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Pathogen Causing *Phalaenopsis* Soft Rot Disease – 16S rDNA and Virulence Characterisation

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Electronic supplementary material (ESM)

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Dc1  GCAG--CT-AC-CATGCA-GTCGAGCGGCAGCGGGGGGAAGCTTGCTTCCCCGCCGGCGAGCGGCGGACGGGTGAGTAAT
Dc2  ----------------------------------------------------------------------------------
Dc3  GCAG--CT-AC-CATGCA-GTCGAGCGGCAGCGGGGGGAAGCTTGCTTCCCCGCCGGCGAGCGGCGGACGGGTGAGTAAT
EcM  ----------------------------------------------------------CGAGCGGCGGACGGGTGAGTAAT
DcM  GCAGGCCTAACACATGCAAGTCGAGCGGCAGCGGGGGGAAGCTTGCTTCCCCGCCGGCGAGCGGCGGACGGGTGAGTAAT
Ec   GCAGGCCTAACACATGCAAGTCGAGCGGCAGCGGGGGGAAGCTTGCTTCCCCGCCGGCGAGCGGCGGACGGGTGAGTAAT

Dc1  GTCTGGGGATCTGCCTGATGGAGGGGGATAACTACTGGAAACGGTAGC-TAATACCGCATAACGTCGCAAGACCAAAGTG
Dc2  -------------------GGAGGGGGATAACTCCTGGAAACGGTTGCTTAATCCCGNTAAACGTCCCAAGACCAAAATN
Dc3  GTCTGGGGATCTGCCTGATGGAGGGGGATAACTACTGGAAACGGTAGC-TAATACCGCATAACGTCGCAAGACCAAAGTG
EcM  GTCTGGGGATCTGCCTGATGGAGGGGGATAACTACTGGAAACGGTAGC-TAATACCGCATAACGTCGCAAGACCAAAGTG
DcM  GTCTGGGGATCTGCCTGATGGAGGGGGATAACTACTGGAAACGGTAGC-TAATACCGCATAACGTCGCAAGACCAAAGTG
Ec   GTCTGGGGATCTGCCTGATGGAGGGGGATAACTACTGGAAACGGTAGC-TAATACCGCATAACGTCGCAAGACCAAAGTG

Dc1  GGGGACCTTCGGGCCTCACGCCATCGGATGAACCCAGATGGGATTAGCTAGTAGGTGGGGTAACGGCTCACCTAGGCGAC
Dc2  GGGGACCTTTGGGCCTCNCGCCATCGGGTGAACCCCAATGGGATTAGCTTGTAGGTTGGGTAACGGCTCACCTTGGCGAC
Dc3  GGGGACCTTCGGGCCTCACGCCATCGGATGAACCCAGATGGGATTAGCTAGTAGGTGGGGTAACGGCTCACCTAGGCGAC
EcM  GGGGACCTTCGGGCCTCACGCCATCGGATGAACCCAGATGGGATTAGCTAGTAGGTGGGGTAACGGCTCACCTAGGCGAC
DcM  GGGGACCTTCGGGCCTCACGCCATCGGATGAACCCAGATGGGATTAGCTAGTAGGTGGGGTAACGGCTCACCTAGGCGAC
Ec   GGGGACCTTCGGGCCTCACGCCATCGGATGAACCCAGATGGGATTAGCTAGTAGGTGGGGTAACGGCTCACCTAGGCGAC

Dc1  GATCCCTAGCTGGTCTGAGAGGATGACCAGCCACACTGGAACTGAGACACGGTCCAGACTCCTACGGGAGGCAGCAGTGG
Dc2  GATCCCTAGCTGGTTTGAGAGGATGCCCAGCCACACTGGAACTGAGACACGGTCCAGATTCCTACGGGAGGCAGCAGTGG
Dc3  GATCCCTAGCTGGTCTGAGAGGATGACCAGCCACACTGGAACTGAGACACGGTCCAGACTCCTACGGGAGGCAGCAGTGG
EcM  GATCCCTAGCTGGTCTGAGAGGATGACCAGCCACACTGGAACTGAGACACGGTCCAGACTCCTACGGGAGGCAGCAGTGG
DcM  GATCCCTAGCTGGTCTGAGAGGATGACCAGCCACACTGGAACTGAGACACGGTCCAGACTCCTACGGGAGGCAGCAGTGG
Ec   GATCCCTAGCTGGTCTGAGAGGATGACCAGCCACACTGGAACTGAGACACGGTCCAGACTCCTACGGGAGGCAGCAGTGG

