505 | NBC2815_01505 | 4.35 | 1.89E-14 | Hypothetical Protein |
| NBC2815_01506 | NBC2815_01506 | 4.46 | 4.09E-15 | lipoprotein |
| NBC2815_01508 | NBC2815_01508 | -1.66 | 1.40E-03 | acetoacetyl-CoA thiolase |
| NBC2815_01509 | NBC2815_01509 | -2.80 | 4.18E-06 | ISX01 transposase, IS5 family |
| NBC2815_01510 | NBC2815_01510 | 1.80 | 1.19E-04 | leucine dehydrogenase |
| NBC2815_01511 | NBC2815_01511 | 2.71 | 6.86E-06 | Hypothetical Protein |
| NBC2815_01513 | NBC2815_01513 | 3.41 | $1.59 \mathrm{E}-11$ | Hypothetical Protein |
| NBC2815_01514 | NBC2815_01514 | -1.91 | 2.26E-04 | Hypothetical Protein |
| NBC2815_01515 | NBC2815_01515 | -2.12 | 5.33E-03 | transposase |
| NBC2815_01517 | NBC2815_01517 | -1.79 | 3.05E-05 | ATPase |
| dniR_2 | NBC2815_01518 | -2.27 | 2.12E-09 | membrane-bound lytic murein transglycosylase D |
| NBC2815_01519 | NBC2815_01519 | -2.03 | 1.65E-05 | protein FimV |
| NBC2815_01520 | NBC2815_01520 | -1.56 | 8.95E-03 | glyoxalase-bleomycin resistance protein-dioxygenase superfamily protein |
| truA | NBC2815_01521 | 1.89 | 3.61E-05 | tRNA pseudouridine synthase A |
| NBC2815_01522 | NBC2815_01522 | 2.33 | 2.73E-07 | N-(5'-phosphoribosyl)anthranilate isomerase /EC_number="5.3.1.24 |
| NBC2815_01525 | NBC2815_01525 | -1.59 | 4.02E-02 | ISX01 transposase, IS5 family |
| NBC2815_01527 | NBC2815_01527 | 1.90 | 2.13E-03 | transcriptional regulator |
| accD | NBC2815_01531 | -1.64 | 3.38E-03 | Acyl-CoA carboxyltransferase beta chain |
| g/m M | NBC2815_01532 | -1.88 | $4.13 \mathrm{E}-05$ | phosphoglucosamine mutase |
| NBC2815_01533 | NBC2815_01533 | -1.69 | 4.31E-04 | oxidoreductase |
| tpiA | NBC2815_01539 | -1.90 | 1.55E-05 | triosephosphate isomerase |
| nuoa | NBC2815_01542 | -1.90 | 6.10E-05 | NADH dehydrogenase subunit A |
| пиов | NBC2815_01543 | -2.13 | 3.13E-06 | NADH dehydrogenase subunit B |
| NBC2815_01544 | NBC2815_01544 | -2.28 | 2.19E-07 | NADH dehydrogenase subunit C/EC_number="1.6.5.11 |
| NBC2815_01545 | NBC2815_01545 | -3.01 | 7.10E-12 | NADH dehydrogenase subunit $\mathrm{D} / \mathrm{EC}$ _number="1.6.5.11 |
| nuoe | NBC2815_01546 | -2.98 | 1.52E-11 | NADH-quinone oxidoreductase chain e (nadh dehydrogenasel chain e) (ndh-1, chain e) (nu05) oxidoreductase |
| nuof | NBC2815_01547 | -3.07 | 2.88E-12 | NADH-quinone oxidoreductase chain $f$ ( adh dehydrogenasel chain $f$ ) (ndh-1, chain $f$ ) (nuo6) oxidoreductase |
| NBC2815_01548 | NBC2815_01548 | -2.87 | 1.08E-10 | NADH dehydrogenase subunit G/EC_number="1.6.5.3 |
| пион | NBC2815_01549 | -3.25 | $1.04 \mathrm{E}-13$ | NADH-quinone oxidoreductase subunit h (nadh dehydrogenaselsubunit h ) (ndh-1 subunit h ) (nuo8) oxidoreductase |
| NBC2815_01550 | NBC2815_01550 | -2.92 | $1.14 \mathrm{E}-12$ | NADH dehydrogenase subunit I/EC_number="1.6.5.3 |
| nuos | NBC2815_01551 | -2.64 | $2.66 \mathrm{E}-11$ | NADH dehydrogenase subunit J |
| nuok | NBC2815_01552 | -3.44 | 9.20E-18 | NADH-quinone oxidoreductase chain k (nadh dehydrogenasel chain k ) (ndh-1, chain k ) (nuo11) oxidoreductase |
| NBC2815_01553 | NBC2815_01553 | -3.04 | 4.13E-11 | NADH dehydrogenase subunit L |
| NBC2815_01554 | NBC2815_01554 | -3.77 | $0.00 \mathrm{E}+00$ | NADH:ubiquinone oxidoreductase subunit M/EC_number="1.6.6.11 |
| NBC2815_01555 | NBC2815_01555 | -5.06 | $0.00 \mathrm{E}+00$ | NADH-ubiquinone oxidoreductase $\mathrm{Nqo14}$ subunit |
| NBC2815_01557 | NBC2815_01557 | -1.63 | 8.54E-04 | ribosome maturation protein RimP |
| nusA | NBC2815_01558 | -1.56 | 6.38E-03 | transcription elongation protein nusa |
| infB | NBC2815_01559 | -1.76 | $1.13 \mathrm{E}-03$ | translation initiation factor IF-2 |
| rpso | NBC2815_01562 | -1.65 | $1.93 \mathrm{E}-03$ | 30 S ribosomal protein 515 |
| NBC2815_01563 | NBC2815_01563 | -2.49 | 4.44E-08 | polynucleotide phosphorylase /EC_number="2.7.7.8 |
| NBC2815_01564 | NBC2815_01564 | 37.34 | 1.25E-02 | transposase |
| NBC2815_01566 | NBC2815_01566 | -2.89 | $2.03 \mathrm{E}-13$ | nicotinate-nucleotide pyrophosphorylase |
| NBC2815_01567 | NBC2815_01567 | -5.23 | 2.48E-16 | Hypothetical Protein |
| purE | NBC2815_01568 | -2.71 | 1.83E-13 | N5-carboxyaminoimidazole ribonucleotide mutase |
| NBC2815_01569 | NBC2815_01569 | -2.52 | 6.95E-11 | phosphoribosylaminoimidazole carboxylase ATPase subunit /EC_number="4.1.1.21 |
| NBC2815_01570 | NBC2815_01570 | -1.85 | 4.59E-03 | iron superoxide dismutase |
| NBC2815_01571 | NBC2815_01571 | -3.46 | 8.48E-10 | glutaredoxin-like protein |
| NBC2815_01573 | NBC2815_01573 | -3.48 | 1.01E-06 | Integral membrane protein of the Marc family protein |
| NBC2815_01575 | NBC2815_01575 | -2.34 | $2.26 \mathrm{E}-09$ | Rossmann fold nucleotide-binding protein |
| NBC2815_01576 | NBC2815_01576 | -3.35 | 3.76E-16 | alginate biosynthesis protein |
| NBC2815_01577 | NBC2815_01577 | -6.68 | 4.62E-30 | pre-pilin like leader sequence |
| pilW | NBC2815_01578 | -30.62 | 1.15E-56 | type IV pilus assembly protein PilW |
| NBC2815_01579 | NBC2815_01579 | -21.61 | $0.00 \mathrm{E}+00$ | PilY1 protein |
| pilE | NBC2815_01580 | -12.95 | 8.30E-39 | type IV pilin pile protein |
| NBC2815_01581 | NBC2815_01581 | -2.79 | $2.13 \mathrm{E}-13$ | IS1478 transposase |
| NBC2815_01586 | NBC2815_01586 | -2.45 | 2.12E-09 | DNA helicase-like protein |
| NBC2815_01588 | NBC2815_01588 | 2.18 | $2.85 \mathrm{E}-03$ | beta alanine--pyruvate transaminase /EC_number="2.6.1.18 |
| NBC2815_01589 | NBC2815_01589 | -3.29 | 2.99E-16 | integral membrane transporter |
| NBC2815_01590 | NBC2815_01590 | -1.55 | 1.50E-02 | integral membrane transporter |
| yhjE | NBC2815_01594 | -3.34 | 3.69E-03 | metabolite transport protein |
| NBC2815_01598 | NBC2815_01598 | 1.94 | $2.00 \mathrm{E}-05$ | oxidoreductase |
| NBC2815_01600 | NBC2815_01600 | -1.70 | 1.24E-03 | glutamine synthetase |
| gabD | NBC2815_01610 | 2.08 | 3.55E-04 | succinate-semialdehyde dehydrogenase |
| NBC2815_01614 | NBC2815_01614 | 1.64 | 3.76E-03 | multidrug resistance protein |
| NBC2815_01615 | NBC2815_01615 | 3.20 | 1.06E-11 | TetR/AcrR family transcriptional regulator |
| NBC2815_01616 | NBC2815_01616 | -2.17 | 3.18E-06 | NAD-specific glutamate dehydrogenase/EC_number="1.4.1.2 |
| NBC2815_01618 | NBC2815_01618 | -1.80 | 8.95E-04 | transposase |
| NBC2815_01620 | NBC2815_01620 | 2.47 | 1.20E-07 | tis1421-transposase b |
| NBC2815_01621 | NBC2815_01621 | 3.82 | 2.89E-07 | HrpF protein |
| NBC2815_01622 | NBC2815_01622 | 2.13 | 2.34E-07 | IS1478 transposase |
| NBC2815_01626 | NBC2815_01626 | 2.76 | 3.85E-07 | putative replication protein |
| NBC2815_01627 | NBC2815_01627 | 3.03 | $2.86 \mathrm{E}-04$ | hypothetical protein |
| NBC2815_01630 | NBC2815_01630 | 4.94 | 1.82E-06 | cytochrome D ubiquinol oxidase subunit I |




| NBC2815_01988 | NBC2815_01988 | 2.38 | $2.31 \mathrm{E}-08$ | phage replication protein RstA |
| :---: | :---: | :---: | :---: | :---: |
| NBC2815_01989 | NBC2815_01989 | 3.59 | 1.21E-02 | hypothetical protein |
| NBC2815_01991 | NBC2815_01991 | 2.17 | 4.33E-04 | L-sorbosone dehydrogenase |
| NBC2815_01992 | NBC2815_01992 | 3.67 | 1.09E-05 | L-sorbosone dehydrogenase |
| motC | NBC2815_01995 | 17.60 | 2.04E-20 | flagellar motor protein |
| NBC2815_01996 | NBC2815_01996 | 51.07 | 5.51E-22 | flagellar motor protein MotD |
| NBC2815_01997 | NBC2815_01997 | 23.68 | 1.79E-17 | ParA family ATPase |
| NBC2815_01998 | NBC2815_01998 | 28.05 | 5.46E-19 | chemotaxis protein |
| NBC2815_01999 | NBC2815_01999 | 31.44 | 2.16E-20 | anti-sigma factor antagonist-like protein |
| cheY1 | NBC2815_02000 | 17.69 | 9.86E-17 | two-component system regulatory protein |
| cheA | NBC2815_02001 | 20.29 | $1.28 \mathrm{E}-17$ | Chemotaxis protein histidine kinase |
| NBC2815_02002 | NBC2815_02002 | 9.77 | 5.26E-08 | Hypothetical Protein |
| NBC2815_02003 | NBC2815_02003 | 58.87 | 6.60E-38 | Hypothetical Protein |
| NBC2815_02004 | NBC2815_02004 | 30.70 | 2.72E-23 | chemotaxis protein |
| NBC2815_02005 | NBC2815_02005 | 12.16 | 5.12E-17 | methyl-accepting chemotaxis protein |
| tsr6 | NBC2815_02006 | 11.70 | $2.31 \mathrm{E}-15$ | membrane-anchored chemotaxis sensory transducer |
| tsr | NBC2815_02007 | 17.87 | 4.57E-18 | chemotaxis protein |
| NBC2815_02008 | NBC2815_02008 | 2.84 | 2.62E-07 | methyl-accepting chemotaxis protein |
| NBC2815_02009 | NBC2815_02009 | 14.62 | 4.59E-17 | methyl-accepting chemotaxis protein |
| pilz | NBC2815_02010 | 17.32 | 6.76E-10 | type IV pilus assembly protein Pilz |
| NBC2815_02011 | NBC2815_02011 | 2.56 | 1.01E-02 | type IV pilus assembly protein Pilz |
| NBC2815_02012 | NBC2815_02012 | 24.10 | $2.40 \mathrm{E}-16$ | chemotaxis signal transduction protein |
| NBC2815_02013 | NBC2815_02013 | 16.81 | 2.08E-10 | Hypothetical Protein |
| NBC2815_02014 | NBC2815_02014 | 39.02 | 1.96E-22 | chemotaxis protein methyltransferase |
| NBC2815_02015 | NBC2815_02015 | 6.85 | 4.37E-18 | chemoreceptor glutamine deamidase CheD |
| NBC2815_02016 | NBC2815_02016 | 7.72 | 2.80E-17 | chemotaxis-specific methylesterase/EC_number="3.1.1.61 |
| NBC2815_02017 | NBC2815_02017 | 7.11 | 2.05E-14 | c-di-GMP phosphodiesterase or signal transduction protein |
| acnA | NBC2815_02022 | 4.50 | 3.05E-15 | Aconitase A |
| NBC2815_02023 | NBC2815_02023 | 6.37 | 1.10E-18 | Hypothetical Protein |
| rpfF | NBC2815_02025 | -1.87 | 1.96E-04 | enoyl-CoA hydratase |
| rpfg | NBC2815_02028 | -1.70 | 1.32E-04 | response regulator |
| lys | NBC2815_02029 | -1.76 | 1.34E-04 | lysyl-tRNA synthetase |
| prfB | NBC2815_02030 | -1.92 | 3.17E-05 | peptide chain release factor 2 |
| carB | NBC2815_02034 | -1.76 | 2.42E-03 | carbamoyl-phosphate synthetase large chain protein |
| NBC2815_02036 | NBC2815_02036 | -1.75 | 4.72E-03 | hypothetical protein |
| NBC2815_02038 | NBC2815_02038 | -1.63 | 7.27E-04 | dihydrodipicolinate reductase /EC_number="1.17.1.8 |
| NBC2815_02039 | NBC2815_02039 | 2.36 | 9.58E-05 | valine-pyruvate aminotransferase |
| NBC2815_02040 | NBC2815_02040 | 2.83 | $2.14 \mathrm{E}-05$ | Hypothetical Protein |
| $f e o b$ | NBC2815_02041 | 3.14 | 5.08E-12 | ferrous iron transport protein $B$ |
| $f e o A$ | NBC2815_02042 | 2.62 | 8.02E-10 | ferrous iron uptake protein |
| NBC2815_02043 | NBC2815_02043 | -1.84 | 1.69E-04 | enoyl-CoA hydratase |
| NBC2815_02044 | NBC2815_02044 | -1.75 | $1.43 \mathrm{E}-03$ | hydroxymethyIglutaryl-CoA lyase |
| NBC2815_02045 | NBC2815_02045 | -1.72 | 1.88E-04 | 3-hydroxyacyl-CoA dehydrogenase |
| NBC2815_02046 | NBC2815_02046 | -2.58 | $1.42 \mathrm{E}-11$ | elongation factor $P$ |
| NBC2815_02047 | NBC2815_02047 | 1.56 | 3.67E-03 | Hypothetical Protein |
| NBC2815_02048 | NBC2815_02048 | 1.85 | 3.75E-04 | Hypothetical Protein |
| NBC2815_02052 | NBC2815_02052 | -2.49 | 4.68E-10 | cationic amino acid transporter |
| yhdG_2 | NBC2815_02053 | -2.66 | 3.13E-11 | cationic amino acid transporter |
| NBC2815_02054 | NBC2815_02054 | -2.06 | $1.23 \mathrm{E}-07$ | methylthioribulose-1-phosphate dehydratase |
| NBC2815_02055 | NBC2815_02055 | -1.68 | $2.26 \mathrm{E}-04$ | dioxygenase |
| NBC2815_02056 | NBC2815_02056 | -1.80 | 3.04E-04 | enolase |
| NBC2815_02057 | NBC2815_02057 | -1.57 | 4.55E-03 | Hypothetical Protein |
| NBC2815_02058 | NBC2815_02058 | 2.08 | 1.97E-02 | IS1478 transposase |
| NBC2815_02059 | NBC2815_02059 | 1.95 | 1.90E-04 | hypothetical protein |
| NBC2815_02062 | NBC2815_02062 | 3.07 | 3.02E-11 | imidazole glycerol phosphate synthase subunit HisF/EC_number="4.1.3.- |
| NBC2815_02063 | NBC2815_02063 | 3.71 | 1.34E-11 | 1-(5-phosphoribosyl)-5-[(5-phosphoribosylamino)methylideneamino] imidazole-4-carboxamide isomerase /EC_number="5.3.1.1 |
| hisH | NBC2815_02064 | 5.75 | 1.34E-24 | imidazole glycerol phosphate synthase subunit Hish |
| NBC2815_02065 | NBC2815_02065 | 4.71 | 4.82E-21 | imidazole glycerol-phosphate dehydratase/histidinol phosphatase |
| hisc | NBC2815_02066 | 6.08 | 5.11E-29 | histidinol-phosphate aminotransferase |
| hisD | NBC2815_02067 | 7.70 | 3.93E-38 | bifunctional histidinal dehydrogenase/ histidinol dehydrogenase |
| hisG | NBC2815_02068 | 5.76 | $2.63 \mathrm{E}-21$ | ATP phosphoribosyltransferase |
| NBC2815_02069 | NBC2815_02069 | 7.75 | 1.70E-09 | TrpR-like protein Yerc/YecD |
| NBC2815_02078 | NBC2815_02078 | -2.21 | 6.39E-06 | putative plasmid stability protein |
| NBC2815_02083 | NBC2815_02083 | -6.47 | 4.29E-14 | hypothetical protein |
| guad_2 | NBC2815_02087 | -1.63 | 1.11E-03 | GMP synthase |
| guab | NBC2815_02088 | -1.64 | 4.30E-03 | inosine-5-monophosphate dehydrogenase |
| NBC2815_02089 | NBC2815_02089 | -1.77 | 3.58E-04 | bifunctional 5,10-methylene-tetrahydrofolate dehydrogenase/ 5,10-methylene-tetrahydrofolate cyclohydrolase |
| cmk | NBC2815_02104 | 1.65 | $3.69 \mathrm{E}-03$ | cytidylate kinase |
| NBC2815_02110 | NBC2815_02110 | -1.53 | 8.82E-03 | pheromone shutdown protein |
| NBC2815_02113 | NBC2815_02113 | -1.58 | $2.50 \mathrm{E}-03$ | sugar $A B C$ transporter permease |
| male | NBC2815_02115 | -1.88 | 5.26E-05 | sugar $A B C$ transporter substrate-binding protein |
| NBC2815_02118 | NBC2815_02118 | 1.51 | $2.23 \mathrm{E}-02$ | Lacl family transcriptional regulator |
| scpa | NBC2815_02121 | 2.83 | 2.21E-11 | segregation and condensation protein A |
| NBC2815_02122 | NBC2815_02122 | 1.76 | 1.83E-04 | transcriptional regulator containing the HTH domain protein |
| NBC2815_02123 | NBC2815_02123 | 1.66 | 4.24E-03 | pseudouridylate synthase |
| NBC2815_02126 | NBC2815_02126 | -2.61 | 7.21E-07 | hydrolase |
| ybdL | NBC2815_02127 | -2.58 | 4.25E-11 | aminotransferase |
| ccmA | NBC2815_02128 | -2.44 | 1.06E-06 | cytochrome c biogenesis protein CcmA |
| NBC2815_02129 | NBC2815_02129 | -2.27 | 4.92E-04 | heme exporter protein CcmB |
| ccmD2 | NBC2815_02131 | -1.93 | $2.95 \mathrm{E}-02$ | heme exporter protein D (c-type cytochrome biogenesis protein CcmD) |
| NBC2815_02132 | NBC2815_02132 | -2.37 | 5.86E-06 | cytochrome c-type biogenesis protein CcmE |
| NBC2815_02133 | NBC2815_02133 | -1.78 | 1.97E-04 | C-type cytochrome biogenesis membrane protein |
| NBC2815_02134 | NBC2815_02134 | -4.00 | 1.34E-18 | C-type cytochrome biogenesis protein/thioredoxin |
| NBC2815_02135 | NBC2815_02135 | -3.39 | 3.00E-12 | C-type cytochrome biogenesis protein |
| cych | NBC2815_02136 | -1.58 | 4.52E-02 | C-type cytochrome biogenesis protein |
| NBC2815_02139 | NBC2815_02139 | -2.55 | 3.82E-02 | IS1478 transposase |
| NBC2815_02144 | NBC2815_02144 | 5.58 | 1.36E-14 | methyl-accepting chemotaxis protein |
| NBC2815_02145 | NBC2815_02145 | 2.38 | $9.60 \mathrm{E}-07$ | Hypothetical Protein |
| NBC2815_02146 | NBC2815_02146 | 2.82 | $1.32 \mathrm{E}-07$ | Hypothetical Protein |
| NBC2815_02148 | NBC2815_02148 | 1.67 | 5.92E-04 | lipoprotein |
| surE | NBC2815_02150 | -1.56 | 2.76E-03 | stationary phase survival protein Sure |
| truD | NBC2815_02152 | -1.66 | 1.05E-02 | tRNA pseudouridine synthase D |
| ispF | NBC2815_02153 | -1.94 | $1.17 \mathrm{E}-02$ | 2-C-methyl-D-erythritol 2,4-cyclodiphosphate synthase |
| ispD | NBC2815_02154 | -2.43 | 1.90E-10 | 2-C-methyl-D-erythritol 4-phosphate cytidylyltransferase |











