**Supplementary Table 1.** The relationship between cell size, cell surface area, cell volume, number of cells and the resulting cell volume. The Table shows that that cell size and the volumetric density of a size of cell in the tissue are more important than the number of cells. Reporting only the number of cells can be misleading for biological functions, by ignoring the resultant surface area for transmembrane mucins and membrane receptors and the resultant volume of the cytosol for producing mucins and other proteins. Cell size and volumetric density in the tissue better describe the functioning of that tissue. Typical gill lamellae have mucous cells between 20-60 µ2, whereas typical skin mucous cells are from 150-300 µ2 and intestinal mucosa present intermediary cell sizes. Five cells of 300 µ2 have 15 times more surface area and 58 times more cytosol volume than 5 cells of 20 µ2.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Area (µ2) | Radius  (µ) | Surface area sphere (µ2) | Volume sphere (µ3) | Number of cells | Surface area in unit (µ2) | Volume in unit (µ3) |
| 20 | 2.5231 | 80 | 67.2835 | 5 | 400 | 336.4176 |
|  |  | 80 | 67.2835 | 10 | 800 | 672.8353 |
| 50 | 3.9894 | 200 | 265.9615 | 5 | 1000 | 1329.8076 |
|  |  | 200 | 265.9615 | 10 | 2000 | 2659.6152 |
| 100 | 5.6418 | 400 | 752.2527 | 5 | 2000 | 3761.2638 |
|  |  | 400 | 752.2527 | 10 | 4000 | 7522.5277 |
| 150 | 6.9098 | 600 | 1381.9766 | 5 | 3000 | 6909.8830 |
|  |  | 600 | 1381.9766 | 10 | 6000 | 13819.7660 |
| 200 | 7.9788 | 800 | 2127.6921 | 5 | 4000 | 10638.4608 |
|  |  | 800 | 2127.6921 | 10 | 8000 | 21276.9216 |
| 250 | 8.9206 | 1000 | 2973.5401 | 5 | 5000 | 14867.70095 |
|  |  | 1000 | 2973.5402 | 10 | 10000 | 29735.4019 |
| 300 | 9.7720 | 1200 | 3908.8201 | 5 | 6000 | 19544.1005 |
|  |  | 1200 | 3908.8201 | 10 | 12000 | 39088.2010 |
|  |  |  |  |  |  |  |