Dc1  GGAATATTGCACAATGGGGGAAACCCTGATGCAGCCATGCCGCGTGTGTGAAGAAGGCCTTCGGGTTGTAAAGCACTTTC
Dc2  GGAATATTGCCCAATGGGGGAAACCCTGATGCAGCCATGCCGCGTGTGTGAAGAAGGCCTTCGGGTTGTAAAGCACTTTC
Dc3  GGAATATTGCACAATGGGGGAAACCCTGATGCAGCCATGCCGCGTGTGTGAAGAAGGCCTTCGGGTTGTAAAGCACTTTC
EcM  GGAATATTGCACAATGGGGGAAACCCTGATGCAGCCATGCCGCGTGTGTGAAGAAGGCCTTCGGGTTGTAAAGCACTTTC
DcM  GGAATATTGCACAATGGGGGAAACCCTGATGCAGCCATGCCGCGTGTGTGAAGAAGGCCTTCGGGTTGTAAAGCACTTTC
Ec   GGAATATTGCACAATGGGGGAAACCCTGATGCAGCCATGCCGCGTGTGTGAAGAAGGCCTTCGGGTTGTAAAGCACTTTC

Dc1  AGCGGGGAGGAAGGCGGTAAGGTTAATAACCTTACCGATTGACGTTACCCGCAGAAGAAGCACCGGCTAACTCCGTGCCA
Dc2  AGCGGGGAGGAAGGCGGCAAGGTTAATAACCTTACCGATTGACGTTACCCGCAGAAGAAGCACCGGCTAACTCCGTGCCA
Dc3  AGCGGGGAGGAAGGCGGTAAGGTTAATAACCTTACCGATTGACGTTACCCGCAGAAGAAGCACCGGCTAACTCCGTGCCA
EcM  AGCGGGGAGGAAGGCGGCAAGGTTAATAACCTTGCCGATTGACGTTACCCGCAGAAGAAGCACCGGCTAACTCCGTGCCA
DcM  AGCGGGGAGGAAGGCGGTAAGGTTAATAACCTTACCGATTGACGTTACCCGCAGAAGAAGCACCGGCTAACTCCGTGCCA
Ec   AGCGGGGAGGAAGGCGGTAAGGTTAATAACCTTACCGATTGACGTTACCCGCAGAAGAAGCACCGGCTAACTCCGTGCCA

Dc1  GCAGCCGCGGTAATACGGAGGGTGCAAGCGTTAATCGGAATGACTGGGCGTAAAGCGCACGCAGGCGGTCTGTTAAGTTG
Dc2  GCAGCCGCGGTAATACGGAGGGTGCAAGCGTTAATCGGAATGACTGGGCGTAAAGCGCACGCAGGCGGTCTGTTAAGTTG
Dc3  GCAGCCGCGGTAATACGGAGGGTGCAAGCGTTAATCGGAATGACTGGGCGTAAAGCGCACGCAGGCGGTCTGTTAAGTTG
EcM  GCAGCCGCGGTAATACGGAGGGTGCAAGCGTTAATCGGAATGACTGGGCGTAAAGCGCACGCAGGCGGTCTGTTAAGTTG
DcM  GCAGCCGCGGTAATACGGAGGGTGCAAGCGTTAATCGGAATGACTGGGCGTAAAGCGCACGCAGGCGGTCTGTTAAGTTG
Ec   GCAGCCGCGGTAATACGGAGGGTGCAAGCGTTAATCGGAATGACTGGGCGTAAAGCGCACGCAGGCGGTCTGTTAAGTTG
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Dc1  GATGTGAAATCCCCGGGCTTAACCTGGGAACTGCATTCAAAACTGACAGGCTAGAGTCTCGTAGAGGGGGGTAGAATTCC
Dc2  GATGTGAAATCCCCGGGCTTAACCTGGGAACTGCATTCAAAACTGACAGGCTAGAGTCTCGTAGAGGGGGGTAGAATTCC
Dc3  GATGTGAAATCCCCGGGCTTAACCTGGGAACTGCATTCAAAACTGACAGGCTAGAGTCTCGTAGAGGGGGGTAGAATTCC
EcM  GATGTGAAATCCCCGGGCTTAACCTGGGAACTGCATTCAAAACTGACAGGCTAGAGTCTCGTAGAGGGGGGTAGAATTCC
DcM  GATGTGAAATCCCCGGGCTTAACCTGGGAACTGCATTCAAAACTGACAGGCTAGAGTCTCGTAGAGGGGGGTAGAATTCC
Ec   GATGTGAAATCCCCGGGCTTAACCTGGGAACTGCATTCAAAACTGACAGGCTAGAGTCTCGTAGAGGGGGGTAGAATTCC

