

| | Ri_Ptu1_1 | Ri_Ptu1_2 | Ri_Ptu1_3 | Ri_Ptu1_4 | Ri_Ptu1_5 | Ri_Ptu1_6 | Pr_Ptu1_1 | Pr_Ptu1_2 | Pp_Ptu1_1 | Pp_Ptu1_2 | Pp_Ptu1_3 | Pt_Ptu1_1 | MVIIA |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
| Ri_Ptu1_1 | 100.00 | 35.85 | 26.53 | 15.91 | 38.46 | 30.00 | 47.92 | 50.00 | 83.64 | 26.92 | 33.96 | 35.48 | 27.45 |
| Ri_Ptu1_2 | 35.85 | 100.00 | 31.91 | 20.45 | 37.25 | 33.33 | 43.75 | 42.31 | 35.85 | 28.85 | 78.18 | 35.48 | 24.49 |
| Ri_Ptu1_3 | 26.53 | 31.91 | 100.00 | 30.23 | 44.00 | 30.77 | 30.95 | 30.61 | 26.53 | 79.63 | 34.04 | 45.45 | 45.45 |
| Ri_Ptu1_4 | 15.91 | 20.45 | 30.23 | 100.00 | 33.33 | 28.26 | 23.08 | 25.00 | 20.45 | 25.58 | 22.73 | 32.26 | 31.11 |
| Ri_Ptu1_5 | 38.46 | 37.25 | 44.00 | 33.33 | 100.00 | 31.37 | 36.96 | 37.25 | 38.46 | 38.00 | 41.18 | 32.26 | 36.17 |
| Ri_Ptu1_6 | 30.00 | 33.33 | 30.77 | 28.26 | 31.37 | 100.00 | 25.58 | 36.73 | 26.00 | 32.69 | 31.25 | 36.36 | 27.78 |
| Pr_Ptu1_1 | 47.92 | 43.75 | 30.95 | 23.08 | 36.96 | 25.58 | 100.00 | 42.55 | 45.83 | 27.66 | 45.83 | 31.03 | 25.00 |
| Pr_Ptu1_2 | 50.00 | 42.31 | 30.61 | 25.00 | 37.25 | 36.73 | 42.55 | 100.00 | 53.70 | 27.45 | 48.08 | 35.48 | 22.00 |
| Pp_Ptu1_1 | 83.64 | 35.85 | 26.53 | 20.45 | 38.46 | 26.00 | 45.83 | 53.70 | 100.00 | 28.85 | 33.96 | 32.26 | 27.45 |
| Pp_Ptu1_2 | 26.92 | 28.85 | 79.63 | 25.58 | 38.00 | 32.69 | 27.66 | 27.45 | 28.85 | 100.00 | 30.77 | 42.42 | 22.45 |
| Pp_Ptu1_3 | 33.96 | 78.18 | 34.04 | 22.73 | 41.18 | 31.25 | 45.83 | 48.08 | 33.96 | 30.77 | 100.00 | 38.71 | 20.41 |
| Pt_Ptu1_1 | 35.48 | 35.48 | 45.45 | 32.26 | 32.26 | 36.36 | 31.03 | 35.48 | 32.26 | 42.42 | 38.71 | 100.00 | 30.00 |
| MVIIA | 27.45 | 24.49 | 45.45 | 31.11 | 36.17 | 27.78 | 25.00 | 22.00 | 27.45 | 22.45 | 20.41 | 30.00 | 100.00 |

Supplementary Data 4: Pair-wise identity matrix of Ptu1 family peptide sequences of assassin bug *R. iracundus* (Ri_Ptu1), Australian assassin bug *Pristhesancus plagipennis* (Pp_Ptu1), African assassin bug *Platymeris rhadamanthus* (Pr_Ptu1), *Peirates turpis* (Pt_Ptu1) and homolog toxin “ ω - conotoxins” (MVIIA) from a cone snail.