# Mitosis

**By**

**BIO1140 Section**

**Demonstrators:**
**and**

**2013**

**Department of Biology**

**University of Ottawa**

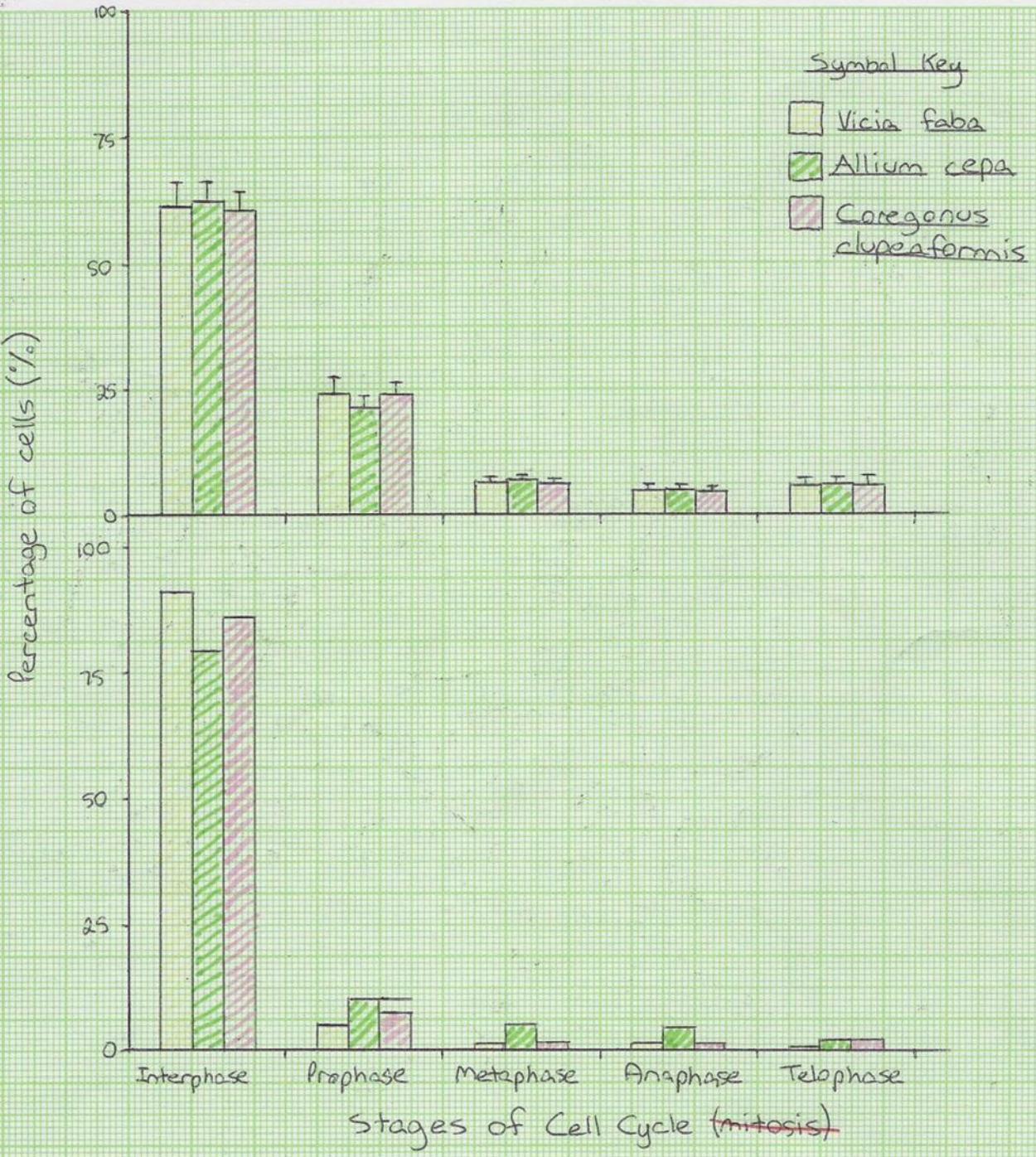


Figure 1: Percentage of cells in each stage of mitosis for Vicia faba, Allium cepa and Coregonus clupeaformis at room temperature. Upper panel shows class averages + standard error (n=16), and lower panel shows personal data obtained by dividing the number of cells found in each stage by the total number of cells observed, 150 for each organism. Cells are observed at 40× magnification in three seperate fields of view of 50 cells each.

