

Biology Reference Tables*

————— Edition V, 1/9/17 —————

Table A – The Metric System

| Prefix | Symbol | Value | Power of ten |
|-----------------|--------|---------------|------------------|
| Giga | G | 1,000,000,000 | 10 ⁹ |
| | | 100,000,000 | 10 ⁸ |
| | | 10,000,000 | 10 ⁷ |
| Mega | M | 1,000,000 | 10 ⁶ |
| | | 100,000 | 10 ⁵ |
| Myria (archaic) | my | 10,000 | 10 ⁴ |
| Kilo | k | 1,000 | 10 ³ |
| Hecto | h | 100 | 10 ² |
| Deca | da | 10 | 10 ¹ |
| None | None | 1 | 10 ⁰ |
| Deci | d | .1 | 10 ⁻¹ |
| Centi | c | .01 | 10 ⁻² |
| Milli | m | .001 | 10 ⁻³ |
| Myrio (archaic) | None | .0001 | 10 ⁻⁴ |
| | | .00001 | 10 ⁻⁵ |
| Micro | μ | .000001 | 10 ⁻⁶ |
| | | .0000001 | 10 ⁻⁷ |
| | | .00000001 | 10 ⁻⁸ |
| Nano | n | .000000001 | 10 ⁻⁹ |

Table B – Properties -o- Water

| | |
|--|--|
| Boiling Point.....100°C | Energy gained during melting.....330 J/g |
| Freezing Point.....0°C | Energy released during freezing.....330 J/g |
| Density at 3.89 °C.....1 g/mL | Energy gained during vaporization.....2260 J/g |
| Specific heat of liquid water.....4.186 J/g·°C | Energy released during condensation.....2260 J/g |

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Table C – Useful Formulae

| | |
|--|---|
| $\text{gradient} = \frac{\Delta \text{ field value}}{\Delta \text{ distance}}$ | $\% \text{ error} = \frac{(\text{experimental value} - \text{accepted value})}{\text{accepted value}} \times 100$ |
| $\text{density} = \frac{\text{mass}}{\text{volume}}$ | $p + q = 1 \qquad p^2 + 2pq + q^2 = 1$ |