Dc1  AGGTGTAGCGGTGAAATGCGTAGAGATCTGGAGGAATACCGGTGGCGAAGGCGGCCCCCTGGACGAAGACTGACGCTCAG
Dc2  AGGTGTAGCGGTGAAATGCGTAGAGATCTGGAGGAATACCGGTGGCGAAGGCGGCCCCCTGGACGAAGACTGACGCTCAG
Dc3  AGGTGTAGCGGTGAAATGCGTAGAGATCTGGAGGAATACCGGTGGCGAAGGCGGCCCCCTGGACGAAGACTGACGCTCAG
EcM  AGGTGTAGCGGTGAAATGCGTAGAGATCTGGAGGAATACCGGTGGCGAAGGCGGCCCCCTGGACGAAGACTGACGCTCAG
DcM  AGGTGTAGCGGTGAAATGCGTAGAGATCTGGAGGAATACCGGTGGCGAAGGCGGCCCCCTGGACGAAGACTGACGCTCAG
Ec   AGGTGTAGCGGTGAAATGCGTAGAGATCTGGAGGAATACCGGTGGCGAAGGCGGCCCCCTGGACGAAGACTGACGCTCAG

Dc1  GTGCGAAAGCGTGGGGAGCAAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGATGTCGATTTGGAGGTTGTGCC
Dc2  GTGCGAAAGCGTGGGGAGCAAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGATGTCGATTTGGAGGTTGTGCC
Dc3  GTGCGAAAGCGTGGGGAGCAAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGATGTCGATTTGGAGGTTGTGCC
EcM  GTGCGAAAGCGTGGGGAGCAAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGATGTCGATTTGGAGGTTGTGCC
DcM  GTGCGAAAGCGTGGGGAGCAAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGATGTCGATTTGGAGGTTGTGCC
Ec   GTGCGAAAGCGTGGGGAGCAAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGATGTCGATTTGGAGGTTGTGCC

Dc1  CTTGAGGCGTGGCTTCCGGAGCTAACGCGTTAAATCGACCGCCTGGGGAGTACGGCCGCAAGGTTAAAACTCAAATGAAT
Dc2  CTTGAGGCGTGGCTTCCGGAGCTAACGCGTTAAATCGACCGCCTGGGGAGTACGGCCGCAAGGTTAAAACTCAAATGAAT
Dc3  CTTGAGGCGTGGCTTCCGGAGCTAACGCGTTAAATCGACCGCCTGGGGAGTACGGCCGCAAGGTTAAAACTCAAATGAAT
EcM  CTTGAGGCGTGGCTTCCGGAGCTAACGCGTTAAATCGACCGCCTGGGGAGTACGGCCGCAAGGTTAAAACTCAAATGAAT
DcM  CTTGAGGCGTGGCTTCCGGAGCTAACGCGTTAAATCGACCGCCTGGGGAGTACGGCCGCAAGGTTAAAACTCAAATGAAT
Ec   CTTGAGGCGTGGCTTCCGGAGCTAACGCGTTAAATCGACCGCCTGGGGAGTACGGCCGCAAGGTTAAAACTCAAATGAAT

Dc1  TGACGGGGGCCCGCACAAGCGGTGGAGCATGTGGTTTAATTCGATGCAACGCGAAGAACCTTACCTACTCTTGACATCCA
Dc2  TGACGGGGGCCCGCACAAGCGGTGGAGCATGTGGTTTAATTCGATGCAACGCGAAGAACCTTACCTACTCTTGACATCCA
Dc3  TGACGGGGGCCCGCACAAGCGGTGGAGCATGTGGTTTAATTCGATGCAACGCGAAGAACCTTACCTACTCTTGACATCCA
EcM  TGACGGGGGCCCGCACAAGCGGTGGAGCATGTGGTTTAATTCGATGCAACGCGAAGAACCTTACCTACTCTTGACATCCA
DcM  TGACGGGGGCCCGCACAAGCGGTGGAGCATGTGGTTTAATTCGATGCAACGCGAAGAACCTTACCTACTCTTGACATCCA
Ec   TGACGGGGGCCCGCACAAGCGGTGGAGCATGTGGTTTAATTCGATGCAACGCGAAGAACCTTACCTACTCTTGACATCCA

Dc1  GCGAAGACTGCAAAGATGCGGTCCTGCCTTCGGGAACGCTAANACAGGTGCTGCATGGCTGTCCTCACCTCCGTGTTGGG
Dc2  GCGAAGACTGCAGAGATGCGGTCGTGCCTTCGGGAACGCTGAGACAGGTGCTGCATGGCTGTCGTCAGCT-CGTGTTGTG
Dc3  GCGAAGACTGCAAAGATGCGGTCGTGCCTTCGGGAACGCTGAAACAGGTGCTGCATGGCTGTCGTCAGCT-CCTGTTGTG
EcM  GCGAAGACTGCAGAGATGCGGTCGTGCCTTCGGGAACGCTGAGACAGGTGCTGCATGGCTGTCGTCAGCT-CGTGTTGTG
DcM  GCGAAGACTGCAGAGATGCGGTCGTGCCTTCGGGAACGCTGAGACAGGTGCTGCATGGCTGTCGTCAGCT-CGTGTTGTG
Ec   GCGAAGACTGCAGAGATGCGGTCGTGCCTTCGGGAACGCTGAGACAGGTGCTGCATGGCTGTCGTCAGCT-CGTGTTGTG