**Conclusion:**

The relative time spent in each phase of mitosis by each of the three organisms (*Vicia faba*, *Allium cepa* and *Coregonus clupeaformis*) was approximately the same, and class data was fairly consistent with the personal group data. Interphase was always the phase in which all organisms spent the most time; approximately 61% of cells in the class data and 80%-90% of cells in group data were found in interphase. Prophase was the always the second longest phase for the organisms, (approximately 23% of class data cells and 7% of group data cells were found in prophase). All three organisms spend about 5% of their time in metaphase, anaphase and telophase in the class data, whereas they spent only 1%-2% of their time in these stages for the group data. The personal group observations indicated that *Vicia faba* spent the most time in interphase (92%), followed by prophase (4.67%) and finally the least amount of time in metaphase, anaphase and telophase (0.67%-1.33%). *Allium cepa* was observed to be more actively dividing, because only 79.3% of cells were found in interphase. Prophase again was the second longest stage, with 10% of cells found in prophase. *Allium cepa* spends approximately 4.67% of its time in metaphase, 4% in anaphase and 2% in telophase. Finally, *Coregonus clupeaformis* was shown to be more active in mitosis than *Vicia faba* but less active than *Allium cepa*, since it spent 86.67% of its time in interphase, 7.33% in prophase, 1.33% in metaphase, 2.67% in anaphase and 2% in telophase.

## BIO1140 Mitosis Marking Scheme

**Student ID:** **Corrector:**

| 1- Presentation | |
|---|---|
| Correct Plot type (bar graph) | 1 /1 |
| Tick marks: 3 to 5 (Y axis) per panel - do not obscure data | 1 /1 |
| Axes labels (present and appropriate for variables plotted) | 1 /1 |
| Axis scale is the same on both panels | 0.5 /0.5 |
| Axes scale encompasses data | 0.5 /0.5 |
| Bars correctly spaced (separation between phases) | 0.5 /0.5 |
| Borders and / or frame are NOT present | 0.5 /0.5 |
| Layout on page appropriate – 2/3 for graph rest for caption | 1 /1 |
| General presentation (clean and clear) | 1 /2 |
| **total presentation** | **7 /8** |

| 2- Data | |
|---|---|
| Symbols (colours or patterns) used | 1 /1 |
| Symbol key present (one only) | 1 /1 |
| Error bars (only + SE shown) – class data panel only | 1 /1 |
| Data bars of uniform width | 1 /1 |
| Average +SE on upper panel | 1 /1 |
| Personal data on lower panel | 1 /1 |
| **Total data** | **6 /6** |

| 3- Caption | |
|---|---|
| Begins with a figure number | 1 /1 |
| First sentence is a specific title | 0.5 /1 |
| Genus and species are indicated | 1 /1 |
| *Genus* and *species* are correctly written (italics or underlined) | 1 /1 |
| States that means are presented | 1 /1 |
| States that errors bars represent +SE | 1 /1 |
| Sample size or sample size range is indicated | 1 /1 |
| Explanation of each panel | 1 /1 |
| **Total Caption** | **7.5 /8** |

| 4- Conclusion and misc. | |
|---|---|
| Comparison between data (group/class + bean/onion/fish) | 2 /2 |
| Conclusion regarding relative time of cell cycle phases | 2 /4 |
| Spelling and presentation | 1 /2 |
| **Total Conclusion** | **5 8** |
| **Total report** | **/30** |
| **In-lab evaluation (up to 6 marks)** | **5.4 /6** |
| 1 day late — Late penalty (-10% per late day) or other | -3.6 |
| **Total Lab4** | **27.3 /36** |