Table D – Selected Temperature Scales

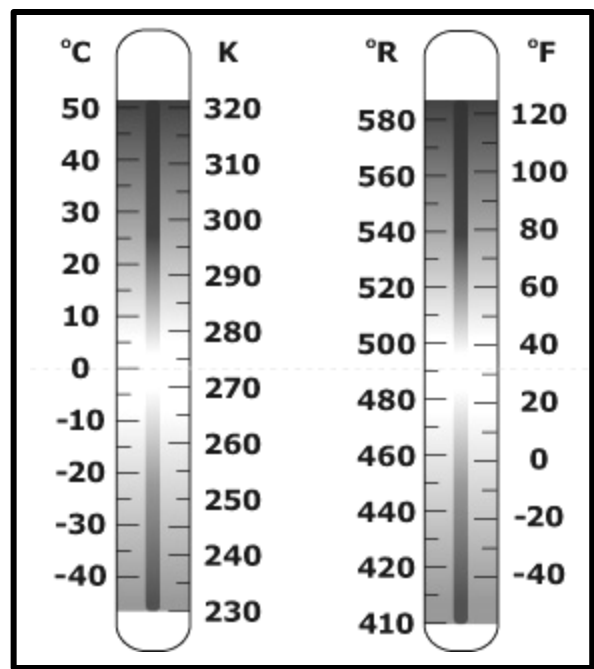


Table E – Selected Genetics Terms

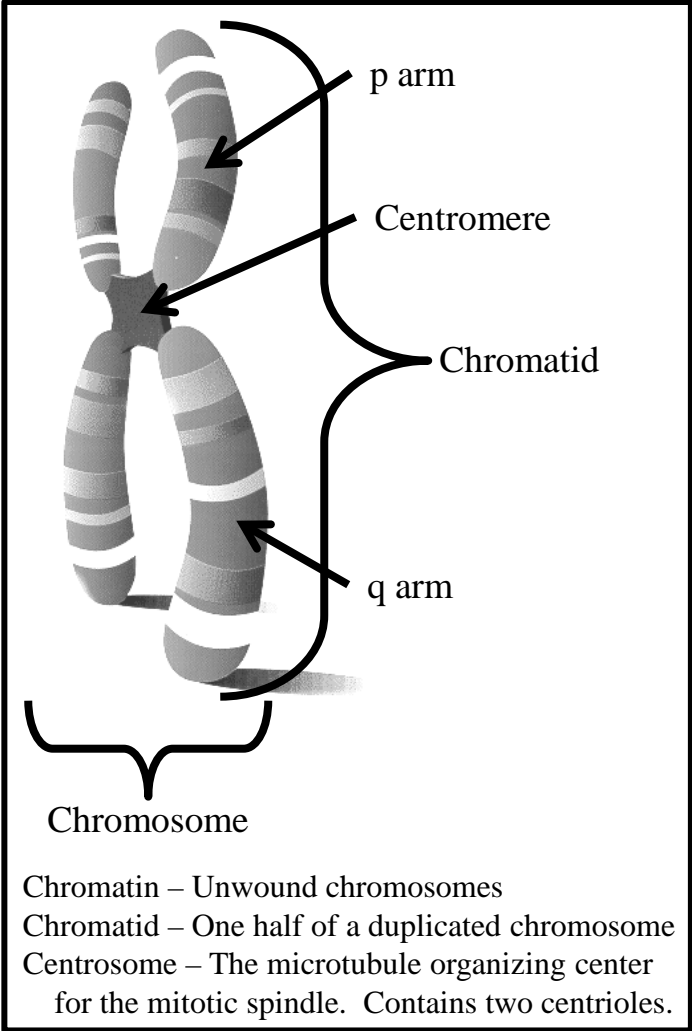


Table F – Selected Functional Groups

| | |
|---|-------------------------|
| —O—H | Hydroxyl group |
| $\begin{array}{c} \text{O} \\ \\ \text{—C—} \end{array}$ | Carbonyl group |
| $\begin{array}{c} \text{O} \\ \\ \text{—C—O—H} \end{array}$ | Carboxyl group |
| $\begin{array}{c} \text{H} \\ \\ \text{—N—} \\ \\ \text{H} \end{array}$ | Amino group |
| —S—H | Sulfhydryl group |