| NBC2815_03942 | NBC2815_03942 | -1.64 | 3.04E-04 | hypothetical protein |
| :---: | :---: | :---: | :---: | :---: |
| NBC2815_03943 | NBC2815_03943 | 5.08 | $2.48 \mathrm{E}-02$ | Hypothetical Protein |
| NBC2815_03946 | NBC2815_03946 | 2.85 | $5.82 \mathrm{E}-10$ | putative signal protein with GAF, PAS(PAC) and GGDEF domains |
| NBC2815_03947 | NBC2815_03947 | 1.64 | $1.10 \mathrm{E}-03$ | glycerate kinase |
| NBC2815_03950 | NBC2815_03950 | -1.59 | $2.25 \mathrm{E}-03$ | oxidoreductase |
| NBC2815_03951 | NBC2815_03951 | 1.68 | 3.99E-04 | export protein |
| g/pQ | NBC2815_03952 | 2.34 | 1.17E-03 | periplasmic glycerophosphodiester phosphodiesterase |
| trmE | NBC2815_03957 | 1.90 | $4.65 \mathrm{E}-05$ | tRNA modification GTPase TrmE |
| rpmH | NBC2815_03960 | 1.69 | $5.21 \mathrm{E}-03$ | 50S ribosomal protein L34 |
| NBC2815_04001 | NBC2815_04001 | 3.51 | $1.06 \mathrm{E}-15$ | Putative replication protein |
| NBC2815_04003 | NBC2815_04003 | 1.95 | $2.13 \mathrm{E}-02$ | hypothetical protein |
| trag | NBC2815_04004 | 2.37 | $2.17 \mathrm{E}-07$ | Type IV secretion system protein VirD4 |
| NBC2815_04005 | NBC2815_04005 | 2.16 | $2.54 \mathrm{E}-07$ | hypothetical protein |
| NBC2815_04008 | NBC2815_04008 | 6.75 | $2.43 \mathrm{E}-23$ | hypothetical protein |
| NBC2815_04009 | NBC2815_04009 | 6.56 | 5.49E-28 | Site-specific recombinase |
| NBC2815_04010 | NBC2815_04010 | 2.18 | 1.36E-04 | Plasmid partition protein |
| NBC2815_04011 | NBC2815_04011 | 1.70 | 3.13E-02 | hypothetical protein |
| NBC2815_04020 | NBC2815_04020 | -1.64 | 9.83E-04 | Hypothetical Protein |
| NBC2815_04022 | NBC2815_04022 | 3.19 | 5.26E-05 | hypothetical protein |
| NBC2815_04023 | NBC2815_04023 | 1.87 | $1.33 \mathrm{E}-04$ | hypothetical protein |
| NBC2815_04024 | NBC2815_04024 | 2.30 | 1.97E-06 | Hypothetical protein |
| NBC2815_04026 | NBC2815_04026 | 3.20 | 6.94E-10 | hypothetical protein |
| NBC2815_04027 | NBC2815_04027 | 4.13 | 6.68E-15 | Site-specific recombinase |
| NBC2815_04028 | NBC2815_04028 | 4.42 | $1.91 \mathrm{E}-06$ | hypothetical protein |
| NBC2815_04031 | NBC2815_04031 | -2.59 | $2.88 \mathrm{E}-12$ | partition protein C |

* Values below 0 mean that the gene has a lower expression in planta than in Wilbrink's medium; values over 0 mean that the gene has higher expression in planta than in Wilbrink's medium

Table S3. Enriched COG/eggNOG categories among commonly up- and down-regulated genes of $X$. fragariae in planta vs. in pure bacterial culture

| COG/eggNOG | Enrichment ratio* | FDR-derived p-values |
| :---: | :---: | :---: |
| Over-represented COGs in up-regulated genes |  |  |
| N - cell motility | 3.03 | $2.53 \mathrm{E}-19$ |
| T - signal transduction mechanisms | 1.58 | $2.73 \mathrm{E}-05$ |
| P - inorganic ion transport and metabolism | 1.29 | 0.021 |
| K - transcription | 1.27 | 0.029 |
| G - carbohydrate transport and metabolism | 1.22 | 0.0325 |
| Over-represented COGs in down-regulated genes |  |  |
| C - energy production and conversion | 1.75 | $3.73 \mathrm{E}-06$ |
| I - lipid transport and metabolism | 1.95 | $3.73 \mathrm{E}-06$ |
| F - nucleotide transport and metabolism | 1.90 | $0.13 \mathrm{E}-03$ |
| E-amino acid transport and metabolism | 1.50 | $0.15 \mathrm{E}-03$ |
| J - translation | 1.51 | $0.42 \mathrm{E}-03$ |
| U-intracellular trafficking and secretion | 1.48 | $0.75 \mathrm{E}-02$ |
| M - cell wall/membrane/envelope biogenesis | 1.16 | 0.049 |

[^0]Table S4. Enriched secondary KEGG pathways among commonly up- and down-regulated genes of $X$. fragariae in planta vs. in pure bacterial culture

| Secondary KEGG pathway | Enrichment <br> ratio $^{*}$ | FDR-derived <br> $\boldsymbol{p}$-values |
| :--- | :--- | :---: |
| Over-represented KEGGs among up-regulated genes |  |  |
|  |  |  |
| Flagellar assembly | 4.45 | $9.86 \mathrm{E}-17$ |
| Two-component system | 1.95 | $0.73 \mathrm{E}-03$ |
| Bacterial chemotaxis | 4.45 | $0.97 \mathrm{E}-03$ |
| Sulfur metabolism | 3.18 | $0.28 \mathrm{E}-02$ |

Over-represented KEGGs among down- regulated genes

| Oxidative phosphorylation | 2.65 | $3.35 \mathrm{E}-13$ |
| :--- | :--- | :--- |
| Purine metabolism | 1.64 | $8.913 \mathrm{E}-03$ |
| Aminoacyl-tRNA biosynthesis | 2.00 | $1.515 \mathrm{E}-02$ |

*Enrichment ratio $=$ proportion of secondary KEGG pathway X in the group of analysed set of $X$. fragariae differentially expressed genes/ proportion of secondary KEGG pathway X in $X$. fragariae genome

Table S5. Top 20 up-regulated X. fragariae genes in planta

| Gene | Fold <br> change | FDR $\boldsymbol{p}$-value <br> correction | Product |
| :---: | :---: | :---: | :--- |
| NBC2815_00636 | 105.9199 | $6.89 \mathrm{E}-65$ | NADPH-sulfite reductase flavoprotein subunit |
| flhF | 62.35954 | $1.37 \mathrm{E}-42$ | flagellar gtp-binding protein flhf |
| NBC2815_02003 | 58.87432 | 6.6E-38 | Hypothetical Protein |
| NBC2815_03701 | 56.85988 | $7.57 \mathrm{E}-19$ | Hypothetical Protein |
| NBC2815_01996 | 51.0737 | $5.51 \mathrm{E}-22$ | flagellar motor protein MotD |
| cysI | 50.8429 | $3.4 \mathrm{E}-71$ | sulfite reductase (NADPH) hemoprotein subunit beta |
| ahpF | 45.66229 | $1.33 \mathrm{E}-85$ | alkyl hydroperoxide reductase |
| NBC2815_01818 | 43.42204 | $1.32 \mathrm{E}-30$ | RNA polymerase sigma factor |
| NBC2815_01850 | 43.38369 | $3.1 \mathrm{E}-22$ | flagellar protein |
| NBC2815_00181 | 42.11746 | $1.39 \mathrm{E}-56$ | ankyrin-like protein |
| NBC2815_01848 | 40.61609 | $5.26 \mathrm{E}-25$ | flagellar protein |
| NBC2815_02014 | 39.01692 | $1.96 \mathrm{E}-22$ | chemotaxis protein methyltransferase |
| flgJ | 37.95125 | $1.37 \mathrm{E}-34$ | flagellar rod assembly protein/muramidase FlgJ |
| NBC2815_01563 | 37.33584 | 0.012479 | transposase |
| flgE | 35.56915 | $3.92 \mathrm{E}-25$ | flagellar hook protein FlgE |
| flgI | 32.73334 | $1.52 \mathrm{E}-43$ | flagellar basal body P-ring protein |
| flgF | 32.11444 | $4.75 \mathrm{E}-25$ | flagellar basal body rod protein FlgF |
| NBC2815_01999 | 31.43577 | $2.16 \mathrm{E}-20$ | anti-sigma factor antagonist-like protein |
| NBC2815_00180 | 30.91575 | $4.57 \mathrm{E}-29$ | catalase |

Table S6. Top 20 down-regulated X. fragariae genes in planta

| Gene | Fold change | FDR p-value <br> correction | Product |
| :---: | :---: | :---: | :--- |
| NBC2815_03825 | -44.9739 | 0.000847 | phage-related capsid scaffold protein |
| pilW | -30.6205 | $1.15 \mathrm{E}-56$ | type IV pilus assembly protein PilW |
| NBC2815_01578 | -21.6124 | 0 | PilY1 protein |
| NBC2815_02806 | -19.2106 | 0 | ComEA-related DNA uptake protein |
| NBC2815_03661 | -18.0018 | 0 | bifunctional proline dehydrogenase/pyrroline-5- <br> carboxylate dehydrogenase |
| NBC2815_00894 | -16.3023 | 0.102496 | ISxac3 transposase |
| NBC2815_03850 | -15.3451 | $8.73 \mathrm{E}-77$ | tryptophan halogenase |
| pilE | -12.9492 | $8.3 \mathrm{E}-39$ | type IV pilin pile protein <br> iroN_2 |
| NBC2815_01451 | -12.1184 | 0 | TonB-dependent receptor |
| NBC2815_03739 | -10.3094 | $3.53 \mathrm{E}-28$ | membrane protein |
| NBC2815_03866 | -9.34617 | $4.49 \mathrm{E}-14$ | ISXoc2 transposase, IS3 family |
| fyuA | -8.4841 | 0 | TonB-dependent receptor |
| NBC2815_03370 | -8.4602 | $1.57 \mathrm{E}-08$ | hypothetical protein |
| NBC2815_00985 | -8.33924 | $6.18 \mathrm{E}-26$ | hypothetical protein |
| NBC2815_03112 | -8.11521 | 0 | outer membrane protein XadA |
| NBC2815_03748 | -8.01224 | $1.73 \mathrm{E}-16$ | Hypothetical Protein |
| NBC2815_01442 | -7.79861 | $5.82 \mathrm{E}-24$ | acyl-CoA dehydrogenase |
| NBC2815_03927 | -7.74074 | $1.04 \mathrm{E}-13$ | Hypothetical Protein |
| NBC2815_02244 | -7.62174 | $1.66 \mathrm{E}-15$ | GTP cyclohydrolase |
|  |  |  |  |

