**Supplementary Material 2.** Taxonomic overview of AstA-positive innervation and AstA expression in the digestive system of insects and other Ecdysozoa

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **taxon** | **foregut****innervation** | **midgut****innervation** | **hindgut****innervation** | **expression in EECs** | **inhibition of gut motility** | **references** |
| Nematoda |  |  |  | + |  | (Nathoo et al., 2001) |
| Decapoda |  |  |  | + |  | (Yin et al., 2006) |
| Chelicerata |  |  | + |  | -(hindgut) | (Šimo and Park, 2014) |
| Dermaptera |  | + | + |  |  | (Rankin et al., 1998) |
| Blattodea |  | + | + | + | +(fore/hindgut) | (Lange et al., 1993; Reichwald et al., 1994; Duve et al., 1995; Lange, 1995; Veelaert et al., 1995; Yu et al., 1995; Weiß, 1997; Maestro et al., 1998; Fusé et al., 1999; Aguilar et al., 2003) |
| Orthoptera | + | + | + | + |  | (Vanden Broeck et al., 1996; Robertson and Lange, 2010; Robertson et al., 2012) |
| Heteroptera | + | + | + | + | + | (Sarkar et al., 2003; Zandawala et al., 2012; Zandawala and Orchard, 2013) |
| Hymenoptera | n.e. | n.e. | n.e. | + |  | (Christie, 2020) |
| Diptera | - | + | + | + | + (midgut) | (Duve et al., 1993; Duve H, 1994; Veenstra et al., 1995, 2008; Yoon and Stay, 1995; Hernandez-Martinez et al., 2005; Veenstra, 2009; Predel et al., 2010; Reiher et al., 2011; Zoephel et al., 2012; Robertson et al., 2014; Vanderveken and O’Donnell, 2014; Chen et al., 2016) |
| Lepidoptera | + | + | *+* | *+* | + (foregut) | (Duve et al., 1997, 1999, 2000; Abdel-latief et al., 2004; Abdel-Latief et al., 2004; Davey et al., 2005; Matthews et al., 2007; Lwalaba et al., 2010) |

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