**S1 Table. Comparison of dioecious species originating from Japan and previously described dioecious species of *Volvox* sect. *Volvox.***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Species | *Volvox rousseletii* from Japan  | *Volvox rousseletii* from Africa a  | *Volvox rousseletii* var. *lucknowensis* from India | *Volvox perglobator* | *Volvox prolificus* |
| Size of asexual spheroid (µm)  | 331-423 x 352-476 | 690-2058 x 754-2180 | 610-629 x 544-766 b | 466-980 x 449-1100 | 400-1450 |
| Number of cells in asexual spheroid  | 4700-11800 | 14000-42000 | 6000-8000 b | 2500-12000 | 9000–25000 |
| Number of gonidia in asexual spheroid | 4-8 | 1-16, usually 6-10 | 3-7 | 3-13 | 2–20, usually 6–12 |
| Size of male spheroid (µm) | 304-468 x 337-534 | 471-1443 x 559-1550 | 610-629 x 544-766 b | 315-400 x 320-440 | 140-1023 |
| Number of cells in male spheroid | 9100-17000 |  | 6000-8000 b | 4600-9200 | 5300-9200 |
| Number of sperm packets in sexual spheroid | 35-92 | 108-300 or more | 20-60 | 48-80 | 25-55, but up to 300 |
| Development of sperm packets in male sphered | Old male spheroid with sperm packets of early and final stages of development | Male spheroid with sperm packets of every stage of development  | Male spheroid with sperm packets of all stages of development  | Old male spheroid with only matured sperm packets | Old male spheroid with sperm packets of early stages of development  |
| Size of female spheroid (µm) | 353-550 x 380-657 | 600-1464 x 644-1636 | 610-629 x 544-766 | 340-868 x 432-807 | 400-1090 |
| Number of cells in female spheroid | 8900-14000 |  | 6000-8000 b | 2200-12900 | 8500-1290 |
| Number of zygotes (eggs) in female spheroid | 52-97 | 60-227, sometimes up to 655 | 100-159 | 18-121 | 80-282 |
| Development of eggs/zygotes in female sphered | Old female spheroid with only matured zygotes | Old female spheroid with only matured zygotes |  | Old female spheroid with only matured zygotes | Old female spheroid with eggs and all stages of development of zygotes |
| Diameter of zygotes without spines (µm) | 31-39 | 35-44 | 32-33.5 | 21-34 | 30-35 |
| Shape of spines of zygote  | Straight or slightly curved with acute apices | Curved or straight with acute apices | Broadly with conical apices | Straight with rounded apices | Straight with somewhat rounded apices |
| Length of spines of zygotes (µm) | 3.4-6.4 | 4.5-12 | 3.7-5.5 | 2.5-5.4 | 5-9 |
| References | The present study (Figs 1-3) | Rich and Pocock [1], Smith [2], McCracken & Starr [3] | Iyengar [4], Smith [2], Iyengar & Desikachary [5] | Smith [2], Hanschen et al. [6] | Iyengar [4], Smith [2], Iyengar & Desikachary [5], Hanschen et al. [7] |

a Including *V. rousseletii* f. *grinquaensis* Pocock.

b Total measurement based on three types of spheroids.

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