Table S7. Genes of $X$. fragariae IPO 3485 coding for degradative enzymes and their expression fold change in planta

| Gene | Locus tag in IPO 3485 genome | product | Fold change* | FDR p-value correction |
| :---: | :---: | :---: | :---: | :---: |
| NBC2815_00007 | NBC2815_00007 | putative metal-dependent membrane protease | 1.16 | 3.93E-01 |
| NBC2815_00008 | NBC2815_00008 | Zn -dependent protease with chaperone functionHtpX | 1.14 | $5.75 \mathrm{E}-01$ |
| ctp | NBC2815_00025 | carboxyl-terminal protease | -1.85 | $4.49 \mathrm{E}-04$ |
| NBC2815_00083 | NBC2815_00083 | glucan 1,4-beta-glucosidase | 1.47 | $3.54 \mathrm{E}-02$ |
| NBC2815_00084 | NBC2815_00084 | glucan 1,4-beta-glucosidase | 10.10 | $1.34 \mathrm{E}-03$ |
| NBC2815_00106 | NBC2815_00106 | cellulase | 1.52 | $8.85 \mathrm{E}-03$ |
| NBC2815_00107 | NBC2815_00107 | cellulase | 5.19 | $1.05 \mathrm{E}-20$ |
| NBC2815_00119 | NBC2815_00119 | alpha-amylase | 1.82 | $2.53 \mathrm{E}-03$ |
| NBC2815_00211 | NBC2815_00211 | protease Do | 1.97 | $4.79 \mathrm{E}-04$ |
| NBC2815_00320 | NBC2815_00320 | Pectate lyase precursor | -1.26 | $1.37 \mathrm{E}-01$ |
| NBC2815_00320 | NBC2815_00320 | Pectate lyase precursor | -1.26 | $1.37 \mathrm{E}-01$ |
| NBC2815_00328 | NBC2815_00328 | metalloprotease | -1.32 | $2.74 \mathrm{E}-01$ |
| NBC2815_00429 | NBC2815_00429 | lipase | 1.06 | $7.74 \mathrm{E}-01$ |
| NBC2815_00514 | NBC2815_00514 | lipase | -1.63 | $4.32 \mathrm{E}-03$ |
| NBC2815_00659 | NBC2815_00659 | cell wall hydrolase superfamily protein | 9.98 | $1.85 \mathrm{E}-21$ |
| NBC2815_00676 | NBC2815_00676 | non-hemolytic phospholipase C | 1.46 | $8.21 \mathrm{E}-02$ |
| glgX2 | NBC2815_00679 | isoamylase | 1.90 | $3.68 \mathrm{E}-04$ |
| gloA | NBC2815_00776 | lactoylglutathione lyase | -1.18 | $3.30 \mathrm{E}-01$ |
| NBC2815_00847 | NBC2815_00847 | zinc metalloprotease | -1.24 | $4.22 \mathrm{E}-01$ |
| NBC2815_00879 | NBC2815_00879 | Zn -dependent protease | 2.00 | $2.59 \mathrm{E}-05$ |
| NBC2815_00954 | NBC2815_00954 | integral membrane protease subunit | 1.42 | 7.38E-02 |
| NBC2815_00999 | NBC2815_00999 | phospholipase A1 | 1.42 | $4.71 \mathrm{E}-02$ |
| clpX | NBC2815_01065 | ATP-dependent clp protease ATP-binding subunit protein | 1.18 | $4.22 \mathrm{E}-01$ |
| clpP | NBC2815_01066 | ATP-dependent clp protease proteolytic subunit protein | 2.35 | $4.01 \mathrm{E}-05$ |
| sdaA_1 | NBC2815_01252 | L-serine ammonia-lyase | 1.81 | $2.90 \mathrm{E}-01$ |
| sdaA_2 | NBC2815_01253 | L-serine ammonia-lyase | -2.11 | $1.17 \mathrm{E}-02$ |
| sdaA_3 | NBC2815_01254 | L-serine ammonia-lyase | -1.67 | $6.94 \mathrm{E}-04$ |
| xsa_1 | NBC2815_01342 | xylosidase | 3.53 | $5.10 \mathrm{E}-02$ |
| xsa_2 | NBC2815_01343 | xylosidase | 2.82 | $1.25 \mathrm{E}-04$ |
| NBC2815_01365 | NBC2815_01365 | membrane-associated zinc metalloprotease | 1.50 | $1.29 \mathrm{E}-02$ |
| NBC2815_01417 | NBC2815_01417 | phospholipase | 1.27 | 3.54E-01 |
| NBC2815_01432 | NBC2815_01432 | photolyase | -1.24 | $2.23 \mathrm{E}-01$ |
| mucD | NBC2815_01451 | periplasmic protease | 1.28 | 2.41E-01 |
| NBC2815_01471 | NBC2815_01471 | ClpXP protease specificity-enhancing factor | -1.60 | $4.09 \mathrm{E}-03$ |
| NBC2815_01494 | NBC2815_01494 | Deoxyribodipyrimidine photolyase-like protein | -1.03 | $9.24 \mathrm{E}-01$ |
| NBC2815_01659 | NBC2815_01659 | subtilase serine protease | 2.03 | $4.18 \mathrm{E}-03$ |
| NBC2815_01660 | NBC2815_01660 | subtilase serine protease | 3.30 | $6.01 \mathrm{E}-11$ |
| hutH | NBC2815_01777 | histidine ammonia-lyase | 1.22 | $2.28 \mathrm{E}-01$ |
| NBC2815_01801 | NBC2815_01801 | autotransporter serine protease | 22.60 | 3.73E-35 |
| clps | NBC2815_01877 | ATP-dependent Clp protease adaptor protein ClpS | 1.25 | $1.51 \mathrm{E}-01$ |
| clpA | NBC2815_01878 | ATP-dependent clp protease ATP-binding subunit Clpa protein | 5.13 | $1.21 \mathrm{E}-15$ |
| NBC2815_02177 | NBC2815_02177 | serine protease | 4.10 | 3.23E-16 |
| celd | NBC2815_02229 | glucan 1,4-beta-glucosidase precursor | -3.38 | $2.11 \mathrm{E}-13$ |
| NBC2815_02249 | NBC2815_02249 | alpha-xylosidase | 1.21 | $2.33 \mathrm{E}-01$ |
| NBC2815_02289 | NBC2815_02289 | Pectate lyase precursor | 1.78 | $2.37 \mathrm{E}-03$ |
| NBC2815_02289 | NBC2815_02289 | Pectate lyase precursor | 1.78 | $2.37 \mathrm{E}-03$ |
| NBC2815_02481 | NBC2815_02481 | pectate lyase | 2.00 | $2.98 \mathrm{E}-03$ |
| NBC2815_02481 | NBC2815_02481 | pectate lyase | 2.00 | $2.98 \mathrm{E}-03$ |
| NBC2815_02482 | NBC2815_02482 | polygalacturonase | 2.94 | $2.00 \mathrm{E}-08$ |
| NBC2815_02499 | NBC2815_02499 | esterase/lipase/thioesterase | -1.38 | $3.87 \mathrm{E}-02$ |
| NBC2815_02616 | NBC2815_02616 | cellulase | -1.26 | $1.82 \mathrm{E}-01$ |
| NBC2815_02635 | NBC2815_02635 | extracellular protease | 1.83 | $2.16 \mathrm{E}-04$ |
| NBC2815_02635 | NBC2815_02635 | extracellular protease | 1.83 | $2.16 \mathrm{E}-04$ |
| NBC2815_02720 | NBC2815_02720 | extracellular serine protease | 3.74 | $8.69 \mathrm{E}-08$ |
| NBC2815_02720 | NBC2815_02720 | extracellular serine protease | 3.74 | $8.69 \mathrm{E}-08$ |
| NBC2815_02722 | NBC2815_02722 | serine protease | 3.92 | $1.07 \mathrm{E}-18$ |
| NBC2815_02722 | NBC2815_02722 | serine protease | 3.92 | $1.07 \mathrm{E}-18$ |
| NBC2815_02723 | NBC2815_02723 | serine protease | 2.22 | $1.35 \mathrm{E}-06$ |
| NBC2815_02723 | NBC2815_02723 | serine protease | 2.22 | $1.35 \mathrm{E}-06$ |
| NBC2815_02726 | NBC2815_02726 | cellulase | 15.10 | 3.83E-13 |
| NBC2815_02732 | NBC2815_02732 | cysteine protease | 7.19 | $6.93 \mathrm{E}-41$ |
| hfik | NBC2815_02867 | integral membrane protease subunit | -1.11 | $5.90 \mathrm{E}-01$ |
| NBC2815_02976 | NBC2815_02976 | extracellular protease | 9.00 | 7.63E-13 |
| NBC2815_02976 | NBC2815_02976 | extracellular protease | 9.00 | $7.63 \mathrm{E}-13$ |
| NBC2815_02977 | NBC2815_02977 | extracellular protease | 5.23 | $6.84 \mathrm{E}-05$ |
| NBC2815_02977 | NBC2815_02977 | extracellular protease | 5.23 | $6.84 \mathrm{E}-05$ |
| NBC2815_02978 | NBC2815_02978 | extracellular protease | 2.39 | $5.34 \mathrm{E}-02$ |
| NBC2815_02978 | NBC2815_02978 | extracellular protease | 2.39 | $5.34 \mathrm{E}-02$ |
| NBC2815_02979 | NBC2815_02979 | extracellular protease | 1.03 | $1.00 \mathrm{E}+00$ |
| NBC2815_02979 | NBC2815_02979 | extracellular protease | 1.03 | $1.00 \mathrm{E}+00$ |
| NBC2815_03054 | NBC2815_03054 | Lysophospholipase L1 | 2.45 | $1.99 \mathrm{E}-02$ |
| NBC2815_03055 | NBC2815_03055 | Lysophospholipase L1 | 1.60 | $2.56 \mathrm{E}-01$ |
| NBC2815_03075 | NBC2815_03075 | alpha-amylase (fragment) | 3.72 | 3.80E-11 |


| \|NBC2815_03091 | NBC2815_03091 | serine protease | -1.57 | 2.58E-02 |
| :---: | :---: | :---: | :---: | :---: |
| NBC2815_03111 | NBC2815_03111 | Subtilisin-like serine protease | -7.10 | 0.00E+00 |
| NBC2815_03114 | NBC2815_03114 | Subtilisin-like serine protease | -1.15 | 3.83E-01 |
| NBC2815_03149 | NBC2815_03149 | putative glycoprotease | -1.58 | 2.40E-03 |
| NBC2815_03286 | NBC2815_03286 | ATP-dependent protease La (LON) domain subfamily protein | 1.03 | 9.56E-01 |
| NBC2815_03364 | NBC2815_03364 | alpha-amlyase | -5.16 | 0.00E+00 |
| NBC2815_03376 | NBC2815_03376 | polysaccharide deacetylase | 1.73 | 7.87E-03 |
| NBC2815_03389 | NBC2815_03389 | cellulase $S$ | 1.50 | $2.77 \mathrm{E}-01$ |
| celS | NBC2815_03391 | cellulase $S$ | 1.53 | $1.55 \mathrm{E}-01$ |
| prc | NBC2815_03429 | Periplasmic protease | 1.29 | 2.31E-01 |
| NBC2815_03443 | NBC2815_03443 | endopolygalacturonase | 1.88 | 1.13E-02 |
| hslU | NBC2815_03460 | ATP-dependent protease ATP-binding subunit HslU | 1.59 | 3.65E-02 |
| hs/V | NBC2815_03461 | peptidase component of the hsluv protease | 2.94 | 4.01E-07 |
| engXCA | NBC2815_03482 | cellulase | 1.14 | 4.51E-01 |
| NBC2815_03487 | NBC2815_03487 | zinc protease | -2.79 | 1.58E-11 |
| NBC2815_03487 | NBC2815_03487 | zinc protease | -2.79 | 1.58E-11 |
| NBC2815_03572 | NBC2815_03572 | lipase | 7.07 | 5.84E-40 |
| NBC2815_03611 | NBC2815_03611 | Zinc metalloprotease | -2.59 | 5.50E-03 |
| NBC2815_03612 | NBC2815_03612 | Zinc metalloprotease | -1.46 | 6.61E-01 |
| NBC2815_03640 | NBC2815_03640 | beta-glucosidase | 1.14 | 4.82E-01 |
| NBC2815_03663 | NBC2815_03663 | membrane-anchored metalloprotease | -1.10 | 5.83E-01 |
| NBC2815_03720 | NBC2815_03720 | Pectate lyase precursor | 1.65 | 9.57E-03 |
| NBC2815_03720 | NBC2815_03720 | Pectate lyase precursor | 1.65 | 9.57E-03 |


| Locus tag in NBC 2815 genome | KEGG term |
| :---: | :---: |
| NBC2815_00001 | K02313 |
| NBC2815_00002 | K02338 |
| NBC2815_00005 | K03629 |
| NBC2815_00006 | K02470 |
| NBC2815_00007 | K07052 |
| NBC2815_00010 | K03832 |
| NBC2815_00011 | K03561 |
| NBC2815_00012 | K03559 |
| NBC2815_00013 | K03559 |
| NBC2815_00015 | K07481 |
| NBC2815_00017 | K06131 |
| NBC2815_00019 | K03474 |
| NBC2815_00020 | K07481 |
| NBC2815_00021 | K06076 |
| NBC2815_00024 | K00058 |
| NBC2815_00025 | K03797 |
| NBC2815_00026 | K22719 |
| NBC2815_00031 | K03777 |
| NBC2815_00033 | K08081 |
| NBC2815_00035 | K04773 |
| NBC2815_00036 | K03327 |
| NBC2815_00039 | K04066 |
| NBC2815_00041 | K03089 |
| NBC2815_00042 | K03648 |
| NBC2815_00044 | K09811 |
| NBC2815_00045 | K09812 |
| NBC2815_00046 | K03732 |
| NBC2815_00047 | K03671 |
| NBC2815_00048 | K03628 |
| NBC2815_00050 | K00031 |
| NBC2815_00054 | K06879 |
| NBC2815_00055 | K07799 |
| NBC2815_00056 | K07788 |
| NBC2815_00058 | K07789 |
| NBC2815_00065 | K03670 |
| NBC2815_00066 | K00857 |
| NBC2815_00067 | K03656 |
| NBC2815_00069 | K09915 |
| NBC2815_00071 | K01591 |
| NBC2815_00076 | K00631 |
| NBC2815_00080 | K07504 |
| NBC2815_00083 | K05349 |
| NBC2815_00086 | K01235 |
| NBC2815_00087 | K02529 |
| NBC2815_00088 | K14058 |
| NBC2815_00089 | K03554 |
| NBC2815_00090 | K07043 |
| NBC2815_00092 | K01772 |


| NBC2815_00094 | K03116 |
| :---: | :---: |
| NBC2815_00095 | K03117 |
| NBC2815_00096 | K03118 |
| NBC2815_00098 | K01951 |
| NBC2815_00099 | K02454 |
| NBC2815_00100 | K01878 |
| NBC2815_00101 | K01879 |
| NBC2815_00103 | K00265 |
| NBC2815_00104 | K00266 |
| NBC2815_00105 | K13979 |
| NBC2815_00106 | K01179 |
| NBC2815_00107 | K01179 |
| NBC2815_00108 | K07481 |
| NBC2815_00119 | K16147 |
| NBC2815_00120 | K05343 |
| NBC2815_00121 | K00700 |
| NBC2815_00122 | K00064 |
| NBC2815_00123 | K03929 |
| NBC2815_00125 | K02554 |
| NBC2815_00129 | K02529 |
| NBC2815_00132 | K01815 |
| NBC2815_00133 | K00065 |
| NBC2815_00135 | K00500 |
| NBC2815_00136 | K03719 |
| NBC2815_00137 | K02013 |
| NBC2815_00139 | K05847 |
| NBC2815_00140 | K05846 |
| NBC2815_00145 | K04090 |
| NBC2815_00147 | K07088 |
| NBC2815_00148 | K03496 |
| NBC2815_00152 | K19222 |
| NBC2815_00153 | K00655 |
| NBC2815_00154 | K07019 |
| NBC2815_00158 | K04565 |
| NBC2815_00159 | K04565 |
| NBC2815_00160 | K07712 |
| NBC2815_00161 | K07708 |
| NBC2815_00162 | K03320 |
| NBC2815_00163 | K04751 |
| NBC2815_00164 | K01915 |
| NBC2815_00165 | K06153 |
| NBC2815_00167 | K07481 |
| NBC2815_00171 | K07481 |
| NBC2815_00174 | K01698 |
| NBC2815_00175 | K00380 |
| NBC2815_00177 | K00014 |
| NBC2815_00179 | K03722 |
| NBC2815_00180 | K03781 |
| NBC2815_00181 | K06867 |
| NBC2815_00182 | K07481 |


