**Supplemental Fig. 1.** Partial alignments of *gpd1* gene sequences from *Globodera ellingtonae*, *G. pallida*, *G. rostochiensis* and *gpd1* messenger RNA (mRNA) of *G. rostochiensis* showing the location of the qRT-PCR primers (GPDN F4/GPDN R5) and the probe.

*gpd1* intron

 **GPDN F4 primer**

*G. ellingtonae* (GenBank KR072510) GTGTTCACCACTATTGAGAAGGTTTTAGGGAAAGGGAGGGGTCATGT-GA 348

*G. pallida* (GenBank KR072511) GTGTTCACCACCATTGAGAAGGTTT-AGGGAAAGGGGGG---CATGTTGA 346

*G. rostochiensis* (GenBank KR072509) GTGTTCACCACCATTGAGAAGGTTTTAGGGAAAGGGAGGGGCCATGT-GA 347

*G. rostochiensis* *gpd1* mRNA (EMBL AF004522) GTGTTCACTACCATTGAGAAGG---------------------------- 375

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*G. ellingtonae* (GenBank KR072510) TTTTAATAAGTTTTAAAATGTTAAGGCTTCGACACACTTGAAGGGAGGCG 398

*G. pallida* (GenBank KR072511) TTTAAATAAGTTTTAAAATGTTAAGGCTTCGGCACACTTGAAGGGAGGCG 396

*G. rostochiensis* (GenBank KR072509) TTTAAATAAGTTTTAAAATGTTAAGGCTTCGGCACACTTGAAGGGGGGCG 397

*G. rostochiensis* *gpd1* mRNA (EMBL AF004522) --------------------------CTTCGGCACACTTGAAGGGGGGCG 399

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*gpd1* intron

*G. ellingtonae* (GenBank KR072510) CCAAGAAGGTGAGATGAGTGGACTTTGGAGGTTTTGGCATTTTTAAATGC 448

*G. pallida* (GenBank KR072511) CCAAGAAGGTGAGATGAGCGGACTTTGGAGGTTTTGGCATTTTAAAATGC 446

*G. rostochiensis* (GenBank KR072509) CCAAGAAGGTGAGAT-AGTGGACTTTGGAGGTTTTGGCATTTTTAAATGC 446

*G. rostochiensis* *gpd1* mRNA (EMBL AF004522) CCAAGAAGGTG--------------------------------------- 410

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*G. ellingtonae* (GenBank KR072510) TTTTTTCCAGGTGGTCATCTCTGCTCCGTCCGCTGATGCACCGATGTACG 498

*G. pallida* (GenBank KR072511) TATTTTC-AGGTGGTTATCTCTGCTCCGTCCGCTGATGCACCGATGTACG 495

*G. rostochiensis* (GenBank KR072509) TATATTTCAGGTGGTCATCTCTGCTCCGTCCGCTGATGCACCGATGTACG 496

*G. rostochiensis* *gpd1* mRNA (EMBL AF004522) -------------GTCATCTCTGCTCCGTCCGCTGATGCACCGATGTACG 447

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***gpd1* probe**

*G. ellingtonae* (GenBank KR072510) TGATGGGCGTCAACGAGGACAAATATGACCCGGCCAAGGACAACGTGATT 548

*G. pallida* (GenBank KR072511) TGATGGGCGTCAACGAGGACAAATATGACCCGGCCAAGGACAACGTGATT 545

*G. rostochiensis* (GenBank KR072509) TGATGGGCGTCAACGAGGACAAATATGACCCGGCCAAGGACAACGTGATT 546

*G. rostochiensis* *gpd1* mRNA (EMBL AF004522) TGATGGGCGTCAACGAGGACAAATATGACCCGGCCAAGGACAACGTGATT 497

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*gpd1* intron

*G. ellingtonae* (GenBank KR072510) AGGTTTTGCGCTCCTTTCAAA----------AAAATTCTCATTTTTT--- 585

*G. pallida* (GenBank KR072511) AGGTTTTGCGCTCCTTTCCAATTTCAGAATAAAAATTCTTATTTTTTTTT 595

*G. rostochiensis* (GenBank KR072509) AGGTTTTGAGCTTCATTCAAA--------AAAAAATTCTTATTTTTT--- 585

*G. rostochiensis* *gpd1* mRNA (EMBL AF004522) AG------------------------------------------------ 499

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*G. ellingtonae* (GenBank KR072510) GTCTGTTTTAGCAACGCTTCGTGCACCACTAACTGCCTGGCGCCGCTGGC 635