Dc1  AAAGGTGGGGTTAAGTCCCGCAACGAGCGCAACCCTTAACCTCTGGTGCCAGCCTTACGGGTCGCGAACTCAGGGGAAAA
Dc2  AAATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTATCCTCTGTTGCCAGCACTACGGGT-GGGAACTCAGGGG-AGA
Dc3  AAATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTATCCTCTGGTGCCAGCACTACGGGT-GGGAACTCAGGGGAAAA
EcM  AAATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTATCCTCTGTTGCCAGCACTACGGGT-GGGAACTCAGGGG-AGA
DcM  AAATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTATCCTTTGTTGCCAGCACTACGGGT-GGGAACTCAAGGG-AGA
Ec   AAATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTATCCTCTGTTGCCAGCACTACGGGT-GGGAACTCAGGGG-AGA

Dc1  CTGCCCGGTGATAAACCGAAGGAAGGTGGGAATGCCGTCAAGGCCTCAGGGCCCTTGGGAGTAGGGGTACCAACGTGGTG
Dc2  CTGCC-GGTGATAAACCGGAGGAAGGTGGGGATGACGTCAAGTCATCATGGCCCTTACGAGTAGGGCTACACACGTGCTA
Dc3  CTGCCNGTGGATAAACCGGAAGAAAGTGGGAATGACGTCAAGTCATCATGGCCCTTACGAGTAGGGCTACCCCCGTGCTA
EcM  CTGCC-GGTGATAAACCGGAGGAAGGTGGGGATGACGTCAAGTCATCATGGCCCTTACGAGTAGGGCTACACACGTGCTA
DcM  CTGCC-GGTGATAAACCGGAGGAAGGTGGGGATGACGTCAAGTCATCATGGCCCTTACGAGTAGGGCTACACACGTGCTA
Ec   CTGCC-GGTGATAAACCGGAGGAAGGTGGGGATGACGTCAAGTCATCATGGCCCTTACGAGTAGGGCTACACACGTGCTA

Dc1  AAATGGCGGTAATCAAAGCAANATGGCACC----------------------------------------------------
Dc2  CAATGGC-GTATACAAAGAGAAGCGACCTCGCGAGAGCAAGCGGACCTCATAAAGTACGTCGTAGTCCGGATTGGAGTCT
Dc3  AAATGGC-CTAAAAAAAGAAATGC-ACCTCCGGAGAGCAAACGGAACTCTAAAAATACCCCGAAGCCCCGATNGGAAGCG
EcM  CAATGGC-GTATACAAAGAGAAGCGACCTCGCGAGAGCAAGCGGACCTCATAAAGTACGTCGTAGTCCGGATTGGAGTCT
DcM  CAATGGC-GTATACAAAGAGAAGCGACCTCGCGAGAGCAAGCGGACCTCATAAAGTACGTCGTAGTCCGGATTGGAGTCT
Ec   CAATGGC-GTATACAAAGAGAAGCGACCTCGCGAGAGCAAGCGGACCTCATAAAGTACGTCGTAGTCCGGATTGGAGTCT

Dc1  ----------------------------------------------------------
Dc2  GCAACTCGACTCCATGAAGTCGGAATCGCTAGTAATCGTAGATCAGAATGCTACGGT
Dc3  GCCACCCGACTCGCAGAAGTCGGAATCTTTTGNACTTCTTAATCTAATGGTTTCGGG
EcM  GCAACTCGACTCCATGAAGTCGGAATCGCTAGTAATCGTAGATCAGAATGCTACGGT
DcM  GCAACTCGACTCCATGAAGTCGGAATCGCTAGTAATCGTAGATCAGAATGCTACGGT
Ec   GCAACTCGACTCCATGAAGTCGGAATCGCTAGTAATCGTAGATCAGAATGCTACGGT
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Figure S1. Multiple sequence alignment of 16S rDNA sequences among three bacterial isolates associated with soft rot disease of *Phalaenopsis* in Indonesia and three 16S rDNA available in the NCBI DNA Database. *Dc*1, *Dc*2, and *Dc*3 – ITS sequences from bacterial isolate #1, #2, and #3 from *Phalaenopsis amabilis*. EcM – *Erwinia chrysanthemi* strain Miandian 2 (Acc. No. HM590191.1); DcM – *Dickeya chrysanthemi* strain M074 (KP322608.1); Ec – *Erwinia chrysantemi* (JX995135.1)