| NBC2815_00184 | K07481 |
| :---: | :---: |
| NBC2815_00186 | K02004 |
| NBC2815_00188 | K05786 |
| NBC2815_00192 | K01867 |
| NBC2815_00196 | K01476 |
| NBC2815_00199 | K07481 |
| NBC2815_00200 | K00943 |
| NBC2815_00202 | K12262 |
| NBC2815_00203 | K03781 |
| NBC2815_00204 | K01255 |
| NBC2815_00205 | K20862 |
| NBC2815_00211 | K04771 |
| NBC2815_00216 | K02483 |
| NBC2815_00219 | K07071 |
| NBC2815_00224 | K06889 |
| NBC2815_00228 | K14415 |
| NBC2815_00229 | K22105 |
| NBC2815_00231 | K00508 |
| NBC2815_00234 | K03098 |
| NBC2815_00235 | K07391 |
| NBC2815_00236 | K09806 |
| NBC2815_00237 | K04751 |
| NBC2815_00238 | K01197 |
| NBC2815_00241 | K00797 |
| NBC2815_00243 | K01585 |
| NBC2815_00244 | K07481 |
| NBC2815_00246 | K11902 |
| NBC2815_00248 | K02335 |
| NBC2815_00249 | K00228 |
| NBC2815_00255 | K18240 |
| NBC2815_00257 | K02078 |
| NBC2815_00259 | K00655 |
| NBC2815_00266 | K00059 |
| NBC2815_00270 | K00647 |
| NBC2815_00271 | K09902 |
| NBC2815_00272 | K06867 |
| NBC2815_00275 | K00036 |
| NBC2815_00276 | K11745 |
| NBC2815_00278 | K01674 |
| NBC2815_00279 | K06213 |
| NBC2815_00280 | K09181 |
| NBC2815_00281 | K09799 |
| NBC2815_00282 | K00525 |
| NBC2815_00283 | K00526 |
| NBC2815_00285 | K03671 |
| NBC2815_00286 | K11068 |
| NBC2815_00288 | K06877 |
| NBC2815_00289 | K07502 |
| NBC2815_00301 | K19048 |
| NBC2815_00306 | K07497 |


| NBC2815_00307 | K07483 |
| :---: | :---: |
| NBC2815_00308 | K00209 |
| NBC2815_00310 | K00464 |
| NBC2815_00314 | K00101 |
| NBC2815_00315 | K01971 |
| NBC2815_00316 | K01971 |
| NBC2815_00318 | K00832 |
| NBC2815_00319 | K03841 |
| NBC2815_00335 | K00626 |
| NBC2815_00337 | K02498 |
| NBC2815_00338 | K02496 |
| NBC2815_00339 | K01719 |
| NBC2815_00343 | K03071 |
| NBC2815_00344 | K00057 |
| NBC2815_00346 | K00156 |
| NBC2815_00349 | K03216 |
| NBC2815_00351 | K22317 |
| NBC2815_00354 | K07483 |
| NBC2815_00355 | K07497 |
| NBC2815_00356 | K19130 |
| NBC2815_00357 | K19129 |
| NBC2815_00358 | K19128 |
| NBC2815_00359 | K19127 |
| NBC2815_00360 | K07012 |
| NBC2815_00361 | K15342 |
| NBC2815_00363 | K01968 |
| NBC2815_00364 | K01969 |
| NBC2815_00365 | K00253 |
| NBC2815_00370 | K07004 |
| NBC2815_00375 | K07018 |
| NBC2815_00376 | K06916 |
| NBC2815_00377 | K04063 |
| NBC2815_00379 | K06222 |
| NBC2815_00380 | K23256 |
| NBC2815_00383 | K06181 |
| NBC2815_00387 | K03579 |
| NBC2815_00391 | K03424 |
| NBC2815_00392 | K08224 |
| NBC2815_00395 | K01433 |
| NBC2815_00396 | K07664 |
| NBC2815_00400 | K07481 |
| NBC2815_00401 | K07497 |
| NBC2815_00402 | K07483 |
| NBC2815_00409 | K01687 |
| NBC2815_00411 | K19267 |
| NBC2815_00413 | K00549 |
| NBC2815_00420 | K07497 |
| NBC2815_00421 | K07483 |
| NBC2815_00423 | K00864 |
| NBC2815_00424 | K02440 |


| NBC2815_00425 | K00111 |
| :---: | :---: |
| NBC2815_00426 | K02444 |
| NBC2815_00428 | K07178 |
| NBC2815_00429 | K01066 |
| NBC2815_00430 | K03495 |
| NBC2815_00432 | K01754 |
| NBC2815_00435 | K12979 |
| NBC2815_00436 | K02169 |
| NBC2815_00438 | K00059 |
| NBC2815_00439 | K02170 |
| NBC2815_00441 | K00652 |
| NBC2815_00442 | K01012 |
| NBC2815_00444 | K03179 |
| NBC2815_00447 | K05802 |
| NBC2815_00449 | K09781 |
| NBC2815_00452 | K00703 |
| NBC2815_00453 | K00700 |
| NBC2815_00454 | K01236 |
| NBC2815_00455 | K00705 |
| NBC2815_00456 | K06044 |
| NBC2815_00458 | K01214 |
| NBC2815_00460 | K07483 |
| NBC2815_00461 | K07497 |
| NBC2815_00467 | K07497 |
| NBC2815_00469 | K04084 |
| NBC2815_00470 | K03926 |
| NBC2815_00473 | K04078 |
| NBC2815_00474 | K04077 |
| NBC2815_00478 | K01626 |
| NBC2815_00479 | K18118 |
| NBC2815_00481 | K01053 |
| NBC2815_00483 | K00982 |
| NBC2815_00484 | K09125 |
| NBC2815_00485 | K07276 |
| NBC2815_00486 | K09019 |
| NBC2815_00488 | K07481 |
| NBC2815_00497 | K07481 |
| NBC2815_00499 | K13929 |
| NBC2815_00500 | K13931 |
| NBC2815_00502 | K13932 |
| NBC2815_00503 | K13933 |
| NBC2815_00504 | K13934 |
| NBC2815_00505 | K13930 |
| NBC2815_00507 | K00645 |
| NBC2815_00512 | K07315 |
| NBC2815_00516 | K00163 |
| NBC2815_00522 | K07497 |
| NBC2815_00527 | K03281 |
| NBC2815_00529 | K03321 |
| NBC2815_00533 | K01990 |


| NBC2815_00534 | K01992 |
| :---: | :---: |
| NBC2815_00535 | K01992 |
| NBC2815_00536 | K02014 |
| NBC2815_00550 | K06147 |
| NBC2815_00552 | K01854 |
| NBC2815_00554 | K01784 |
| NBC2815_00561 | K13924 |
| NBC2815_00563 | K07217 |
| NBC2815_00569 | K07386 |
| NBC2815_00573 | K21929 |
| NBC2815_00578 | K03316 |
| NBC2815_00580 | K07481 |
| NBC2815_00588 | K03924 |
| NBC2815_00591 | K07114 |
| NBC2815_00592 | K07114 |
| NBC2815_00594 | K03309 |
| NBC2815_00595 | K00615 |
| NBC2815_00596 | K16088 |
| NBC2815_00597 | K21472 |
| NBC2815_00603 | K02017 |
| NBC2815_00604 | K02018 |
| NBC2815_00605 | K02020 |
| NBC2815_00607 | K05986 |
| NBC2815_00609 | K00134 |
| NBC2815_00615 | K04487 |
| NBC2815_00622 | K00927 |
| NBC2815_00623 | K01091 |
| NBC2815_00624 | K00873 |
| NBC2815_00625 | K01623 |
| NBC2815_00626 | K23518 |
| NBC2815_00627 | K01738 |
| NBC2815_00628 | K02302 |
| NBC2815_00633 | K02014 |
| NBC2815_00635 | K00390 |
| NBC2815_00636 | K00381 |
| NBC2815_00637 | K00380 |
| NBC2815_00638 | K00957 |
| NBC2815_00639 | K00955 |
| NBC2815_00640 | K03585 |
| NBC2815_00641 | K18138 |
| NBC2815_00642 | K07483 |
| NBC2815_00643 | K07497 |
| NBC2815_00648 | K03214 |
| NBC2815_00650 | K01626 |
| NBC2815_00653 | K06207 |
| NBC2815_00654 | K03768 |
| NBC2815_00655 | K00024 |
| NBC2815_00658 | K00799 |
| NBC2815_00660 | K07481 |
| NBC2815_00662 | K00219 |


| NBC2815_00663 | K00344 |
| :---: | :---: |
| NBC2815_00664 | K03286 |
| NBC2815_00666 | K06178 |
| NBC2815_00668 | K00639 |
| NBC2815_00669 | K23163 |
| NBC2815_00670 | K02046 |
| NBC2815_00671 | K02047 |
| NBC2815_00672 | K02045 |
| NBC2815_00674 | K00060 |
| NBC2815_00675 | K02014 |
| NBC2815_00676 | K01114 |
| NBC2815_00677 | K22305 |
| NBC2815_00679 | K01214 |
| NBC2815_00680 | K05844 |
| NBC2815_00684 | K07497 |
| NBC2815_00687 | K00793 |
| NBC2815_00688 | K14652 |
| NBC2815_00689 | K00794 |
| NBC2815_00690 | K03625 |
| NBC2815_00691 | K00946 |
| NBC2815_00693 | K01546 |
| NBC2815_00696 | K02483 |
| NBC2815_00697 | K02484 |
| NBC2815_00698 | K01919 |
| NBC2815_00699 | K03978 |
| NBC2815_00701 | K03673 |
| NBC2815_00702 | K03673 |
| NBC2815_00704 | K00001 |
| NBC2815_00706 | K08309 |
| NBC2815_00707 | K00974 |
| NBC2815_00714 | K07481 |
| NBC2815_00719 | K02557 |
| NBC2815_00720 | K02556 |
| NBC2815_00721 | K07305 |
| NBC2815_00723 | K03719 |
| NBC2815_00724 | K00285 |
| NBC2815_00725 | K01775 |
| NBC2815_00726 | K07481 |
| NBC2815_00735 | K00564 |
| NBC2815_00736 | K06183 |
| NBC2815_00741 | K09941 |
| NBC2815_00744 | K09767 |
| NBC2815_00747 | K02071 |
| NBC2815_00748 | K02072 |
| NBC2815_00749 | K02073 |
| NBC2815_00751 | K07275 |
| NBC2815_00753 | K00627 |
| NBC2815_00755 | K00382 |
| NBC2815_00759 | K02108 |
| NBC2815_00760 | K02110 |


| NBC2815_00761 | K02109 |
| :---: | :---: |
| NBC2815_00762 | K02113 |
| NBC2815_00763 | K02111 |
| NBC2815_00764 | K02115 |
| NBC2815_00765 | K02112 |
| NBC2815_00766 | K02114 |
| NBC2815_00767 | K04093 |
| NBC2815_00769 | K04042 |
| NBC2815_00773 | K00820 |
| NBC2815_00776 | K01759 |
| NBC2815_00777 | K07233 |
| NBC2815_00779 | K01738 |
| NBC2815_00780 | K01414 |
| NBC2815_00782 | K00647 |
| NBC2815_00783 | K01716 |
| NBC2815_00784 | K02346 |
| NBC2815_00785 | K01091 |
| NBC2815_00786 | K07481 |
| NBC2815_00791 | K08968 |
| NBC2815_00792 | K01935 |
| NBC2815_00794 | K01737 |
| NBC2815_00795 | K11927 |
| NBC2815_00796 | K16171 |
| NBC2815_00797 | K01800 |
| NBC2815_00798 | K02670 |
| NBC2815_00802 | K01697 |
| NBC2815_00803 | K01758 |
| NBC2815_00805 | K09690 |
| NBC2815_00806 | K09691 |
| NBC2815_00807 | K18827 |
| NBC2815_00811 | K01711 |
| NBC2815_00812 | K22252 |
| NBC2815_00816 | K10012 |
| NBC2815_00818 | K03522 |
| NBC2815_00819 | K03521 |
| NBC2815_00820 | K01710 |
| NBC2815_00821 | K00973 |
| NBC2815_00822 | K01790 |
| NBC2815_00823 | K00067 |
| NBC2815_00824 | K16011 |
| NBC2815_00825 | K15778 |
| NBC2815_00826 | K01028 |
| NBC2815_00827 | K01029 |
| NBC2815_00828 | K07272 |
| NBC2815_00829 | K00311 |
| NBC2815_00831 | K18480 |
| NBC2815_00832 | K02067 |
| NBC2815_00833 | K02065 |
| NBC2815_00834 | K02066 |
| NBC2815_00836 | K03746 |


| NBC2815_00837 | K01881 |
| :---: | :---: |
| NBC2815_00839 | K17103 |
| NBC2815_00841 | K03789 |
| NBC2815_00843 | K07497 |
| NBC2815_00847 | K07043 |
| NBC2815_00848 | K01153 |
| NBC2815_00849 | K01154 |
| NBC2815_00851 | K14623 |
| NBC2815_00852 | K03427 |
| NBC2815_00859 | K12308 |
| NBC2815_00861 | K09704 |
| NBC2815_00862 | K07481 |
| NBC2815_00864 | K11754 |
| NBC2815_00866 | K03558 |
| NBC2815_00867 | K00764 |
| NBC2815_00870 | K23743 |
| NBC2815_00872 | K03269 |
| NBC2815_00873 | K19302 |
| NBC2815_00875 | K01524 |
| NBC2815_00876 | K00937 |
| NBC2815_00877 | K07636 |
| NBC2815_00878 | K07657 |
| NBC2815_00879 | K01423 |
| NBC2815_00880 | K03676 |
| NBC2815_00882 | K00030 |
| NBC2815_00883 | K07481 |
| NBC2815_00895 | K07483 |
| NBC2815_00896 | K07497 |
| NBC2815_00907 | K03695 |
| NBC2815_00910 | K16092 |
| NBC2815_00911 | K01586 |
| NBC2815_00916 | K16091 |
| NBC2815_00917 | K02510 |
| NBC2815_00919 | K07481 |
| NBC2815_00925 | K03781 |
| NBC2815_00926 | K00281 |
| NBC2815_00927 | K07552 |
| NBC2815_00928 | K07552 |
| NBC2815_00930 | K01283 |
| NBC2815_00931 | K03760 |
| NBC2815_00939 | K03608 |
| NBC2815_00940 | K03609 |
| NBC2815_00941 | K03610 |
| NBC2815_00942 | K06977 |
| NBC2815_00948 | K01247 |
| NBC2815_00949 | K07260 |
| NBC2815_00955 | K08289 |
| NBC2815_00956 | K07497 |
| NBC2815_00963 | K21420 |
| NBC2815_00967 | K10805 |


| NBC2815_00969 | K09796 |
| :---: | :---: |
| NBC2815_00970 | K07107 |
| NBC2815_00971 | K03701 |
| NBC2815_00972 | K02888 |
| NBC2815_00973 | K02899 |
| NBC2815_00974 | K03979 |
| NBC2815_00975 | K02968 |
| NBC2815_00976 | K03980 |
| NBC2815_00977 | K11753 |
| NBC2815_00978 | K01870 |
| NBC2815_00979 | K03101 |
| NBC2815_00980 | K03527 |
| NBC2815_00982 | K02297 |
| NBC2815_00983 | K02298 |
| NBC2815_00984 | K02299 |
| NBC2815_00985 | K02300 |
| NBC2815_00987 | K04485 |
| NBC2815_01002 | K07481 |
| NBC2815_01005 | K01599 |
| NBC2815_01007 | K01735 |
| NBC2815_01008 | K00891 |
| NBC2815_01009 | K00275 |
| NBC2815_01010 | K09980 |
| NBC2815_01013 | K08989 |
| NBC2815_01020 | K01337 |
| NBC2815_01022 | K07782 |
| NBC2815_01023 | K18457 |
| NBC2815_01024 | K03406 |
| NBC2815_01027 | K03293 |
| NBC2815_01028 | K01273 |
| NBC2815_01029 | K07481 |
| NBC2815_01031 | K03455 |
| NBC2815_01032 | K02014 |
| NBC2815_01033 | K02014 |
| NBC2815_01036 | K02014 |
| NBC2815_01037 | K06158 |
| NBC2815_01040 | K01876 |
| NBC2815_01044 | K01159 |
| NBC2815_01045 | K03550 |
| NBC2815_01046 | K03549 |
| NBC2815_01047 | K03551 |
| NBC2815_01048 | K07107 |
| NBC2815_01049 | K03562 |
| NBC2815_01050 | K03560 |
| NBC2815_01051 | K03646 |
| NBC2815_01052 | K03641 |
| NBC2815_01053 | K03640 |
| NBC2815_01055 | K10026 |
| NBC2815_01057 | K07481 |
| NBC2815_01059 | K03770 |


