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| **Supplementary file 1**. Species and GenBank accession no. of Pro-resilins and mucins | | |
| Species | Protein | Acession Number |
| *Anopheles gambiae* | Muc91C | AGAP002367 |
| *Anoplophora glabripennis* | Muc91C | XP\_018561641.1 |
|  | Pro-resilin | XP\_018561641.1 |
|  | Muc3Al | XP\_018564600.1 |
|  | Muc3A | XP\_018562266.1 |
|  | Muc2 | XP\_018564844.1 |
|  | Muc3Al | XP\_018564600.1 |
|  | Muc5AC | XP\_018564744.1 |
| *Acyrthosiphon pisum* | Muc2 | XP\_008181271.1 |
| *Aedes aegypti* | Muc3A | XP\_021708482.1 |
| *Apis mellifera* | Muc91C | XP\_006569520.2 |
| *Bombus impatiens* | Muc3A | XP\_012243416.1 |
|  | Muc5AC | XP\_012239483.1 |
| *Bombyx mori* | Muc3A | XP\_037870848.1 |
| *Drosophila melanogaster* | Muc91C | AAF55584.1 |
|  | Pro-resilin | NP\_611157.1 |
| *Drosophila willistoni* | Muc5AC | XP\_023031088.1 |
| *Homo sapiens* | Muc5AC | NP\_001291288.1 |
|  | Muc2 | AZL49145 |
|  | Muc3A | XP\_021708482.1 |
| *Myzus persicae* | Muc91C | XP\_000059040.1 |
|  | Pro-resilin | XP\_000004150.2 |
| *Nasonia vitripennis* | Muc91C | XP\_001605137.1 |
|  | Pro-resilin | XP\_001604687.1 |
| *Papilio xuthus* | Muc2 | XP\_013171518.1 |
| *Tribolium castaneum* | Muc91C | XP\_975482.1 |
|  | Muc5AC | XP\_008198760.1 |
|  | Muc2 | XP\_015834638.1 |
|  | Pro-resilin | XP\_001807028.1 |
|  | Pro-resilin | XP\_006563165.2 |
| *Zootermopsis nevadensis* | Muc5AC | XP\_021921012.1 |
|  | Muc3A | XP\_021933252.1 |
|  | Muc2l | XP\_021912795.1 |