Table G – Levels of Organization

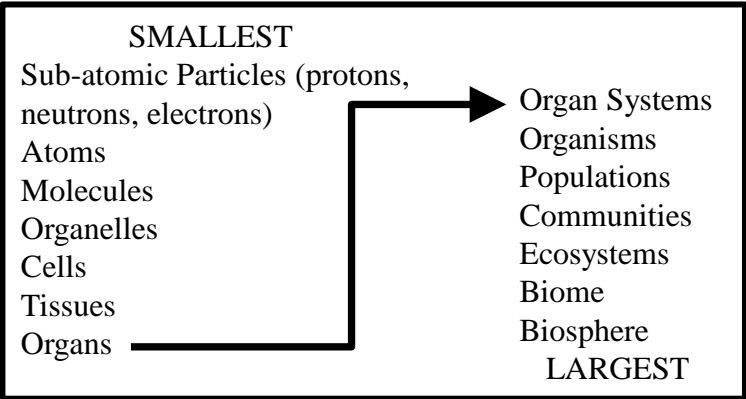


Table H – Stages of Mitosis

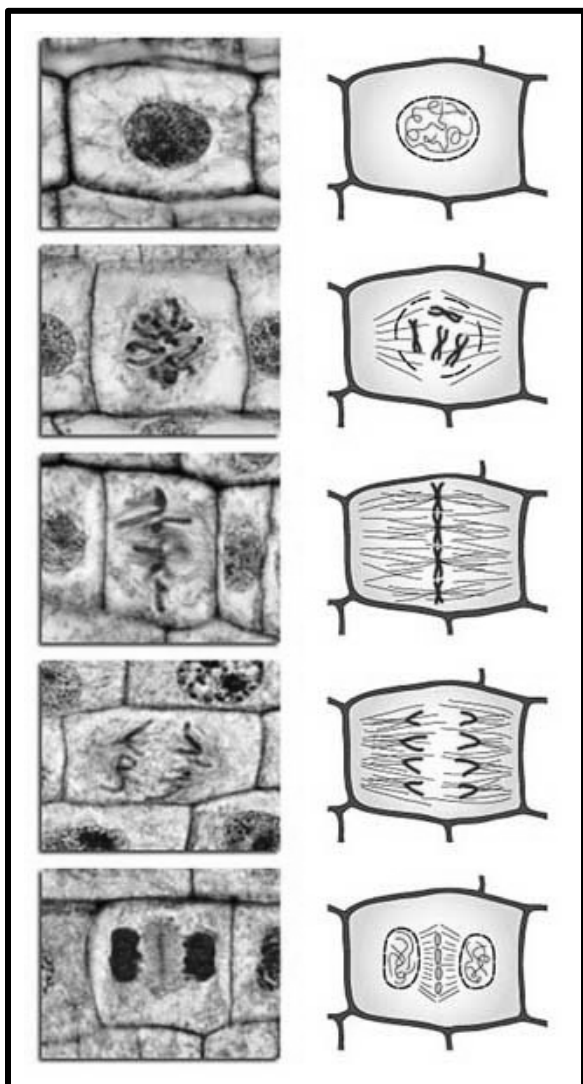


Table I – Cellular Respiration

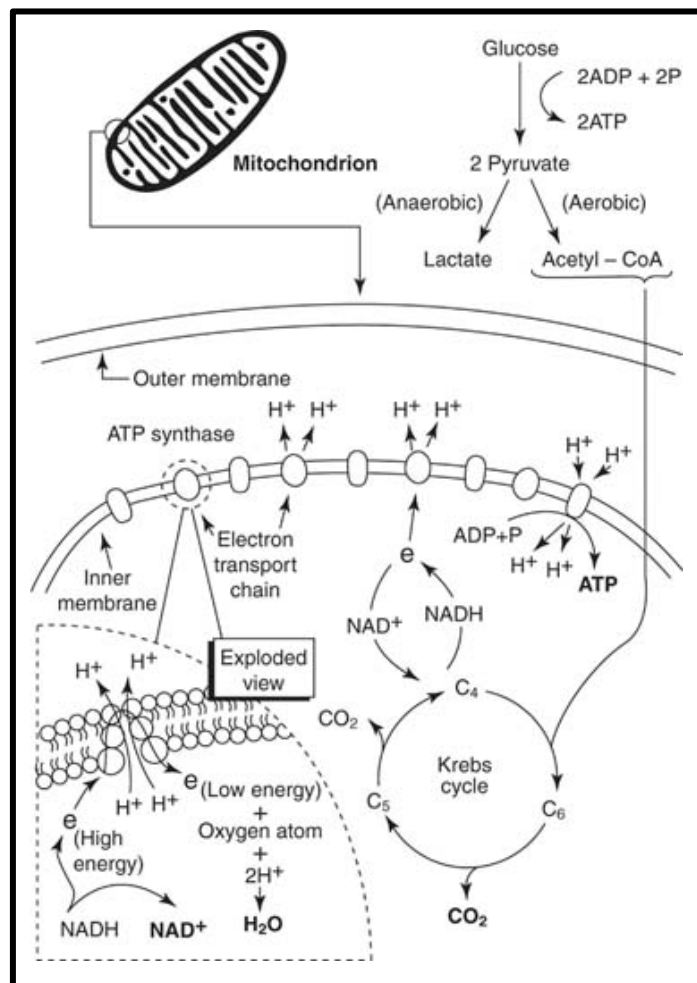


Table J – The Universal Genetic Code

| | | SECOND BASE | | | | | |
|------------|---|--------------------|-----------|------------|------------|---|------------|
| | | U | C | A | G | | |
| FIRST BASE | U | UUU } Phe | UCU } | UAU } Tyr | UGU } Cys | U | THIRD BASE |
| | | UUC } | UCC } | UAC } | UGC } | C | |
| | | UUA } Leu | UCA } Ser | UAA } Stop | UGA } Stop | A | |
| | | UUG } | UCG } | UAG } Stop | UGG } Trp | G | |
| | C | CUU } | CCU } | CAU } His | CGU } | U | |
| | | CUC } Leu | CCC } Pro | CAC } | CGC } Arg | C | |
| | | CUA } | CCA } | CAA } Gln | CGA } | A | |
| | | CUG } | CCG } | CAG } | CGG } | G | |
| | A | AUU } | ACU } | AAU } Asn | AGU } Ser | U | |
| | | AUC } Ile | ACC } Thr | AAC } | AGC } | C | |
| | | AUA } | ACA } | AAA } Lys | AGA } Arg | A | |
| | | AUG } Met or start | ACG } | AAG } | AGG } | G | |
| | G | GUU } | GCU } | GAU } Asp | GGU } | U | |
| | | GUC } Val | GCC } Ala | GAC } | GGC } Gly | C | |
| | | GUA } | GCA } | GAA } Glu | GGA } | A | |
| | | GUG } | GCG } | GAG } | GGG } | G | |

Table K – Selected Acronyms

WTS GTWF
IPMAT
RRR GENTS
OIL RIG
LEOGER

Table L – The Periodic Table of the Elements

| | | | | | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|--|--|--|--|--|--|--|-------|----|-------|-------|
| 1 | | | | | | | | | | | | | | | | | 18 |
| 1A | | | | | | | | | | | | | | | | | 8A |
| 1 | 2 | | | | | | | | | | | | | | 2 | | |
| H | He | 17 | | | | | | | | | | | | | He | | |