| NBC2815_01063 | K03530 |
| :---: | :---: |
| NBC2815_01064 | K01338 |
| NBC2815_01065 | K03544 |
| NBC2815_01066 | K01358 |
| NBC2815_01067 | K03545 |
| NBC2815_01070 | K07481 |
| NBC2815_01073 | K07481 |
| NBC2815_01078 | K11177 |
| NBC2815_01079 | K11178 |
| NBC2815_01080 | K13483 |
| NBC2815_01081 | K09003 |
| NBC2815_01088 | K01356 |
| NBC2815_01089 | K13053 |
| NBC2815_01090 | K14161 |
| NBC2815_01091 | K14162 |
| NBC2815_01103 | K10563 |
| NBC2815_01105 | K08307 |
| NBC2815_01106 | K01069 |
| NBC2815_01108 | K03469 |
| NBC2815_01109 | K02342 |
| NBC2815_01110 | K20074 |
| NBC2815_01113 | K12982 |
| NBC2815_01114 | K11211 |
| NBC2815_01116 | K03639 |
| NBC2815_01118 | K03637 |
| NBC2815_01119 | K03636 |
| NBC2815_01120 | K03635 |
| NBC2815_01122 | K02343 |
| NBC2815_01123 | K09747 |
| NBC2815_01124 | K06187 |
| NBC2815_01125 | K02503 |
| NBC2815_01126 | K07285 |
| NBC2815_01129 | K03924 |
| NBC2815_01133 | K06287 |
| NBC2815_01134 | K07040 |
| NBC2815_01135 | K02911 |
| NBC2815_01136 | K00648 |
| NBC2815_01137 | K00645 |
| NBC2815_01138 | K00059 |
| NBC2815_01139 | K02078 |
| NBC2815_01140 | K09458 |
| NBC2815_01141 | K01657 |
| NBC2815_01142 | K07082 |
| NBC2815_01143 | K02341 |
| NBC2815_01144 | K02676 |
| NBC2815_01150 | K03201 |
| NBC2815_01155 | K03201 |
| NBC2815_01179 | K13408 |
| NBC2815_01180 | K13409 |
| NBC2815_01193 | K07483 |


| NBC2815_01194 | K07497 |
| :---: | :---: |
| NBC2815_01201 | K17758 |
| NBC2815_01206 | K00384 |
| NBC2815_01211 | K09761 |
| NBC2815_01212 | K00833 |
| NBC2815_01213 | K08312 |
| NBC2815_01214 | K01082 |
| NBC2815_01215 | K04765 |
| NBC2815_01216 | K09771 |
| NBC2815_01217 | K00605 |
| NBC2815_01218 | K02437 |
| NBC2815_01220 | K01467 |
| NBC2815_01221 | K03301 |
| NBC2815_01222 | K08987 |
| NBC2815_01223 | K06445 |
| NBC2815_01229 | K07481 |
| NBC2815_01234 | K07497 |
| NBC2815_01236 | K04083 |
| NBC2815_01237 | K03814 |
| NBC2815_01238 | K20534 |
| NBC2815_01240 | K07290 |
| NBC2815_01241 | K11068 |
| NBC2815_01242 | K02837 |
| NBC2815_01247 | K00641 |
| NBC2815_01248 | K01739 |
| NBC2815_01249 | K00003 |
| NBC2815_01252 | K01752 |
| NBC2815_01254 | K01752 |
| NBC2815_01257 | K12262 |
| NBC2815_01263 | K01785 |
| NBC2815_01265 | K03106 |
| NBC2815_01268 | K00459 |
| NBC2815_01270 | K02959 |
| NBC2815_01271 | K02860 |
| NBC2815_01272 | K00554 |
| NBC2815_01273 | K02884 |
| NBC2815_01275 | K04762 |
| NBC2815_01276 | K07481 |
| NBC2815_01284 | K01868 |
| NBC2815_01285 | K02520 |
| NBC2815_01286 | K02916 |
| NBC2815_01287 | K02887 |
| NBC2815_01288 | K01889 |
| NBC2815_01289 | K01890 |
| NBC2815_01290 | K04764 |
| NBC2815_01293 | K01991 |
| NBC2815_01294 | K13661 |
| NBC2815_01295 | K13656 |
| NBC2815_01296 | K13662 |
| NBC2815_01298 | K13664 |


| NBC2815_01299 | K13657 |
| :---: | :---: |
| NBC2815_01300 | K13658 |
| NBC2815_01301 | K03328 |
| NBC2815_01302 | K13659 |
| NBC2815_01303 | K13665 |
| NBC2815_01304 | K13660 |
| NBC2815_01305 | K09705 |
| NBC2815_01306 | K01662 |
| NBC2815_01312 | K03098 |
| NBC2815_01315 | K06884 |
| NBC2815_01318 | K03575 |
| NBC2815_01319 | K03110 |
| NBC2815_01321 | K12658 |
| NBC2815_01322 | K21061 |
| NBC2815_01323 | K22550 |
| NBC2815_01324 | K22549 |
| NBC2815_01325 | K21062 |
| NBC2815_01326 | K13877 |
| NBC2815_01327 | K01271 |
| NBC2815_01333 | K07481 |
| NBC2815_01335 | K07481 |
| NBC2815_01337 | K08677 |
| NBC2815_01346 | K09955 |
| NBC2815_01350 | K07497 |
| NBC2815_01354 | K08973 |
| NBC2815_01355 | K01962 |
| NBC2815_01356 | K02337 |
| NBC2815_01358 | K03470 |
| NBC2815_01359 | K00748 |
| NBC2815_01360 | K00677 |
| NBC2815_01361 | K02372 |
| NBC2815_01362 | K02536 |
| NBC2815_01364 | K07277 |
| NBC2815_01365 | K11749 |
| NBC2815_01366 | K00099 |
| NBC2815_01367 | K00981 |
| NBC2815_01368 | K00806 |
| NBC2815_01369 | K02838 |
| NBC2815_01370 | K09903 |
| NBC2815_01372 | K02357 |
| NBC2815_01373 | K02967 |
| NBC2815_01374 | K07346 |
| NBC2815_01377 | K07347 |
| NBC2815_01378 | K07346 |
| NBC2815_01380 | K01265 |
| NBC2815_01381 | K00990 |
| NBC2815_01382 | K00674 |
| NBC2815_01384 | K01439 |
| NBC2815_01385 | K01953 |
| NBC2815_01387 | K02014 |


| NBC2815_01388 | K01434 |
| :---: | :---: |
| NBC2815_01392 | K03594 |
| NBC2815_01394 | K02621 |
| NBC2815_01397 | K03543 |
| NBC2815_01398 | K03446 |
| NBC2815_01403 | K03305 |
| NBC2815_01406 | K06975 |
| NBC2815_01408 | K15974 |
| NBC2815_01409 | K01284 |
| NBC2815_01410 | K00432 |
| NBC2815_01411 | K00528 |
| NBC2815_01412 | K06147 |
| NBC2815_01413 | K01676 |
| NBC2815_01415 | K01673 |
| NBC2815_01417 | K01058 |
| NBC2815_01418 | K09793 |
| NBC2815_01420 | K03704 |
| NBC2815_01421 | K06077 |
| NBC2815_01423 | K22132 |
| NBC2815_01424 | K03424 |
| NBC2815_01428 | K00799 |
| NBC2815_01429 | K01953 |
| NBC2815_01430 | K19784 |
| NBC2815_01431 | K02314 |
| NBC2815_01432 | K01669 |
| NBC2815_01437 | K07483 |
| NBC2815_01441 | K21686 |
| NBC2815_01442 | K00140 |
| NBC2815_01446 | K00020 |
| NBC2815_01447 | K16264 |
| NBC2815_01448 | K01782 |
| NBC2815_01449 | K03088 |
| NBC2815_01451 | K04771 |
| NBC2815_01453 | K07481 |
| NBC2815_01455 | K07483 |
| NBC2815_01456 | K07497 |
| NBC2815_01458 | K03284 |
| NBC2815_01460 | K06189 |
| NBC2815_01462 | K07042 |
| NBC2815_01463 | K06217 |
| NBC2815_01464 | K06168 |
| NBC2815_01467 | K00411 |
| NBC2815_01468 | K00412 |
| NBC2815_01469 | K00413 |
| NBC2815_01470 | K03599 |
| NBC2815_01471 | K03600 |
| NBC2815_01473 | K03724 |
| NBC2815_01474 | K03652 |
| NBC2815_01481 | K03684 |
| NBC2815_01483 | K07481 |


| NBC2815_01484 | K03596 |
| :---: | :---: |
| NBC2815_01485 | K03100 |
| NBC2815_01487 | K03685 |
| NBC2815_01488 | K03595 |
| NBC2815_01489 | K03584 |
| NBC2815_01491 | K03215 |
| NBC2815_01492 | K01768 |
| NBC2815_01493 | K18208 |
| NBC2815_01494 | K06876 |
| NBC2815_01495 | K01207 |
| NBC2815_01496 | K00760 |
| NBC2815_01497 | K19696 |
| NBC2815_01498 | K03704 |
| NBC2815_01499 | K06953 |
| NBC2815_01500 | K03724 |
| NBC2815_01501 | K10747 |
| NBC2815_01503 | K07577 |
| NBC2815_01508 | K00626 |
| NBC2815_01509 | K07481 |
| NBC2815_01510 | K00263 |
| NBC2815_01512 | K07043 |
| NBC2815_01517 | K06915 |
| NBC2815_01518 | K08307 |
| NBC2815_01519 | K08086 |
| NBC2815_01520 | K06996 |
| NBC2815_01521 | K06173 |
| NBC2815_01522 | K01817 |
| NBC2815_01525 | K07481 |
| NBC2815_01528 | K01696 |
| NBC2815_01530 | K01695 |
| NBC2815_01531 | K01963 |
| NBC2815_01532 | K03431 |
| NBC2815_01537 | K06886 |
| NBC2815_01538 | K07124 |
| NBC2815_01539 | K01803 |
| NBC2815_01540 | K03075 |
| NBC2815_01542 | K00330 |
| NBC2815_01543 | K00331 |
| NBC2815_01544 | K00332 |
| NBC2815_01545 | K00333 |
| NBC2815_01546 | K00334 |
| NBC2815_01547 | K00335 |
| NBC2815_01548 | K00336 |
| NBC2815_01549 | K00337 |
| NBC2815_01550 | K00338 |
| NBC2815_01551 | K00339 |
| NBC2815_01552 | K00340 |
| NBC2815_01553 | K00341 |
| NBC2815_01554 | K00342 |
| NBC2815_01555 | K00343 |


| NBC2815_01557 | K09748 |
| :---: | :---: |
| NBC2815_01558 | K02600 |
| NBC2815_01559 | K02519 |
| NBC2815_01560 | K02834 |
| NBC2815_01561 | K03177 |
| NBC2815_01562 | K02956 |
| NBC2815_01563 | K00962 |
| NBC2815_01566 | K00767 |
| NBC2815_01568 | K01588 |
| NBC2815_01569 | K01589 |
| NBC2815_01570 | K04564 |
| NBC2815_01571 | K07390 |
| NBC2815_01575 | K06966 |
| NBC2815_01576 | K08082 |
| NBC2815_01577 | K08084 |
| NBC2815_01578 | K02672 |
| NBC2815_01579 | K02674 |
| NBC2815_01580 | K02655 |
| NBC2815_01582 | K07814 |
| NBC2815_01587 | K00822 |
| NBC2815_01591 | K02379 |
| NBC2815_01595 | K07483 |
| NBC2815_01596 | K07497 |
| NBC2815_01598 | K09471 |
| NBC2815_01599 | K01915 |
| NBC2815_01600 | K01915 |
| NBC2815_01601 | K11073 |
| NBC2815_01603 | K03543 |
| NBC2815_01604 | K03446 |
| NBC2815_01606 | K11076 |
| NBC2815_01607 | K11075 |
| NBC2815_01608 | K11074 |
| NBC2815_01610 | K00135 |
| NBC2815_01613 | K18138 |
| NBC2815_01614 | K03585 |
| NBC2815_01616 | K15371 |
| NBC2815_01621 | K18376 |
| NBC2815_01622 | K07481 |
| NBC2815_01630 | K00425 |
| NBC2815_01631 | K07481 |
| NBC2815_01633 | K07483 |
| NBC2815_01637 | K03702 |
| NBC2815_01642 | K03203 |
| NBC2815_01643 | K03204 |
| NBC2815_01644 | K03195 |
| NBC2815_01645 | K03196 |
| NBC2815_01646 | K03194 |
| NBC2815_01647 | K03197 |
| NBC2815_01648 | K03198 |
| NBC2815_01649 | K03199 |


| NBC2815_01650 | K03200 |
| :---: | :---: |
| NBC2815_01651 | K03201 |
| NBC2815_01654 | K07481 |
| NBC2815_01661 | K03664 |
| NBC2815_01663 | K09801 |
| NBC2815_01664 | K06186 |
| NBC2815_01665 | K03711 |
| NBC2815_01666 | K03631 |
| NBC2815_01667 | K03705 |
| NBC2815_01669 | K03687 |
| NBC2815_01670 | K04043 |
| NBC2815_01671 | K03686 |
| NBC2815_01672 | K00868 |
| NBC2815_01673 | K04517 |
| NBC2815_01677 | K02021 |
| NBC2815_01679 | K04761 |
| NBC2815_01680 | K06147 |
| NBC2815_01683 | K00382 |
| NBC2815_01684 | K00658 |
| NBC2815_01685 | K00164 |
| NBC2815_01687 | K18850 |
| NBC2815_01688 | K01756 |
| NBC2815_01689 | K01679 |
| NBC2815_01691 | K07497 |
| NBC2815_01698 | K01992 |
| NBC2815_01699 | K01990 |
| NBC2815_01700 | K07979 |
| NBC2815_01702 | K00432 |
| NBC2815_01703 | K03772 |
| NBC2815_01704 | K00012 |
| NBC2815_01705 | K03745 |
| NBC2815_01708 | K02529 |
| NBC2815_01709 | K02429 |
| NBC2815_01710 | K00847 |
| NBC2815_01712 | K00548 |
| NBC2815_01713 | K00548 |
| NBC2815_01718 | K12573 |
| NBC2815_01720 | K03218 |
| NBC2815_01722 | K03683 |
| NBC2815_01723 | K02039 |
| NBC2815_01724 | K02036 |
| NBC2815_01725 | K02038 |
| NBC2815_01726 | K02037 |
| NBC2815_01727 | K02040 |
| NBC2815_01729 | K02040 |
| NBC2815_01731 | K01673 |
| NBC2815_01733 | K10773 |
| NBC2815_01737 | K01802 |
| NBC2815_01739 | K01011 |
| NBC2815_01740 | K09164 |