***gpd1* probe**

*G. pallida* (GenBank KR072511) GTCTATTT-AGCAACGCTTCGTGCACCACCAACTGCCTTGCGCCGCTGGC 644

*G. rostochiensis* (GenBank KR072509) GCCTGTTTAAGCAACGCTTCGTGCACCACCAACTGCCTTGCGCCGCTGGC 635

*G. rostochiensis* *gpd1* mRNA (EMBL AF004522) -----------CAACGCTTCGTGCACCACCAACTGCCTTGCGCCGCTGGC 538

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*G. ellingtonae* (GenBank KR072510) CAAAGTGATCAACGACGAGTTTGGCATCATCGAAGGGCTGATGACCACTG 685

*G. pallida* (GenBank KR072511) CAAAGTGATCAACGACGAGTTTGGCATCATCGAAGGGCTGATGACGACTG 694

*G. rostochiensis* (GenBank KR072509) CAAAGTGATCAACGACGAGTTTGGCATCATCGAAGGGTTGATGACCACTG 685

*G. rostochiensis* *gpd1* mRNA (EMBL AF004522) CAAAGTGATCAACGACGAGTTTGGCATCATCGAAGGGTTGATGACCACTG 588

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*gpd1* intron

*G. ellingtonae* (GenBank KR072510) TTCACGCGGTAAGTGATCTTCAGTGGATAGAGC-AAAATCTG---CTTTT 731

*G. pallida* (GenBank KR072511) TTCACGCGGTATGTGGTCTTCAGTTGATAGAGCTAAAATCGGGTCCTTTT 744

*G. rostochiensis* (GenBank KR072509) TTCACGCAGTAAGTGATCTTCAGTTG-----------------------T 712

*G. rostochiensis* *gpd1* mRNA (EMBL AF004522) TTCACGCAGTA--------------------------------------- 599

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*G. ellingtonae* (GenBank KR072510) TTGGACATCACGTTTTATTTATTTATTTTTAAGTGACTGCCACTCAGAAA 781

*G. pallida* (GenBank KR072511) TTGAACGTCACGTTTTATTTATTTTTATTTAAGTGACTGCCACTCAGAAA 794

*G. rostochiensis* (GenBank KR072509) TTGGACATCACGCTTTATTTATTTATTTTTAAGTAACTGCCACTCAGAAA 762

*G. rostochiensis* *gpd1* mRNA (EMBL AF004522) -----------------------------------ACTGCCACTCAGAAA 614

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*G. ellingtonae* (GenBank KR072510) ACGGTGGACGGACCGAGTGGGAAGCAGTGGCGCGACGGGCGTGGCGCCGC 831

*G. pallida* (GenBank KR072511) ACGGTGGACGGACCGAGTGGGAAGCAGTGGCGTGACGGGCGTGGCGCCGC 844

*G. rostochiensis* (GenBank KR072509) ACGGTGGACGGACCGAGTGGGAAGCAGTGGCGCGACGGGCGTGGCGCCGC 812

*G. rostochiensis* *gpd1* mRNA (EMBL AF004522) ACGGTGGACGGACCGAATGGGAAGCAGTGGCGCGACGGGCGTGGCGCCGC 664

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 **GPDN R5 primer**

*G. ellingtonae* (GenBank KR072510) GCAGAACATCATCCCTGCCAGCACCGGGGCAGCCAAAGCAGTGGGCAAGG 881

*G. pallida* (GenBank KR072511) GCAGAACATCATTCCTGCCAGCACCGGAGCAGCCAAAGCAGTGGGCAAGG 894

*G. rostochiensis* (GenBank KR072509) GCAGAACATCATCCCTGCCAGCACCGGGGCAGCCAAAGCAGTGGGCAAGG 862

*G. rostochiensis* *gpd1* mRNA (EMBL AF004522) GCAGAACATCATCCCTGCCAGCACCGGGGCAGCCAAAGCAGTGGGCAAGG 714

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*G. ellingtonae* (GenBank KR072510) T----------------------CCGACCGGCAT---------------- 893

*G. pallida* (GenBank KR072511) T----------------------TCAGTCGGCAT---------------- 906

*G. rostochiensis* (GenBank KR072509) T----------------------TCAACCGGCAT---------------- 874

*G. rostochiensis* *gpd1* mRNA (EMBL AF004522) TCATTCCTGAGCTGAACGGCAAATTAACCGGCATGGCATTCCGTGTGCCG 764

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