| 1.008 | | 4.003 | | | | | | | | | | | | | | | |
| 3 | 4 | | | | | | | | | | | | | 10 | | | |
| Li | Be | 9 | | | | | | | | | | | | | Ne | | |
| 6.941 | 9.012 | | | | | | | | | | | | | 20.18 | | | |
| 11 | 12 | | | | | | | | | | | | | 18 | | | |
| Na | Mg | 13 | 14 | 15 | 16 | 17 | | | | | | | | | | | Ar |
| 22.99 | 24.31 | 3A | 4A | 5A | 6A | 7A | | | | | | | | | | | 39.95 |
| 19 | 20 | 31 | 32 | 33 | 34 | 35 | | | | | | | | | | | 36 |
| K | Ca | Ga | Ge | As | Se | Br | | | | | | | | | | | Kr |
| 39.10 | 40.08 | 69.72 | 72.61 | 74.92 | 78.96 | 79.90 | | | | | | | | | | | 83.80 |
| 37 | 38 | 49 | 50 | 51 | 52 | 53 | | | | | | | | | | | 54 |
| Rb | Sr | In | Sn | Sb | Te | I | | | | | | | | | | | Xe |
| 85.47 | 87.62 | 114.8 | 118.7 | 121.8 | 127.6 | 126.9 | | | | | | | | | | | 131.3 |
| 55 | 56 | 81 | 82 | 83 | 84 | 85 | | | | | | | | | | | 86 |
| Cs | Ba | Tl | Pb | Bi | Po | At | | | | | | | | | | | Rn |
| 132.9 | 137.3 | 204.4 | 207.2 | 209.0 | (209) | (210) | | | | | | | | | | | (222) |
| 87 | 88 | 114 | | 116 | | | | | | | | | | | | 118 | |
| Fr | Ra | Uuq | | Uuh | | | | | | | | | | | | Uuo | |
| (223) | (226) | (277) | | (277) | | | | | | | | | | | | (277) | |

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 |
| Ce | Pr | Nd | Pm | Sm | Eu | Gd | Tb | Dy | Ho | Er | Tm | Yb | Lu |
| 140.1 | 140.9 | 144.2 | (145) | 150.4 | 152.0 | 157.3 | 158.9 | 162.5 | 164.9 | 167.3 | 168.9 | 173.0 | 175.0 |
| 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 |
| Th | Pa | U | Np | Pu | Am | Cm | Bk | Cf | Es | Fm | Md | No | Lr |
| 232.0 | 231.0 | 238.0 | (237) | (244) | (243) | (247) | (247) | (251) | (252) | (257) | (258) | (259) | (262) |