| NBC2815_01741 | K01447 |
| :---: | :---: |
| NBC2815_01744 | K03824 |
| NBC2815_01746 | K12297 |
| NBC2815_01747 | K00858 |
| NBC2815_01748 | K01081 |
| NBC2815_01749 | K07481 |
| NBC2815_01752 | K01141 |
| NBC2815_01753 | K00486 |
| NBC2815_01754 | K01556 |
| NBC2815_01756 | K00452 |
| NBC2815_01757 | K01673 |
| NBC2815_01758 | K07734 |
| NBC2815_01762 | K01893 |
| NBC2815_01763 | K13628 |
| NBC2815_01764 | K02990 |
| NBC2815_01765 | K02963 |
| NBC2815_01766 | K02939 |
| NBC2815_01767 | K03529 |
| NBC2815_01768 | K03528 |
| NBC2815_01769 | K01972 |
| NBC2815_01770 | K04568 |
| NBC2815_01772 | K08963 |
| NBC2815_01773 | K02469 |
| NBC2815_01775 | K01712 |
| NBC2815_01776 | K01458 |
| NBC2815_01777 | K01745 |
| NBC2815_01778 | K01468 |
| NBC2815_01779 | K05603 |
| NBC2815_01780 | K05836 |
| NBC2815_01784 | K17247 |
| NBC2815_01785 | K01613 |
| NBC2815_01786 | K07152 |
| NBC2815_01787 | K07320 |
| NBC2815_01789 | K01736 |
| NBC2815_01790 | K00090 |
| NBC2815_01791 | K00133 |
| NBC2815_01793 | K05874 |
| NBC2815_01795 | K08482 |
| NBC2815_01797 | K07497 |
| NBC2815_01809 | K07481 |
| NBC2815_01815 | K03407 |
| NBC2815_01816 | K03414 |
| NBC2815_01817 | K03413 |
| NBC2815_01818 | K02405 |
| NBC2815_01819 | K04562 |
| NBC2815_01820 | K02404 |
| NBC2815_01821 | K02400 |
| NBC2815_01822 | K02401 |
| NBC2815_01825 | K02421 |
| NBC2815_01826 | K02420 |


| NBC2815_01827 | K02419 |
| :---: | :---: |
| NBC2815_01828 | K02418 |
| NBC2815_01829 | K02417 |
| NBC2815_01830 | K02416 |
| NBC2815_01831 | K02415 |
| NBC2815_01832 | K02414 |
| NBC2815_01833 | K02413 |
| NBC2815_01834 | K02412 |
| NBC2815_01835 | K02411 |
| NBC2815_01836 | K02410 |
| NBC2815_01837 | K02409 |
| NBC2815_01838 | K02408 |
| NBC2815_01839 | K20444 |
| NBC2815_01842 | K10941 |
| NBC2815_01844 | K03092 |
| NBC2815_01848 | K02422 |
| NBC2815_01849 | K02407 |
| NBC2815_01850 | K02406 |
| NBC2815_01851 | K02397 |
| NBC2815_01852 | K02396 |
| NBC2815_01853 | K02395 |
| NBC2815_01854 | K02394 |
| NBC2815_01855 | K02393 |
| NBC2815_01856 | K02392 |
| NBC2815_01857 | K02391 |
| NBC2815_01858 | K02390 |
| NBC2815_01859 | K02389 |
| NBC2815_01860 | K02388 |
| NBC2815_01861 | K02387 |
| NBC2815_01862 | K03415 |
| NBC2815_01863 | K02386 |
| NBC2815_01864 | K02398 |
| NBC2815_01873 | K03406 |
| NBC2815_01874 | K07153 |
| NBC2815_01875 | K00566 |
| NBC2815_01877 | K06891 |
| NBC2815_01878 | K03694 |
| NBC2815_01879 | K02518 |
| NBC2815_01880 | K00684 |
| NBC2815_01881 | K09919 |
| NBC2815_01882 | K00384 |
| NBC2815_01883 | K03466 |
| NBC2815_01886 | K03634 |
| NBC2815_01887 | K07478 |
| NBC2815_01888 | K07481 |
| NBC2815_01891 | K00632 |
| NBC2815_01892 | K07516 |
| NBC2815_01894 | K00940 |
| NBC2815_01895 | K06941 |
| NBC2815_01896 | K02656 |


| NBC2815_01897 | K15539 |
| :---: | :---: |
| NBC2815_01899 | K17713 |
| NBC2815_01900 | K03977 |
| NBC2815_01901 | K03750 |
| NBC2815_01905 | K03750 |
| NBC2815_01906 | K03752 |
| NBC2815_01908 | K02304 |
| NBC2815_01910 | K07481 |
| NBC2815_01915 | K06884 |
| NBC2815_01932 | K11892 |
| NBC2815_01933 | K11893 |
| NBC2815_01934 | K11906 |
| NBC2815_01936 | K11901 |
| NBC2815_01937 | K11900 |
| NBC2815_01938 | K11903 |
| NBC2815_01939 | K11897 |
| NBC2815_01940 | K11896 |
| NBC2815_01941 | K11895 |
| NBC2815_01942 | K11907 |
| NBC2815_01949 | K07497 |
| NBC2815_01950 | K07483 |
| NBC2815_01952 | K07481 |
| NBC2815_01954 | K02474 |
| NBC2815_01957 | K03772 |
| NBC2815_01959 | K07146 |
| NBC2815_01961 | K08300 |
| NBC2815_01962 | K06179 |
| NBC2815_01968 | K07238 |
| NBC2815_01969 | K07497 |
| NBC2815_01970 | K07483 |
| NBC2815_01972 | K03832 |
| NBC2815_01973 | K01724 |
| NBC2815_01974 | K07400 |
| NBC2815_01995 | K02556 |
| NBC2815_01996 | K02557 |
| NBC2815_01997 | K03496 |
| NBC2815_01998 | K03408 |
| NBC2815_02000 | K03413 |
| NBC2815_02001 | K03407 |
| NBC2815_02004 | K05874 |
| NBC2815_02005 | K05874 |
| NBC2815_02006 | K05874 |
| NBC2815_02008 | K05874 |
| NBC2815_02009 | K05874 |
| NBC2815_02012 | K03408 |
| NBC2815_02014 | K00575 |
| NBC2815_02015 | K03411 |
| NBC2815_02016 | K03412 |
| NBC2815_02019 | K01682 |
| NBC2815_02022 | K01681 |


| NBC2815_02024 | K01897 |
| :---: | :---: |
| NBC2815_02025 | K13816 |
| NBC2815_02026 | K10715 |
| NBC2815_02028 | K13815 |
| NBC2815_02029 | K04567 |
| NBC2815_02030 | K02836 |
| NBC2815_02031 | K07462 |
| NBC2815_02033 | K03624 |
| NBC2815_02034 | K01955 |
| NBC2815_02037 | K01956 |
| NBC2815_02038 | K00215 |
| NBC2815_02039 | K05825 |
| NBC2815_02041 | K04759 |
| NBC2815_02042 | K04758 |
| NBC2815_02043 | K13766 |
| NBC2815_02044 | K01640 |
| NBC2815_02046 | K02356 |
| NBC2815_02050 | K00058 |
| NBC2815_02052 | K03294 |
| NBC2815_02053 | K03294 |
| NBC2815_02054 | K08964 |
| NBC2815_02055 | K08967 |
| NBC2815_02056 | K09880 |
| NBC2815_02061 | K11755 |
| NBC2815_02062 | K02500 |
| NBC2815_02063 | K01814 |
| NBC2815_02064 | K02501 |
| NBC2815_02065 | K01089 |
| NBC2815_02066 | K00817 |
| NBC2815_02067 | K00013 |
| NBC2815_02068 | K00765 |
| NBC2815_02070 | K01892 |
| NBC2815_02071 | K07481 |
| NBC2815_02073 | K07481 |
| NBC2815_02074 | K07497 |
| NBC2815_02075 | K07483 |
| NBC2815_02076 | K20266 |
| NBC2815_02077 | K07062 |
| NBC2815_02078 | K21495 |
| NBC2815_02082 | K07505 |
| NBC2815_02085 | K07733 |
| NBC2815_02087 | K01951 |
| NBC2815_02088 | K00088 |
| NBC2815_02089 | K01491 |
| NBC2815_02090 | K09948 |
| NBC2815_02091 | K07481 |
| NBC2815_02092 | K07481 |
| NBC2815_02093 | K07497 |
| NBC2815_02095 | K07497 |
| NBC2815_02097 | K00963 |


| NBC2815_02100 | K19804 |
| :---: | :---: |
| NBC2815_02101 | K08992 |
| NBC2815_02102 | K05788 |
| NBC2815_02103 | K02945 |
| NBC2815_02104 | K00945 |
| NBC2815_02105 | K02919 |
| NBC2815_02108 | K12251 |
| NBC2815_02109 | K03823 |
| NBC2815_02113 | K02026 |
| NBC2815_02114 | K02025 |
| NBC2815_02115 | K02027 |
| NBC2815_02118 | K02529 |
| NBC2815_02119 | K05527 |
| NBC2815_02120 | K09780 |
| NBC2815_02121 | K05896 |
| NBC2815_02122 | K06024 |
| NBC2815_02123 | K06178 |
| NBC2815_02125 | K22757 |
| NBC2815_02126 | K13566 |
| NBC2815_02127 | K14287 |
| NBC2815_02128 | K02193 |
| NBC2815_02129 | K02194 |
| NBC2815_02130 | K02195 |
| NBC2815_02131 | K02196 |
| NBC2815_02132 | K02197 |
| NBC2815_02133 | K02198 |
| NBC2815_02134 | K02199 |
| NBC2815_02135 | K02200 |
| NBC2815_02136 | K02200 |
| NBC2815_02137 | K07481 |
| NBC2815_02138 | K00641 |
| NBC2815_02139 | K07481 |
| NBC2815_02144 | K03406 |
| NBC2815_02147 | K06194 |
| NBC2815_02149 | K00573 |
| NBC2815_02150 | K03787 |
| NBC2815_02152 | K06176 |
| NBC2815_02153 | K01770 |
| NBC2815_02154 | K00991 |
| NBC2815_02155 | K05589 |
| NBC2815_02156 | K01689 |
| NBC2815_02157 | K01627 |
| NBC2815_02158 | K01937 |
| NBC2815_02160 | K02622 |
| NBC2815_02163 | K03306 |
| NBC2815_02164 | K07220 |
| NBC2815_02165 | K03699 |
| NBC2815_02168 | K08369 |
| NBC2815_02175 | K03088 |
| NBC2815_02180 | K02200 |


| NBC2815_02184 | K07497 |
| :---: | :---: |
| NBC2815_02190 | K01733 |
| NBC2815_02192 | K07481 |
| NBC2815_02193 | K00872 |
| NBC2815_02194 | K12524 |
| NBC2815_02195 | K07497 |
| NBC2815_02197 | K07481 |
| NBC2815_02205 | K07497 |
| NBC2815_02206 | K07483 |
| NBC2815_02208 | K00128 |
| NBC2815_02211 | K00254 |
| NBC2815_02212 | K00075 |
| NBC2815_02215 | K19302 |
| NBC2815_02216 | K03526 |
| NBC2815_02217 | K15011 |
| NBC2815_02218 | K15012 |
| NBC2815_02228 | K03307 |
| NBC2815_02229 | K05349 |
| NBC2815_02230 | K07093 |
| NBC2815_02231 | K03205 |
| NBC2815_02236 | K01810 |
| NBC2815_02237 | K01579 |
| NBC2815_02238 | K01918 |
| NBC2815_02239 | K00606 |
| NBC2815_02240 | K00950 |
| NBC2815_02241 | K00970 |
| NBC2815_02244 | K09007 |
| NBC2815_02245 | K08139 |
| NBC2815_02246 | K01805 |
| NBC2815_02247 | K00854 |
| NBC2815_02248 | K15923 |
| NBC2815_02249 | K01811 |
| NBC2815_02251 | K05970 |
| NBC2815_02259 | K01631 |
| NBC2815_02260 | K01684 |
| NBC2815_02261 | K13874 |
| NBC2815_02262 | K00883 |
| NBC2815_02263 | K05524 |
| NBC2815_02265 | K01714 |
| NBC2815_02266 | K03567 |
| NBC2815_02268 | K03564 |
| NBC2815_02269 | K07175 |
| NBC2815_02271 | K00941 |
| NBC2815_02277 | K06911 |
| NBC2815_02280 | K03563 |
| NBC2815_02281 | K01872 |
| NBC2815_02282 | K03565 |
| NBC2815_02283 | K03553 |
| NBC2815_02284 | K01356 |
| NBC2815_02285 | K03688 |


| NBC2815_02287 | K03568 |
| :---: | :---: |
| NBC2815_02288 | K07481 |
| NBC2815_02289 | K01728 |
| NBC2815_02293 | K07481 |
| NBC2815_02294 | K07497 |
| NBC2815_02295 | K07497 |
| NBC2815_02306 | K07481 |
| NBC2815_02308 | K03743 |
| NBC2815_02309 | K03665 |
| NBC2815_02310 | K03666 |
| NBC2815_02311 | K00791 |
| NBC2815_02312 | K00796 |
| NBC2815_02313 | K03798 |
| NBC2815_02314 | K02427 |
| NBC2815_02315 | K07574 |
| NBC2815_02320 | K07497 |
| NBC2815_02326 | K07481 |
| NBC2815_02355 | K13444 |
| NBC2815_02359 | K11902 |
| NBC2815_02360 | K03286 |
| NBC2815_02361 | K11890 |
| NBC2815_02362 | K11891 |
| NBC2815_02365 | K17733 |
| NBC2815_02378 | K07481 |
| NBC2815_02387 | K00995 |
| NBC2815_02388 | K03703 |
| NBC2815_02390 | K01104 |
| NBC2815_02391 | K00979 |
| NBC2815_02392 | K00912 |
| NBC2815_02393 | K11085 |
| NBC2815_02394 | K03559 |
| NBC2815_02395 | K03561 |
| NBC2815_02396 | K02238 |
| NBC2815_02398 | K09810 |
| NBC2815_02399 | K09808 |
| NBC2815_02400 | K19168 |
| NBC2815_02401 | K09159 |
| NBC2815_02402 | K00240 |
| NBC2815_02403 | K00239 |
| NBC2815_02404 | K00242 |
| NBC2815_02405 | K00241 |
| NBC2815_02406 | K06980 |
| NBC2815_02407 | K10112 |
| NBC2815_02408 | K00036 |
| NBC2815_02409 | K00845 |
| NBC2815_02410 | K01057 |
| NBC2815_02411 | K01690 |
| NBC2815_02412 | K01625 |
| NBC2815_02417 | K07481 |
| NBC2815_02418 | K07481 |


| NBC2815_02422 | K06959 |
| :---: | :---: |
| NBC2815_02428 | K03821 |
| NBC2815_02429 | K22881 |
| NBC2815_02430 | K17103 |
| NBC2815_02431 | K03574 |
| NBC2815_02432 | K09920 |
| NBC2815_02433 | K09773 |
| NBC2815_02434 | K01007 |
| NBC2815_02435 | K03442 |
| NBC2815_02436 | K13288 |
| NBC2815_02437 | K11991 |
| NBC2815_02438 | K11924 |
| NBC2815_02439 | K03322 |
| NBC2815_02440 | K00433 |
| NBC2815_02442 | K07481 |
| NBC2815_02449 | K07497 |
| NBC2815_02453 | K07483 |
| NBC2815_02454 | K07497 |
| NBC2815_02456 | K07481 |
| NBC2815_02459 | K00147 |
| NBC2815_02460 | K00931 |
| NBC2815_02463 | K01755 |
| NBC2815_02464 | K00145 |
| NBC2815_02465 | K22479 |
| NBC2815_02466 | K22478 |
| NBC2815_02467 | K01438 |
| NBC2815_02468 | K01940 |
| NBC2815_02469 | K09065 |
| NBC2815_02471 | K01883 |
| NBC2815_02472 | K02426 |
| NBC2815_02474 | K06204 |
| NBC2815_02475 | K01465 |
| NBC2815_02477 | K07481 |
| NBC2815_02479 | K01051 |
| NBC2815_02481 | K01728 |
| NBC2815_02482 | K01184 |
| NBC2815_02484 | K22292 |
| NBC2815_02485 | K00568 |
| NBC2815_02486 | K12960 |
| NBC2815_02488 | K02356 |
| NBC2815_02490 | K15396 |
| NBC2815_02491 | K01092 |
| NBC2815_02492 | K04564 |
| NBC2815_02495 | K15738 |
| NBC2815_02496 | K05591 |
| NBC2815_02497 | K00759 |
| NBC2815_02500 | K00799 |
| NBC2815_02501 | K03704 |
| NBC2815_02505 | K21025 |
| NBC2815_02506 | K03799 |


| NBC2815_02507 | K01894 |
| :---: | :---: |
| NBC2815_02508 | K00023 |
| NBC2815_02510 | K09973 |
| NBC2815_02511 | K09164 |
| NBC2815_02512 | K03572 |
| NBC2815_02513 | K01448 |
| NBC2815_02514 | K06925 |
| NBC2815_02515 | K17758 |
| NBC2815_02516 | K18979 |
| NBC2815_02517 | K03601 |
| NBC2815_02520 | K09125 |
| NBC2815_02523 | K00547 |
| NBC2815_02524 | K16235 |
| NBC2815_02526 | K01874 |
| NBC2815_02528 | K03616 |
| NBC2815_02531 | K03088 |
| NBC2815_02533 | K00507 |
| NBC2815_02534 | K06954 |
| NBC2815_02535 | K09701 |
| NBC2815_02536 | K00574 |
| NBC2815_02539 | K00574 |
| NBC2815_02542 | K14205 |
| NBC2815_02545 | K07481 |
| NBC2815_02546 | K01975 |
| NBC2815_02549 | K19577 |
| NBC2815_02550 | K10680 |
| NBC2815_02551 | K06193 |
| NBC2815_02553 | K04046 |
| NBC2815_02556 | K04760 |
| NBC2815_02557 | K14441 |
| NBC2815_02559 | K01061 |
| NBC2815_02563 | K01494 |
| NBC2815_02564 | K03593 |
| NBC2815_02567 | K07386 |
| NBC2815_02568 | K07386 |
| NBC2815_02570 | K00383 |
| NBC2815_02571 | K00285 |
| NBC2815_02572 | K07148 |
| NBC2815_02573 | K03775 |
| NBC2815_02578 | K07483 |
| NBC2815_02592 | K01875 |
| NBC2815_02594 | K03832 |
| NBC2815_02595 | K00800 |
| NBC2815_02596 | K14170 |
| NBC2815_02597 | K00831 |
| NBC2815_02598 | K07147 |
| NBC2815_02600 | K03435 |
| NBC2815_02601 | K08483 |
| NBC2815_02602 | K00882 |
| NBC2815_02603 | K02770 |


| NBC2815_02604 | K07267 |
| :---: | :---: |
| NBC2815_02605 | K03074 |
| NBC2815_02606 | K03072 |
| NBC2815_02607 | K03210 |
| NBC2815_02608 | K00773 |
| NBC2815_02609 | K07568 |
| NBC2815_02613 | K00761 |
| NBC2815_02616 | K01179 |
| NBC2815_02617 | K00681 |
| NBC2815_02620 | K00954 |
| NBC2815_02621 | K08316 |
| NBC2815_02622 | K04079 |
| NBC2815_02624 | K05973 |
| NBC2815_02627 | K07481 |
| NBC2815_02631 | K01077 |
| NBC2815_02632 | K04075 |
| NBC2815_02633 | K03602 |
| NBC2815_02634 | K00795 |
| NBC2815_02635 | K08646 |
| NBC2815_02636 | K09940 |
| NBC2815_02637 | K03592 |
| NBC2815_02638 | K09889 |
| NBC2815_02639 | K03568 |
| NBC2815_02642 | K08301 |
| NBC2815_02643 | K06287 |
| NBC2815_02644 | K09807 |
| NBC2815_02645 | K00783 |
| NBC2815_02646 | K07497 |
| NBC2815_02650 | K09710 |
| NBC2815_02651 | K00969 |
| NBC2815_02652 | K02340 |
| NBC2815_02653 | K03643 |
| NBC2815_02654 | K01869 |
| NBC2815_02656 | K05838 |
| NBC2815_02658 | K18377 |
| NBC2815_02659 | K18378 |
| NBC2815_02660 | K03219 |
| NBC2815_02661 | K03228 |
| NBC2815_02663 | K03224 |
| NBC2815_02664 | K03223 |
| NBC2815_02666 | K03222 |
| NBC2815_02667 | K18374 |
| NBC2815_02668 | K18373 |
| NBC2815_02669 | K03229 |
| NBC2815_02670 | K03230 |
| NBC2815_02671 | K18381 |
| NBC2815_02672 | K03225 |
| NBC2815_02673 | K03226 |
| NBC2815_02674 | K03227 |
| NBC2815_02675 | K18379 |


| NBC2815_02676 | K03220 |
| :---: | :---: |
| NBC2815_02679 | K18380 |
| NBC2815_02686 | K09779 |
| NBC2815_02687 | K01802 |
| NBC2815_02693 | K18893 |
| NBC2815_02701 | K06182 |
| NBC2815_02703 | K05592 |
| NBC2815_02704 | K03088 |
| NBC2815_02705 | K14761 |
| NBC2815_02711 | K00567 |
| NBC2815_02715 | K02014 |
| NBC2815_02717 | K00123 |
| NBC2815_02726 | K01179 |
| NBC2815_02727 | K07481 |
| NBC2815_02728 | K09823 |
| NBC2815_02729 | K01885 |
| NBC2815_02733 | K07115 |
| NBC2815_02735 | K03723 |
| NBC2815_02736 | K03555 |
| NBC2815_02737 | K03782 |
| NBC2815_02745 | K01834 |
| NBC2815_02751 | K06911 |
| NBC2815_02756 | K23676 |
| NBC2815_02760 | K07141 |
| NBC2815_02762 | K07402 |
| NBC2815_02765 | K03111 |
| NBC2815_02766 | K02523 |
| NBC2815_02768 | K23169 |
| NBC2815_02769 | K23170 |
| NBC2815_02771 | K12526 |
| NBC2815_02775 | K04063 |
| NBC2815_02776 | K00609 |
| NBC2815_02777 | K07447 |
| NBC2815_02778 | K07735 |
| NBC2815_02779 | K01246 |
| NBC2815_02782 | K02670 |
| NBC2815_02783 | K02669 |
| NBC2815_02784 | K06997 |
| NBC2815_02785 | K00286 |
| NBC2815_02787 | K21472 |
| NBC2815_02790 | K07117 |
| NBC2815_02792 | K09014 |
| NBC2815_02793 | K09013 |
| NBC2815_02794 | K09015 |
| NBC2815_02795 | K11717 |
| NBC2815_02798 | K05710 |
| NBC2815_02799 | K16090 |
| NBC2815_02800 | K07336 |
| NBC2815_02801 | K07126 |
| NBC2815_02802 | K07497 |


| NBC2815_02804 | K03734 |
| :---: | :---: |
| NBC2815_02805 | K09975 |
| NBC2815_02806 | K02237 |
| NBC2815_02809 | K07102 |
| NBC2815_02810 | K00992 |
| NBC2815_02811 | K10763 |
| NBC2815_02813 | K09938 |
| NBC2815_02814 | K01933 |
| NBC2815_02815 | K11175 |
| NBC2815_02821 | K00790 |
| NBC2815_02823 | K06041 |
| NBC2815_02824 | K03270 |
| NBC2815_02825 | K11719 |
| NBC2815_02826 | K09774 |
| NBC2815_02827 | K06861 |
| NBC2815_02828 | K03092 |
| NBC2815_02829 | K05808 |
| NBC2815_02830 | K02806 |
| NBC2815_02831 | K06023 |
| NBC2815_02832 | K06958 |
| NBC2815_02833 | K02821 |
| NBC2815_02834 | K11189 |
| NBC2815_02835 | K08483 |
| NBC2815_02836 | K06213 |
| NBC2815_02838 | K07497 |
| NBC2815_02842 | K03205 |
| NBC2815_02843 | K00845 |
| NBC2815_02845 | K02014 |
| NBC2815_02846 | K01206 |
| NBC2815_02848 | K12373 |
| NBC2815_02849 | K01192 |
| NBC2815_02850 | K05349 |
| NBC2815_02852 | K07497 |
| NBC2815_02857 | K07481 |
| NBC2815_02859 | K07497 |
| NBC2815_02860 | K07483 |
| NBC2815_02863 | K01256 |
| NBC2815_02864 | K01939 |
| NBC2815_02865 | K09937 |
| NBC2815_02866 | K04087 |
| NBC2815_02867 | K04088 |
| NBC2815_02868 | K02658 |
| NBC2815_02869 | K05516 |
| NBC2815_02870 | K13993 |
| NBC2815_02872 | K03594 |
| NBC2815_02876 | K02014 |
| NBC2815_02877 | K09788 |
| NBC2815_02878 | K20455 |
| NBC2815_02879 | K01659 |
| NBC2815_02880 | K03417 |


| NBC2815_02881 | K02688 |
| :---: | :---: |
| NBC2815_02883 | K07481 |
| NBC2815_02898 | K12686 |
| NBC2815_02899 | K03154 |
| NBC2815_02900 | K03149 |
| NBC2815_02901 | K03439 |
| NBC2815_02905 | K03282 |
| NBC2815_02911 | K03611 |
| NBC2815_02912 | K02879 |
| NBC2815_02913 | K03040 |
| NBC2815_02914 | K02986 |
| NBC2815_02915 | K02948 |
| NBC2815_02916 | K02952 |
| NBC2815_02917 | K03076 |
| NBC2815_02918 | K02876 |
| NBC2815_02919 | K02907 |
| NBC2815_02920 | K02988 |
| NBC2815_02921 | K02881 |
| NBC2815_02922 | K02933 |
| NBC2815_02923 | K02994 |
| NBC2815_02924 | K02954 |
| NBC2815_02925 | K02931 |
| NBC2815_02926 | K02895 |
| NBC2815_02927 | K02874 |
| NBC2815_02928 | K02961 |
| NBC2815_02929 | K02904 |
| NBC2815_02930 | K02878 |
| NBC2815_02931 | K02982 |
| NBC2815_02932 | K02890 |
| NBC2815_02933 | K02965 |
| NBC2815_02934 | K02886 |
| NBC2815_02935 | K02892 |
| NBC2815_02936 | K02926 |
| NBC2815_02937 | K02906 |
| NBC2815_02938 | K02946 |
| NBC2815_02939 | K02358 |
| NBC2815_02940 | K02355 |
| NBC2815_02941 | K02992 |
| NBC2815_02942 | K02950 |
| NBC2815_02943 | K03046 |
| NBC2815_02944 | K03043 |
| NBC2815_02945 | K02935 |
| NBC2815_02946 | K02864 |
| NBC2815_02947 | K02863 |
| NBC2815_02948 | K02867 |
| NBC2815_02949 | K02601 |
| NBC2815_02950 | K03073 |
| NBC2815_02952 | K02358 |
| NBC2815_02956 | K06942 |
| NBC2815_02957 | K01056 |


| NBC2815_02958 | K02897 |
| :---: | :---: |
| NBC2815_02959 | K00948 |
| NBC2815_02961 | K00919 |
| NBC2815_02962 | K02494 |
| NBC2815_02964 | K02492 |
| NBC2815_02965 | K02835 |
| NBC2815_02967 | K03638 |
| NBC2815_02971 | K07058 |
| NBC2815_02972 | K03809 |
| NBC2815_02974 | K01424 |
| NBC2815_02975 | K03976 |
| NBC2815_02976 | K14645 |
| NBC2815_02980 | K00826 |
| NBC2815_02984 | K00325 |
| NBC2815_02985 | K03088 |
| NBC2815_02991 | K01515 |
| NBC2815_02994 | K01259 |
| NBC2815_02995 | K02493 |
| NBC2815_02996 | K03386 |
| NBC2815_02997 | K03387 |
| NBC2815_02998 | K04761 |
| NBC2815_02999 | K06140 |
| NBC2815_03000 | K00616 |
| NBC2815_03001 | K07304 |
| NBC2815_03006 | K00799 |
| NBC2815_03007 | K01886 |
| NBC2815_03010 | K06968 |
| NBC2815_03011 | K00118 |
| NBC2815_03015 | K02623 |
| NBC2815_03016 | K04100 |
| NBC2815_03017 | K11475 |
| NBC2815_03018 | K03184 |
| NBC2815_03019 | K03185 |
| NBC2815_03022 | K00798 |
| NBC2815_03024 | K04744 |
| NBC2815_03025 | K03771 |
| NBC2815_03026 | K00097 |
| NBC2815_03027 | K02528 |
| NBC2815_03028 | K06195 |
| NBC2815_03029 | K01525 |
| NBC2815_03030 | K00287 |
| NBC2815_03032 | K00560 |
| NBC2815_03033 | K13292 |
| NBC2815_03035 | K06872 |
| NBC2815_03036 | K00852 |
| NBC2815_03037 | K03317 |
| NBC2815_03040 | K16087 |
| NBC2815_03041 | K09922 |
| NBC2815_03042 | K07481 |
| NBC2815_03043 | K07481 |


| NBC2815_03047 | K03119 |
| :---: | :---: |
| NBC2815_03049 | K02004 |
| NBC2815_03050 | K02003 |
| NBC2815_03051 | K10804 |
| NBC2815_03056 | K00901 |
| NBC2815_03057 | K03744 |
| NBC2815_03058 | K05540 |
| NBC2815_03060 | K07038 |
| NBC2815_03061 | K00789 |
| NBC2815_03066 | K01595 |
| NBC2815_03068 | K01251 |
| NBC2815_03069 | K01014 |
| NBC2815_03074 | K09912 |
| NBC2815_03075 | K01176 |
| NBC2815_03076 | K00035 |
| NBC2815_03077 | K07481 |
| NBC2815_03083 | K11752 |
| NBC2815_03085 | K07738 |
| NBC2815_03086 | K00600 |
| NBC2815_03088 | K06020 |
| NBC2815_03089 | K01462 |
| NBC2815_03092 | K00763 |
| NBC2815_03096 | K02014 |
| NBC2815_03097 | K03811 |
| NBC2815_03100 | K02453 |
| NBC2815_03101 | K02463 |
| NBC2815_03102 | K02462 |
| NBC2815_03103 | K02461 |
| NBC2815_03104 | K02460 |
| NBC2815_03105 | K02459 |
| NBC2815_03106 | K02458 |
| NBC2815_03107 | K02457 |
| NBC2815_03108 | K02456 |
| NBC2815_03109 | K02455 |
| NBC2815_03110 | K02454 |
| NBC2815_03111 | K14645 |
| NBC2815_03112 | K21449 |
| NBC2815_03114 | K14645 |
| NBC2815_03115 | K01952 |
| NBC2815_03116 | K03981 |
| NBC2815_03117 | K04763 |
| NBC2815_03119 | K11720 |
| NBC2815_03120 | K07091 |
| NBC2815_03121 | K01255 |
| NBC2815_03122 | K02339 |
| NBC2815_03123 | K01873 |
| NBC2815_03124 | K07497 |
| NBC2815_03125 | K07483 |
| NBC2815_03132 | K11904 |
| NBC2815_03134 | K01206 |


| NBC2815_03137 | K06201 |
| :---: | :---: |
| NBC2815_03138 | K01444 |
| NBC2815_03139 | K03790 |
| NBC2815_03140 | K06598 |
| NBC2815_03141 | K06597 |
| NBC2815_03142 | K06596 |
| NBC2815_03143 | K02660 |
| NBC2815_03144 | K02659 |
| NBC2815_03145 | K02658 |
| NBC2815_03146 | K02657 |
| NBC2815_03147 | K01920 |
| NBC2815_03148 | K03832 |
| NBC2815_03149 | K14742 |
| NBC2815_03150 | K03722 |
| NBC2815_03152 | K05365 |
| NBC2815_03153 | K20444 |
| NBC2815_03155 | K00951 |
| NBC2815_03156 | K06136 |
| NBC2815_03157 | K06137 |
| NBC2815_03158 | K06138 |
| NBC2815_03159 | K06139 |
| NBC2815_03160 | K03578 |
| NBC2815_03161 | K04047 |
| NBC2815_03162 | K03654 |
| NBC2815_03166 | K06182 |
| NBC2815_03170 | K06920 |
| NBC2815_03173 | K07497 |
| NBC2815_03175 | K07461 |
| NBC2815_03176 | K00799 |
| NBC2815_03177 | K06901 |
| NBC2815_03180 | K02014 |
| NBC2815_03181 | K01087 |
| NBC2815_03183 | K00697 |
| NBC2815_03185 | K00117 |
| NBC2815_03186 | K05810 |
| NBC2815_03187 | K06180 |
| NBC2815_03188 | K05807 |
| NBC2815_03189 | K01916 |
| NBC2815_03191 | K01902 |
| NBC2815_03192 | K01903 |
| NBC2815_03193 | K02668 |
| NBC2815_03194 | K02667 |
| NBC2815_03196 | K04095 |
| NBC2815_03197 | K07481 |
| NBC2815_03198 | K02652 |
| NBC2815_03199 | K02650 |
| NBC2815_03200 | K02653 |
| NBC2815_03201 | K02654 |
| NBC2815_03202 | K00859 |
| NBC2815_03204 | K07497 |


| NBC2815_03205 | K07481 |
| :---: | :---: |
| NBC2815_03206 | K18879 |
| NBC2815_03210 | K00297 |
| NBC2815_03212 | K03574 |
| NBC2815_03214 | K03070 |
| NBC2815_03217 | K02535 |
| NBC2815_03218 | K03531 |
| NBC2815_03219 | K03590 |
| NBC2815_03220 | K03589 |
| NBC2815_03221 | K01921 |
| NBC2815_03222 | K01924 |
| NBC2815_03223 | K02563 |
| NBC2815_03224 | K03588 |
| NBC2815_03225 | K01000 |
| NBC2815_03226 | K01929 |
| NBC2815_03227 | K01928 |
| NBC2815_03228 | K03587 |
| NBC2815_03229 | K03586 |
| NBC2815_03230 | K03438 |
| NBC2815_03231 | K03925 |
| NBC2815_03233 | K19164 |
| NBC2815_03234 | K19163 |
| NBC2815_03235 | K07056 |
| NBC2815_03236 | K07121 |
| NBC2815_03237 | K07460 |
| NBC2815_03238 | K07481 |
| NBC2815_03242 | K07481 |
| NBC2815_03243 | K02666 |
| NBC2815_03244 | K02665 |
| NBC2815_03245 | K02664 |
| NBC2815_03246 | K02663 |
| NBC2815_03247 | K02662 |
| NBC2815_03248 | K05366 |
| NBC2815_03250 | K01647 |
| NBC2815_03251 | K02909 |
| NBC2815_03252 | K01239 |
| NBC2815_03256 | K03655 |
| NBC2815_03257 | K09022 |
| NBC2815_03258 | K01139 |
| NBC2815_03259 | K03060 |
| NBC2815_03260 | K00942 |
| NBC2815_03262 | K00989 |
| NBC2815_03263 | K02428 |
| NBC2815_03266 | K01271 |
| NBC2815_03267 | K01262 |
| NBC2815_03268 | K09895 |
| NBC2815_03269 | K09892 |
| NBC2815_03270 | K09888 |
| NBC2815_03271 | K01934 |
| NBC2815_03273 | K01807 |


| NBC2815_03274 | K09005 |
| :---: | :---: |
| NBC2815_03277 | K00788 |
| NBC2815_03278 | K01845 |
| NBC2815_03279 | K00821 |
| NBC2815_03280 | K10716 |
| NBC2815_03281 | K07481 |
| NBC2815_03283 | K13775 |
| NBC2815_03286 | K07157 |
| NBC2815_03287 | K02558 |
| NBC2815_03288 | K00939 |
| NBC2815_03289 | K21071 |
| NBC2815_03292 | K15987 |
| NBC2815_03294 | K01507 |
| NBC2815_03296 | K02014 |
| NBC2815_03298 | K07506 |
| NBC2815_03299 | K07481 |
| NBC2815_03301 | K03147 |
| NBC2815_03308 | K05875 |
| NBC2815_03310 | K00053 |
| NBC2815_03311 | K01652 |
| NBC2815_03312 | K11258 |
| NBC2815_03313 | K01754 |
| NBC2815_03314 | K01649 |
| NBC2815_03315 | K07481 |
| NBC2815_03318 | K00052 |
| NBC2815_03319 | K01704 |
| NBC2815_03320 | K01703 |
| NBC2815_03323 | K00573 |
| NBC2815_03324 | K12340 |
| NBC2815_03325 | K02527 |
| NBC2815_03326 | K02517 |
| NBC2815_03331 | K00029 |
| NBC2815_03332 | K11103 |
| NBC2815_03333 | K07221 |
| NBC2815_03334 | K10819 |
| NBC2815_03336 | K07497 |
| NBC2815_03337 | K07497 |
| NBC2815_03339 | K07481 |
| NBC2815_03340 | K07483 |
| NBC2815_03345 | K13409 |
| NBC2815_03346 | K13408 |
| NBC2815_03351 | K07483 |
| NBC2815_03355 | K02012 |
| NBC2815_03356 | K07649 |
| NBC2815_03357 | K07774 |
| NBC2815_03358 | K07221 |
| NBC2815_03359 | K03300 |
| NBC2815_03360 | K00023 |
| NBC2815_03362 | K16211 |
| NBC2815_03364 | K05341 |


| NBC2815_03366 | K06949 |
| :---: | :---: |
| NBC2815_03371 | K11003 |
| NBC2815_03372 | K11004 |
| NBC2815_03373 | K14260 |
| NBC2815_03377 | K07390 |
| NBC2815_03379 | K07497 |
| NBC2815_03394 | K01070 |
| NBC2815_03395 | K03396 |
| NBC2815_03396 | K00121 |
| NBC2815_03397 | K23239 |
| NBC2815_03400 | K01443 |
| NBC2815_03401 | K00820 |
| NBC2815_03402 | K02529 |
| NBC2815_03404 | K03710 |
| NBC2815_03407 | K07483 |
| NBC2815_03409 | K02463 |
| NBC2815_03410 | K02462 |
| NBC2815_03415 | K03793 |
| NBC2815_03416 | K00950 |
| NBC2815_03418 | K02485 |
| NBC2815_03420 | K04065 |
| NBC2815_03422 | K00033 |
| NBC2815_03427 | K03462 |
| NBC2815_03428 | K13522 |
| NBC2815_03429 | K03797 |
| NBC2815_03435 | K03644 |
| NBC2815_03436 | K03801 |
| NBC2815_03437 | K09158 |
| NBC2815_03440 | K07258 |
| NBC2815_03441 | K03642 |
| NBC2815_03442 | K08305 |
| NBC2815_03443 | K01184 |
| NBC2815_03444 | K05837 |
| NBC2815_03445 | K05515 |
| NBC2815_03446 | K03571 |
| NBC2815_03447 | K03570 |
| NBC2815_03448 | K03569 |
| NBC2815_03449 | K00856 |
| NBC2815_03454 | K03183 |
| NBC2815_03457 | K02348 |
| NBC2815_03458 | K03365 |
| NBC2815_03460 | K03667 |
| NBC2815_03461 | K01419 |
| NBC2815_03462 | K03733 |
| NBC2815_03463 | K09921 |
| NBC2815_03464 | K01778 |
| NBC2815_03466 | K01354 |
| NBC2815_03470 | K01322 |
| NBC2815_03472 | K03098 |
| NBC2815_03474 | K07283 |


| NBC2815_03476 | K01749 |
| :---: | :---: |
| NBC2815_03477 | K08083 |
| NBC2815_03479 | K06999 |
| NBC2815_03480 | K03669 |
| NBC2815_03481 | K03321 |
| NBC2815_03482 | K01179 |
| NBC2815_03489 | K05522 |
| NBC2815_03492 | K01194 |
| NBC2815_03495 | K03284 |
| NBC2815_03497 | K11737 |
| NBC2815_03500 | K15270 |
| NBC2815_03501 | K06983 |
| NBC2815_03510 | K07481 |
| NBC2815_03515 | K07481 |
| NBC2815_03519 | K03786 |
| NBC2815_03520 | K02160 |
| NBC2815_03522 | K01961 |
| NBC2815_03523 | K02687 |
| NBC2815_03527 | K03557 |
| NBC2815_03530 | K00602 |
| NBC2815_03531 | K01945 |
| NBC2815_03540 | K03807 |
| NBC2815_03541 | K03426 |
| NBC2815_03546 | K07483 |
| NBC2815_03547 | K07497 |
| NBC2815_03548 | K19736 |
| NBC2815_03550 | K01284 |
| NBC2815_03553 | K15034 |
| NBC2815_03554 | K09924 |
| NBC2815_03555 | K06175 |
| NBC2815_03560 | K03688 |
| NBC2815_03561 | K03690 |
| NBC2815_03563 | K01921 |
| NBC2815_03566 | K22320 |
| NBC2815_03567 | K22319 |
| NBC2815_03568 | K06940 |
| NBC2815_03569 | K22318 |
| NBC2815_03570 | K07497 |
| NBC2815_03573 | K15724 |
| NBC2815_03579 | K03594 |
| NBC2815_03580 | K08311 |
| NBC2815_03583 | K02996 |
| NBC2815_03584 | K02871 |
| NBC2815_03585 | K06134 |
| NBC2815_03586 | K11741 |
| NBC2815_03587 | K01611 |
| NBC2815_03588 | K10914 |
| NBC2815_03589 | K18697 |
| NBC2815_03590 | K01609 |
| NBC2815_03591 | K00766 |


| NBC2815_03593 | K01658 |
| :---: | :---: |
| NBC2815_03596 | K03430 |
| NBC2815_03597 | K01740 |
| NBC2815_03599 | K07010 |
| NBC2815_03601 | K00651 |
| NBC2815_03602 | K01915 |
| NBC2815_03604 | K01657 |
| NBC2815_03607 | K01783 |
| NBC2815_03610 | K01923 |
| NBC2815_03618 | K05559 |
| NBC2815_03619 | K05560 |
| NBC2815_03620 | K05561 |
| NBC2815_03621 | K05562 |
| NBC2815_03622 | K05563 |
| NBC2815_03623 | K05564 |
| NBC2815_03624 | K07481 |
| NBC2815_03625 | K07025 |
| NBC2815_03630 | K08641 |
| NBC2815_03631 | K01447 |
| NBC2815_03633 | K19802 |
| NBC2815_03640 | K05349 |
| NBC2815_03641 | K01633 |
| NBC2815_03642 | K01409 |
| NBC2815_03643 | K02970 |
| NBC2815_03644 | K09117 |
| NBC2815_03645 | K07058 |
| NBC2815_03646 | K02316 |
| NBC2815_03648 | K14347 |
| NBC2815_03649 | K01829 |
| NBC2815_03650 | K02257 |
| NBC2815_03651 | K02259 |
| NBC2815_03655 | K02276 |
| NBC2815_03656 | K02258 |
| NBC2815_03658 | K02274 |
| NBC2815_03659 | K02275 |
| NBC2815_03661 | K13821 |
| NBC2815_03662 | K01866 |
| NBC2815_03664 | K09001 |
| NBC2815_03666 | K08218 |
| NBC2815_03667 | K01142 |
| NBC2815_03668 | K00762 |
| NBC2815_03670 | K03496 |
| NBC2815_03671 | K03497 |
| NBC2815_03675 | K08679 |
| NBC2815_03676 | K00721 |
| NBC2815_03679 | K15778 |
| NBC2815_03680 | K01520 |
| NBC2815_03681 | K13038 |
| NBC2815_03682 | K03630 |
| NBC2815_03683 | K01887 |


| NBC2815_03687 | K05886 |
| :---: | :---: |
| NBC2815_03694 | K02364 |
| NBC2815_03697 | K07637 |
| NBC2815_03698 | K07660 |
| NBC2815_03700 | K05539 |
| NBC2815_03702 | K07481 |
| NBC2815_03705 | K07483 |
| NBC2815_03707 | K07497 |
| NBC2815_03711 | K03525 |
| NBC2815_03712 | K03524 |
| NBC2815_03720 | K01728 |
| NBC2815_03721 | K07481 |
| NBC2815_03723 | K03657 |
| NBC2815_03725 | K06131 |
| NBC2815_03727 | K02913 |
| NBC2815_03728 | K02902 |
| NBC2815_03731 | K03501 |
| NBC2815_03732 | K01113 |
| NBC2815_03733 | K06133 |
| NBC2815_03736 | K01142 |
| NBC2815_03738 | K14393 |
| NBC2815_03741 | K01895 |
| NBC2815_03743 | K00064 |
| NBC2815_03744 | K07046 |
| NBC2815_03745 | K18335 |
| NBC2815_03746 | K18336 |
| NBC2815_03747 | K18334 |
| NBC2815_03748 | K03534 |
| NBC2815_03749 | K02429 |
| NBC2815_03753 | K18786 |
| NBC2815_03754 | K03292 |
| NBC2815_03755 | K00851 |
| NBC2815_03756 | K05889 |
| NBC2815_03758 | K09800 |
| NBC2815_03759 | K07278 |
| NBC2815_03763 | K07566 |
| NBC2815_03764 | K03168 |
| NBC2815_03769 | K03747 |
| NBC2815_03770 | K04096 |
| NBC2815_03772 | K01462 |
| NBC2815_03773 | K00604 |
| NBC2815_03774 | K03500 |
| NBC2815_03776 | K02847 |
| NBC2815_03779 | K08981 |
| NBC2815_03780 | K09167 |
| NBC2815_03781 | K01497 |
| NBC2815_03782 | K03823 |
| NBC2815_03783 | K02517 |
| NBC2815_03784 | K07560 |
| NBC2815_03785 | K03086 |


| NBC2815_03805 | K06908 |
| :---: | :---: |
| NBC2815_03806 | K06907 |
| NBC2815_03807 | K06903 |
| NBC2815_03817 | K03791 |
| NBC2815_03828 | K00571 |
| NBC2815_03848 | K11209 |
| NBC2815_03851 | K14266 |
| NBC2815_03853 | K03832 |
| NBC2815_03854 | K09696 |
| NBC2815_03855 | K09697 |
| NBC2815_03858 | K01990 |
| NBC2815_03859 | K01992 |
| NBC2815_03861 | K00077 |
| NBC2815_03867 | K00451 |
| NBC2815_03868 | K00457 |
| NBC2815_03872 | K03305 |
| NBC2815_03873 | K00453 |
| NBC2815_03874 | K07004 |
| NBC2815_03875 | K00161 |
| NBC2815_03876 | K00161 |
| NBC2815_03877 | K00162 |
| NBC2815_03879 | K00627 |
| NBC2815_03890 | K00059 |
| NBC2815_03891 | K07497 |
| NBC2815_03900 | K08151 |
| NBC2815_03901 | K08151 |
| NBC2815_03902 | K01792 |
| NBC2815_03904 | K09858 |
| NBC2815_03905 | K07090 |
| NBC2815_03913 | K01495 |
| NBC2815_03914 | K03761 |
| NBC2815_03920 | K07497 |
| NBC2815_03922 | K07481 |
| NBC2815_03924 | K07481 |
| NBC2815_03928 | K21498 |
| NBC2815_03929 | K07334 |
| NBC2815_03930 | K03581 |
| NBC2815_03931 | K03582 |
| NBC2815_03932 | K03583 |
| NBC2815_03933 | K02065 |
| NBC2815_03934 | K02066 |
| NBC2815_03935 | K02067 |
| NBC2815_03936 | K07323 |
| NBC2815_03937 | K07122 |
| NBC2815_03938 | K04754 |
| NBC2815_03940 | K00432 |
| NBC2815_03942 | K09760 |
| NBC2815_03944 | K03294 |
| NBC2815_03947 | K00865 |
| NBC2815_03950 | K06969 |


| NBC2815_03951 | K05794 |
| :--- | :--- |
| NBC2815_03952 | K01126 |
| NBC2815_03953 | K07497 |
| NBC2815_03957 | K03650 |
| NBC2815_03958 | K03217 |
| NBC2815_03959 | K03536 |
| NBC2815_03960 | K02914 |

Table S9. Primers designed and used for validation of RNA-seq data by RT-qPCR

| Gene ID or locus <br> tag | Name/Putative function | Forward primer 5'-3' | Reverse primer 5'-3' |
| :--- | :--- | :--- | :--- |


| $p y k A * *$ | TGACCGAGCGCGACAAGGAG | AGAACGACACTGCGATGAAG |  |  |
| :--- | :--- | :--- | :--- | :---: |
| $r a x A$ | membrane fusion <br> transmembrane protein <br> ribosomal large subunit <br> pseudouridine synthase D | CGATGCGCTGTTGGATGG | ATTAAAGCCCCGACTGATG | AACAAAGCCACCTGACTCTG |
| $r l u D$ | DNA-directed RNA <br> polymerase subunit beta | GAGCGTCTGCGTGGTGAAAC | CACGTTCAGCGGGATGTC |  |

[^1]
[^0]:    *Enrichment ratio $=$ proportion of COG X in the group of analysed set of $X$. fragariae differentially expressed genes/ proportion of COG X in $X$. fragariae genome

[^1]:    *Annealing temperature: $59^{\circ} \mathrm{C}$
    **Kałużna et al., 2019

